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Software and systems engineering — Methods and tools for variability traceability in software and systems product line

Ingénierie des systèmes et du logiciel — Méthodes et outils pour modéliser la traçabilité dans les gammes de produits des logiciels et systèmes

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Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Abbreviated terms **2**
5 Reference model for variability traceability in software and systems product line **2**
5.1 Overview 2
5.2 Reference model for variability traceability in software and systems product line 4
6 Variability tracing management **7**
6.1 General 7
6.2 Variability tracing planning 7
6.2.1 Purpose of variability tracing planning 7
6.2.2 Design variability tracing strategy 8
6.2.3 Define quality assurance measures for variability tracing 8
6.2.4 Assign responsibility for variability tracing 9
6.2.5 Record variability tracing plan 9
6.3 Variability tracing enabling 10
6.3.1 Purpose of variability tracing enabling 10
6.3.2 Provide guidance for variability tracing 10
6.3.3 Mobilize roles and responsibilities for variability tracing 11
6.3.4 Enable variability tracing management 11
6.3.5 Enable variability tracing operations 11
6.3.6 Enable quality assurance measurement for variability tracing 12
6.4 Variability tracing managing 12
6.4.1 Purpose of variability tracing managing 12
6.4.2 Review the plan versus actual result of variability tracing 13
6.4.3 Control issues on domain/application variability tracing 13
6.4.4 Control issues on variability traceability management 13
6.4.5 Control issues on variability tracing support 14
6.4.6 Support corrective actions for variability tracing 14
6.4.7 Make improvement actions for variability tracing 15
7 Variability tracing **15**
7.1 General 15
7.2 Traceability between domain variability model and domain artefacts 15
7.2.1 Purpose of traceability between domain variability model and domain artefacts 15
7.2.2 Identify relations between variation point and domain artefact 16
7.2.3 Identify relations between variant and domain artefact 16
7.2.4 Define the trace links between domain variability model and domain artefacts 17
7.3 Traceability between application variability model and application artefacts 17
7.3.1 Purpose of traceability between application variability model and application artefacts 17
7.3.2 Identify relations between variation point and application artefact 18
7.3.3 Identify relations between variant and application artefact 18
7.3.4 Define the trace links between application variability model and application artefacts 19
7.4 Traceability between domain and application variability model 19
7.4.1 Purpose of traceability between domain and application variability model 19
7.4.2 Identify relations between domain and application variability model 20
7.4.3 Define trace links in accordance with binding results 20
7.5 Traceability among variability related artefacts within a stage 20

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7.5.1 Purpose of traceability between variability related artefacts within a stage 20
7.5.2 Identify relations among domain artefacts within the same stage 21
7.5.3 Define trace links among domain artefacts within the same stage 21
7.5.4 Instantiate trace links in line with binding results 22
7.6 Traceability between variability related artefacts in adjacent stages 22
7.6.1 Purpose of traceability between variability related artefacts in different adjacent stages 22
7.6.2 Identify relations between domain artefacts in adjacent stages 23
7.6.3 Define trace links between domain artefacts in adjacent stages 23
7.6.4 Instantiate trace links in line with binding results 24

8 Variability tracing support 24
8.1 General 24
8.2 Relating tracing to variability model 24
8.2.1 Purpose of relating tracing to variability model 24
8.2.2 Identify variability tracing conflicts 25
8.2.3 Harmonize variability traceability with product line traceability 25
8.3 Quality assurance for variability tracing 26
8.3.1 Purpose of quality assurance for variability tracing 26
8.3.2 Objectively evaluate variability tracing activities 26
8.3.3 Objectively evaluate variability tracing work products 27
8.3.4 Communicate and resolve noncompliance issues 27
8.3.5 Establish records of tracing quality assurance activities 28
8.4 Variability tracing algorithm 28
8.4.1 Purpose of variability tracing algorithm 28
8.4.2 Identify algorithms for variability tracing 29
8.4.3 Evaluate defined variability tracing algorithms 29
8.4.4 Measure the performance of algorithms 30
8.4.5 Optimize traceability algorithms 30

Annex A (informative) **Variability traceability dimension 31**

Annex B (informative) **Types of variability traceability relations 32**

Annex C (informative) **Variability traceability attributes 34**

Bibliography 35

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Foreword

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Introduction

Software and Systems Product Line (SSPL) engineering and management creates, exploits and manages a common platform to develop a family of products (e.g. software products, systems architectures) at lower cost, reduced time to market and with better quality. As a result, it has gained increasing global attention since the 1990s.

Variability, which differentiates a member product from other products within a product line, plays an important role in SSPL; and hundreds of variabilities are introduced throughout the whole SSPL domain engineering stages. Those variabilities are defined, refined, newly added as domain engineering stages go forward. Variabilities thus are modelled carefully so as to manage and control them in a systematic way. This document deals with methods and tools capability for supporting variability modelling using consistent notations and for managing and/or utilizing variability models in domain and application engineering lifecycle processes.

This document can be used in the following modes:

— by the users of this document: to benefit people who want to adopt SSPL for producing their products by guiding how to model variabilities among member products;

— by a product line organization: to provide guidance in the evaluation and selection for methods and tools for variability modelling;

— by providers of tools and methods: to provide guidance in implementing or developing methods and tools by providing a comprehensive set of methods and tools capabilities for supporting variability modelling.

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 variability modelling in product lines. Other ISO/IEC 26550 family of standards are as follows:

— 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;

— 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 organizational management are provided in ISO/IEC 26556;

— 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 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;

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— 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;

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

ISO/IEC 26550, ISO/IEC 26551 and ISO/IEC 26555 are published. ISO/IEC 26557 and ISO/IEC 26559 are to be published. ISO/IEC 26552, ISO/IEC 26553, ISO/IEC 26554, ISO/IEC 26556, ISO/IEC 26560, ISO/IEC 26561, ISO/IEC 26562, ISO/IEC 26563 are planned International Standards.

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Software and systems engineering — Methods and tools for variability traceability in software and systems product line

1 Scope

This document, within the context of the tools and methods of variability traceability for software and system product lines**:**

— provides the terms and definitions specific to variability traceability for software and systems product lines;

— defines process groups and their processes for establishing and managing variability traceability at product line lifecycle processes. Those processes are described in terms of purpose, inputs, tasks, and outcomes;

— defines method capabilities to support the defined tasks of each process;

— defines tool capabilities to automate/semi-automate tasks or defined method capabilities.

This document does not concern processes and capabilities of tools and methods for a single system but rather deals with those for a family of products.

2 Normative references

There are no normative references in this document.

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