

This is a preview of "ISO/IEC 26555:2013". [Click here to purchase the full version from the ANSI store.](#)

First edition  
2013-03-01

---

---

## Software and systems engineering — Tools and methods for product line technical management

*Ingénierie du logiciel et des systèmes — Outils et méthodes pour le  
management technique des gammes de produits*

---

---

Reference number  
ISO/IEC 26555:2013(E)



© ISO/IEC 2013

This is a preview of "ISO/IEC 26555:2013". Click [here](#) to purchase the full version from the ANSI store.



**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

This is a preview of "ISO/IEC 26555:2013". [Click here to purchase the full version from the ANSI store.](#)

## Contents

Page

<b>1</b>	<b>Scope</b> .....	<b>1</b>
<b>2</b>	<b>Normative references</b> .....	<b>1</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>1</b>
<b>4</b>	<b>Reference model for product line technical management</b> .....	<b>2</b>
<b>5</b>	<b>Process management</b> .....	<b>6</b>
<b>5.1</b>	<b>Applying process enabling processes for product lines</b> .....	<b>7</b>
<b>5.1.1</b>	<b>Establish process management group</b> .....	<b>7</b>
<b>5.1.2</b>	<b>Align resources for process definition and improvements</b> .....	<b>8</b>
<b>5.1.3</b>	<b>Govern process definition and improvement</b> .....	<b>9</b>
<b>5.1.4</b>	<b>Prepare process management and improvement</b> .....	<b>9</b>
<b>5.2</b>	<b>Domain engineering process definition</b> .....	<b>10</b>
<b>5.2.1</b>	<b>Define domain engineering processes</b> .....	<b>10</b>
<b>5.2.2</b>	<b>Validate domain engineering processes</b> .....	<b>11</b>
<b>5.2.3</b>	<b>Deploy the domain engineering processes</b> .....	<b>11</b>
<b>5.3</b>	<b>Application engineering process definition</b> .....	<b>12</b>
<b>5.3.1</b>	<b>Define application engineering processes</b> .....	<b>12</b>
<b>5.3.2</b>	<b>Validate the conformance of application engineering processes with domain engineering processes</b> .....	<b>13</b>
<b>5.3.3</b>	<b>Deploy the application engineering processes</b> .....	<b>14</b>
<b>5.4</b>	<b>Applying process monitoring and control for product lines</b> .....	<b>14</b>
<b>5.4.1</b>	<b>Plan for process monitoring and control</b> .....	<b>15</b>
<b>5.4.2</b>	<b>Define process performance measures</b> .....	<b>15</b>
<b>5.4.3</b>	<b>Measure and manage process performance</b> .....	<b>15</b>
<b>5.4.4</b>	<b>Coordinate processes for improving reusability</b> .....	<b>16</b>
<b>5.5</b>	<b>Applying process improvement for product lines</b> .....	<b>16</b>
<b>5.5.1</b>	<b>Assess processes</b> .....	<b>17</b>
<b>5.5.2</b>	<b>Estimate the impact of changes on processes</b> .....	<b>18</b>
<b>5.5.3</b>	<b>Plan process improvement</b> .....	<b>18</b>
<b>5.5.4</b>	<b>Implement process improvements</b> .....	<b>18</b>
<b>5.5.5</b>	<b>Evaluate process improvement</b> .....	<b>19</b>
<b>6</b>	<b>Variability management</b> .....	<b>19</b>
<b>6.1</b>	<b>Variability model management</b> .....	<b>20</b>
<b>6.1.1</b>	<b>Establish variability modeling policy</b> .....	<b>21</b>
<b>6.1.2</b>	<b>Collect variability information</b> .....	<b>21</b>
<b>6.1.3</b>	<b>Verify variability models</b> .....	<b>22</b>
<b>6.1.4</b>	<b>Share and maintain variability models</b> .....	<b>22</b>
<b>6.2</b>	<b>Variability documentation management</b> .....	<b>23</b>
<b>6.2.1</b>	<b>Establish policies for variability documentation</b> .....	<b>23</b>
<b>6.2.2</b>	<b>Collect annotations of variability models</b> .....	<b>23</b>
<b>6.2.3</b>	<b>Validate the variability documentation</b> .....	<b>24</b>
<b>6.3</b>	<b>Variability binding management</b> .....	<b>24</b>
<b>6.3.1</b>	<b>Establish binding policy</b> .....	<b>25</b>
<b>6.3.2</b>	<b>Guide trade-offs analysis among alternatives of binding time</b> .....	<b>25</b>
<b>6.3.3</b>	<b>Guide binding time decision</b> .....	<b>25</b>
<b>6.3.4</b>	<b>Maintain binding information</b> .....	<b>26</b>
<b>6.4</b>	<b>Variability tracing</b> .....	<b>26</b>
<b>6.4.1</b>	<b>Establish policies for traceability management of variability models</b> .....	<b>27</b>
<b>6.4.2</b>	<b>Define links between variability model and domain assets</b> .....	<b>27</b>
<b>6.4.3</b>	<b>Manage the changes of the defined trace links</b> .....	<b>27</b>
<b>6.5</b>	<b>Variability control and evolution</b> .....	<b>28</b>

This is a preview of "ISO/IEC 26555:2013". [Click here to purchase the full version from the ANSI store.](#)

6.5.1	Identity and analyze the evolution needs of variants .....	28
6.5.2	Add or remove variants.....	29
6.5.3	Add or remove dependencies and constraints .....	29
6.5.4	Change binding time .....	29
6.5.5	Maintain the affected traceabilities .....	30
6.5.6	Provide feedback for variabilities and the variability evolution process.....	30
7	Asset Management .....	30
7.1	Asset identification.....	31
7.1.1	Set up and maintain organizational policies for managing assets .....	32
7.1.2	Identity asset candidates .....	32
7.1.3	Estimate efforts necessary to create, reuse, and update domain assets.....	32
7.1.4	Determine assets .....	33
7.1.5	Elicit information necessary to reuse assets .....	33
7.2	Asset base implementation .....	34
7.2.1	Establish the mining (retrieval) mechanism for assets .....	34
7.2.2	Define and implement the CRUD method for assets .....	35
7.2.3	Establish asset base .....	35
7.2.4	Evaluate asset base.....	36
7.3	Asset verification .....	36
7.3.1	Review the selected assets .....	36
7.3.2	Review asset configurations .....	37
7.3.3	Create and release baselines of assets.....	37
7.4	Asset evolution (including change management).....	37
7.4.1	Manage asset changes.....	38
7.4.2	Maintain traceability of assets.....	39
7.4.3	Manage feedback.....	39
7.4.4	Transform the existing assets into assets to rehabilitate asset base.....	39
7.4.5	Dispose assets from asset base .....	40
8	Support management processes .....	40
8.1	Technical quality management for SSPL .....	41
8.1.1	Establish technical quality management policy.....	41
8.1.2	Establish and maintain criteria for quality assurance .....	42
8.1.3	Perform quality assurance according to criteria.....	42
8.1.4	Communicate and ensure resolution of noncompliance issues .....	42
8.2	Configuration management for SSPL.....	43
8.2.1	Identify configurations of member products .....	44
8.2.2	Establish configuration tree for a product line.....	44
8.2.3	Manage configuration of variability in space.....	45
8.3	Decision management for SSPL .....	46
8.3.1	Establish decision management policy .....	46
8.3.2	Tailor decision procedure.....	47
8.3.3	Guide the decision execution.....	47
8.3.4	Learn from execution results .....	47
8.4	Technical risk management for SSPL .....	48
8.4.1	Identify technical risks .....	48
8.4.2	Assess technical risks .....	49
8.4.3	Develop technical risk mitigation plans .....	49
8.4.4	Activate the mitigation plan.....	49
8.5	Tool management for SSPL.....	50
8.5.1	Identify needs for tool management.....	50
8.5.2	Select and adapt tools.....	51
8.5.3	Set-up and maintain tools.....	51
Annex A (informative)	Technical Management and Technical Readiness Levels (TRL).....	52
Annex B (informative)	Relationship with ISO/IEC 12207 processes .....	53
Annex C (informative)	A Construct for Process, Method, Tool, and Aspect.....	55
Bibliography	.....	56

This is a preview of "ISO/IEC 26555:2013". [Click here to purchase the full version from the ANSI store.](#)

## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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.

ISO/IEC 26555 was prepared by Joint Technical Committee ISO/IEC JTC1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

## Introduction

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

- There are inherent differences in technical 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 relationships among them.
- There are lack of tools and methods to support the product line-specific technical management.

Technical management provides management support for a timely and proper deployment of product line in balance with pre-defined product line objectives such as reusability, reducing cost, improving quality, and etc. as well as its planned cost, schedule, and resources. Technical management addresses actual means used to support, monitor, and control the activities of both domain engineering and application engineering of a product line.

There are needs for defining product line-specific technical 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 technical management under the systematic control of complexities. This International Standard addresses the product line-specific processes in technical management by dividing those into *process management*, *variability management*, *asset management*, and *support management* areas with the guidance of a set of tools and methods capabilities for supporting tasks for product line technical management.

This International Standard is intended to benefit people who acquire, supply, develop, operate, and maintain tools and methods for product line technical management. This International Standard 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 technical management. This also helps the organization to evaluate and select relevant tools and methods based on business and user-related criteria.
- 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 technical management.

ISO/IEC 26550 addresses both engineering and management processes and covers the key characteristics of product line development. ISO/IEC 26550 provides an overview of the consecutive international standards (i.e., ISO/IEC 26551 through ISO/IEC 26556) as well as the structure of the model:

- Processes and capabilities of methods and tools for product line scoping, domain requirements engineering, and application requirements engineering are provided as *ISO/IEC 26551: Software and systems engineering – Tools and methods for product line requirements engineering*.
- Processes and capabilities of methods and tools for domain design and application design are provided as *ISO/IEC 26552: Software and systems engineering – Tools and methods for product line architecture design*.

This is a preview of "ISO/IEC 26555:2013". [Click here to purchase the full version from the ANSI store.](#)

- Processes and capabilities of methods and tools for domain realization and application realization are provided as *ISO/IEC 26553: Software and systems engineering – Tools and methods for product line realization*.
- Processes and capabilities of methods and tools for domain verification and validation and application verification and validation are provided as *ISO/IEC 26554: Software and systems engineering – Tools and methods for product line verification and validation*.
- Processes and capabilities of methods and tools for technical management are provided as *ISO/IEC 26555: Software and systems engineering – Tools and methods for product line technical management*.
- Processes and capabilities of methods and tools for organizational management are provided as *ISO/IEC 26556: Software and systems engineering – Tools and methods for product line organizational management*.