ISO/IEC 26558:2017-07 (E)

Software and systems engineering - Methods and tools for variability modelling in software and systems product line

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1

4 Variability modelling in software and systems product line 2
4.1 Overview 2
4.2 Reference model for variability modelling in software and systems product line 4

5 Variability model management 6
5.1 General 6
5.2 Variability model planning 7
5.2.1 Purpose of variability model planning 7
5.2.2 Design variability modelling strategy 7
5.2.3 Define quality assurance measures for variability modelling 8
5.2.4 Assign responsibility for variability modelling 8
5.2.5 Record variability model plan 8
5.3 Variability model enabling 9
5.3.1 Purpose of variability model enabling 9
5.3.2 Provide guidance for variability modelling 10
5.3.3 Mobilize roles and responsibilities for variability modelling 10
5.3.4 Enable variability model-centric variability management 10
5.3.5 Enable variability modelling operations 11
5.3.6 Enable quality assurance measurement for variability modelling 11
5.4 Variability model managing 11
5.4.1 Purpose of variability model managing 11
5.4.2 Review the plan versus actual of variability modelling 12
5.4.3 Control issues on domain/application variability modelling 13
5.4.4 Control issues on variability model-centred variability management 13
5.4.5 Control issues on variability model support 13
5.4.6 Support corrective actions for variability modelling 14
5.4.7 Make improvement actions for variability modelling 14

6 Variability modelling 14
6.1 General 14
6.2 Domain variability modelling 15
6.2.1 Purpose of domain variability modelling 15
6.2.2 Construct domain variability model 15
6.2.3 Annotate domain variability model 16
6.2.4 Verify domain variability model 16
6.2.5 Optimize domain variability model 17
6.3 Application variability modelling 17
6.3.1 Purpose of application variability modelling 17
6.3.2 Construct application variability model 18
6.3.3 Annotate application variability model 18
6.3.4 Verify application variability model 18

6.3.5 Optimize application variability model 19
6.4 Relating variability model to artefacts 19
6.4.1 Purpose of relating variability model to artefacts 19
6.4.2 Retrieve variation points and variants in relevant artefacts 20
6.4.3 Relate domain variability model to domain artefacts 20
6.4.4 Relate application variability model to application artefacts 20
6.5 Relating domain variability model to application variability model 21
6.5.1 Purpose of domain variability model to application variability model 21

6.5.2 Trace binding decisions made in an application 22
6.5.3 Establish relations between domain and application variability models 22
6.5.4 Add decision-related annotations to relations 22
6.5.5 Verify relations between domain and application variability models 23

7 Variability model support 23
7.1 General 23
7.2 Relating variability model to variability mechanism 23
7.2.1 Purpose of relating variability model to variability mechanism 23
7.2.2 Identify variability including variability mechanism constraints 24
7.2.3 Establish relations from variability model to variability mechanism 24
7.2.4 Add variability mechanism constraint annotations into variability model 25
7.3 Quality assurance for variability model 25
7.3.1 Purpose of quality assurance for variability model 25
7.3.2 Objectively evaluate variability modelling activities 26
7.3.3 Objectively evaluate variability model work products 26
7.3.4 Communicate and resolve noncompliance issues 27
7.3.5 Establish records of variability modelling quality assurance activities 27
7.4 Binding decision support 28
7.4.1 Purpose of binding decision support 28
7.4.2 Establish full of references to binding decision tables 28
7.4.3 Verify binding decisions from variability models view 29
7.5 Application configuration support 29
7.5.1 Purpose of application configuration support 29
7.5.2 Relate variability models to binding decision tables 30
7.5.3 Provide different views of variability models by binding stages 30
7.5.4 Support full of traces from variability model to artefacts 30

Annex A (informative) Variability meta model 32

Annex B (informative) Orthogonal variability model 33

Annex C (informative) Formal descriptions for variability relationships 34

Annex D (informative) Orthogonal variability decision table 35

Annex E (informative) Orthogonal variability model validation 36

Bibliography 38