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Technologies de l'information — Ingénierie des systèmes et du logiciel — Outils et méthodes pour le management organisationnel d'une gamme de produits

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized 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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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 document 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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.

This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

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.

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Introduction

The main purpose of this document is to deal with the capabilities of methods and tools of software and systems product line (SSPL) organizational management. This document defines how the tools and methods can support the software and systems product line-specific organizational management processes. Since product lines deal with multiple products that have similarities, product lines have an unprecedented level of organizational management complexities. This arises from several sources:

— there are inherent differences in organizational considerations because there are parallel development processes (domain and application engineering) in a product line, and the two processes are tightly related with each other around assets;

— the close relationships among domain engineering, application engineering and assets require the highly matured managerial capabilities for addressing the relationships; and

— there is a lack of tools and methods to support the product line-specific organizational management.

Organizational management addresses the orchestration of the product line organization. Introduction and institutionalization of the product line strategy in an organization requires ongoing preparation, planning, execution and improvement efforts. Organizational management provides planning, monitoring and control, and management for product line adoption, transition, operations, evolution and organizational value achievement such as reusability, reducing cost and improving quality.

There are needs for defining product line-specific organizational management processes that integrate the involved product line disciplines with those for a single product. Furthermore, support of tools and methods are required so that a product line organization can perform organizational management under the systematic control of complexities. This document addresses the product line-specific processes in organizational management by dividing those into *organizational-level product line planning, organizational product line enabling, and organizational product line management* areas with the guidance of a set of tools and methods capabilities for supporting tasks for product line organizational management.

This document is intended to benefit people who acquire, supply, develop, operate and maintain tools and methods for product line organizational management. This document can be used in one or more of the following modes:

— by an organization intended to implement product lines — to understand, adopt and enact the processes, tools and methods for product line organizational management. This also helps the organization to evaluate and select relevant tools and methods based on business and user-related criteria; and

— by a tool vendor who facilitates or leverages product line engineering practices — to provide a set of tool capabilities that should be embodied in a tool for supporting product line organizational management.

The ISO/IEC 26550 family of standards addresses both engineering and management processes and capabilities of methods and tools in terms of the key characteristics of product line development. This document provides processes and capabilities of methods and tools for product line realization. Other ISO/IEC 26550 family of standards are as follows: ISO/IEC 26550, ISO/IEC 26551, ISO/IEC 26555, ISO/IEC 26557, ISO/IEC 26558 and ISO/IEC 26559 are published. ISO/IEC 26552, ISO/IEC 26553, ISO/IEC 26554, ISO/IEC 26560, ISO/IEC 26561, ISO/IEC 26562 and ISO/IEC 26563 are planned International Standards. The following list provides an overview of the family:

— processes and capabilities of methods and tools for domain requirements engineering and application requirements engineering are provided in ISO/IEC 26551;

— processes and capabilities of methods and tools for domain design and application design are provided in ISO/IEC 26552;

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— processes and capabilities of methods and tools for domain realization and application realization are provided in ISO/IEC 26553;

— processes and capabilities of methods and tools for domain testing and application testing are provided in ISO/IEC 26554;

— processes and capabilities of methods and tools for technical management are provided in ISO/IEC 26555;

— processes and capabilities of methods and tools for variability mechanisms are provided in ISO/IEC 26557;

— processes and capabilities of methods and tools for variability modelling are provided in ISO/IEC 26558;

— processes and capabilities of methods and tools for variability traceability are provided in ISO/IEC 26559;

— processes and capabilities of methods and tools for product management are provided in ISO/IEC 26560;

— processes and capabilities of methods and tools for technical probe are provided in ISO/IEC 26561;

— processes and capabilities of methods and tools for transition management are provided in ISO/IEC 26562;

— processes and capabilities of methods and tools for configuration management of asset are provided in ISO/IEC 26563; and

— others (ISO/IEC 26564 to ISO/IEC 26599) are to be developed.

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Information technology — Software and systems engineering — Tools and methods for product line organizational management

1 Scope

This document, within the methods and tools of organizational management for software and systems product lines:

— enables the users of this document to holistically understand, adopt and enact the processes, tools and methods for product line organizational management;

— helps the users evaluate and select relevant tools and methods based on business and user-related criteria;

— helps make product line engineers, developers and tool vendors informed about capabilities of tools and methods that are required for supporting product line implementation from organizational aspects; and

— provides product line-specific processes and capabilities of tools and methods in organizational management.

This document concerns processes and capabilities of methods and tools for organizational management for a family of products, not for a single system.

NOTE System Architecture is a set of logical and physical principles used to achieve a mission within a given environment. Components that can be subsystems derived from System Architecture are: software products, human-based products such as crew or operators, or hardware products like mechanical structures, electronic boards and chemicals. The scope of this document spans from the system to subsystems and components. Both hardware-intensive and software-intensive systems are included, if they are part of a product family.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological 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/

3.1
organizational risk
risks that inhibit the achievement of business values and product line objectives

Note 1 to entry: Risks related to domain asset development or member product development are dealt with in the technical risk management sub process of ISO/IEC 26555.

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3.2
product roadmap
timeline with high-level milestones for a product life cycle, particularly the timeline for productive deployment of the product

4 Reference model for product line organizational management

4.1 Overview

Organizational management supports an entire product line effort. Introduction and institutionalization of the product line approach is not a one-step phase, but requires preparation and planning followed by execution and implementation.

The reference model specifies the structure of supporting processes and sub processes for product line organizational management. The reference model for product line organizational management in Figure 1 is structured into three processes, organizational-level product line planning, organizational product line managing and organizational product line enabling. Each process is divided into sub processes and each sub process is described in terms of the following attributes:

— the title of the sub process;

— the purpose of the sub process;

— the inputs to produce the outcomes;

— the tasks to achieve the outcomes;

— the outcomes of the sub process; and

— the capabilities of methods and tools required for performing the tasks effectively and efficiently.

NOTE 1 The process mapping results with ISO/IEC/IEEE 15288 and ISO/IEC/IEEE 12207 of Annex B can be referred to differentiate this document from others.

NOTE 2 When the process, sub process, outcomes and tasks are listed or described in a sentence they are italicized in order to increase their visibility.

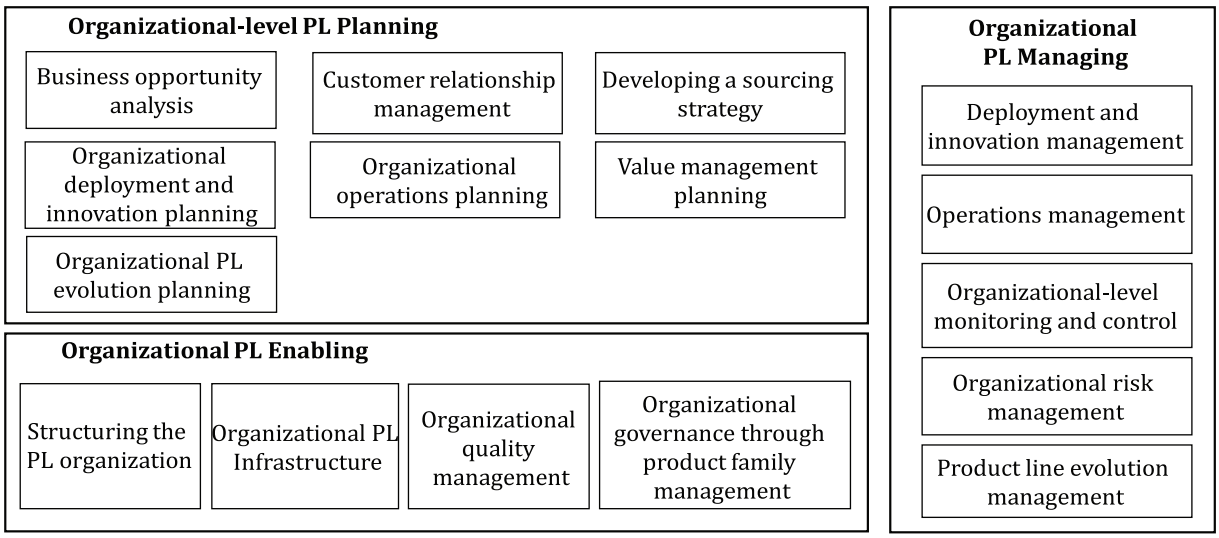


Figure 1 — Product line organizational management reference model

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