

ISO/IEC/IEEE 29148:2011-12 (E)

Systems and software engineering - Life cycle processes - Requirements engineering

Contents		Page
Foreword		vi
Introduction		vii
1	Scope	1
2	Conformance	1
2.1	Intended Usage	1
2.2	Conformance to processes	2
2.3	Conformance to information item content	2
2.4	Full conformance	2
2.5	Tailored conformance	2
2.5.1	Processes	2
2.5.2	Information items	3
3	Normative references	3
4	Terms, definitions and abbreviated terms	3
4.1	Terms and definitions	3
4.2	Abbreviated terms	8
5	Concepts	8
5.1	Introduction	8
5.2	Requirements fundamentals	8
5.2.1	General	8
5.2.2	Stakeholders	8
5.2.3	Transformation of needs into requirements	9
5.2.4	Requirements construct	9
5.2.5	Characteristics of individual requirements	11
5.2.6	Characteristics of a set of requirements	11
5.2.7	Requirement language criteria	12
5.2.8	Requirements attributes	12
5.3	Practical considerations	14
5.3.1	Iteration and recursion of processes	14
5.3.2	Iteration and recursion in requirements engineering	16
5.4	Requirement information items	17
6	Processes	18
6.1	Requirement processes	18
6.1.1	Guidelines for Processes	19
6.2	Stakeholder requirements definition process	19
6.2.1	Purpose	19
6.2.2	Outcomes	19
6.2.3	Activities and tasks	20
6.3	Requirements analysis process	27
6.3.1	Purpose	27
6.3.2	Outcomes	27
6.3.3	Activities and tasks	27
6.4	Requirements engineering activities in other technical processes	33
6.4.1	Requirements in architectural design	33
6.4.2	Requirements in verification	34

6.4.3	Requirements in validation	36
6.5	Requirements management	37
6.5.1	Management Overview	37
6.5.2	Change management	37
6.5.3	Measurement for requirements	39
7	Information items	41
8	Guidelines for information items	42
8.1	Requirements information item outlines	42
8.2	Stakeholder requirements specification document	42
8.2.1	Introduction	42
8.2.2	StRS example outline	42
8.3	System requirements specification document	43
8.3.1	Introduction	43
8.3.2	SyRS example outline	44
8.4	Software requirements specification document	45
8.4.1	Introduction	45
8.4.2	SRS example outline	45
9	Information item content	46
9.1	Introduction	46
9.2	General content	46
9.2.1	Identification	46
9.2.2	Front matter	47
9.2.3	Definitions	47
9.2.4	References	47
9.2.5	Acronyms and abbreviations	47
9.3	Stakeholder requirements specification (StRS) document	47
9.3.1	Business purpose	47
9.3.2	Business scope	48
9.3.3	Business overview	48
9.3.4	Stakeholders	48
9.3.5	Business environment	48
9.3.6	Goal and Objective	48
9.3.7	Business model	48
9.3.8	Information environment	48
9.3.9	Business processes	49
9.3.10	Business operational policies and rules	49
9.3.11	Business operational constraints	49
9.3.12	Business operation modes	49
9.3.13	Business operational quality	49
9.3.14	Business structure	49
9.3.15	User requirements	49
9.3.16	Operational concept	50
9.3.17	Operational scenarios	50
9.3.18	Project constraints	50
9.4	System requirements specification (SyRS) document	50
9.4.1	System purpose	50
9.4.2	System scope	50
9.4.3	System overview	51
9.4.4	Functional requirements	51
9.4.5	Usability requirements	51
9.4.6	Performance requirements	51
9.4.7	System interfaces	51
9.4.8	System Operations	52
9.4.9	System modes and states	52
9.4.10	Physical characteristics	52
9.4.11	Environmental conditions	53
9.4.12	System security	53
9.4.13	Information management	53
9.4.14	Policies and regulations	53

9.4.15	System life cycle sustainment	53
9.4.16	Packaging, handling, shipping and transportation	53
9.4.17	Verification	54
9.4.18	Assumptions and dependencies	54
9.5	Software requirements specification (SRS) document	54
9.5.1	Purpose	54
9.5.2	Scope	54
9.5.3	Product perspective	54
9.5.4	Product functions	56
9.5.5	User characteristics	57
9.5.6	Limitations	57
9.5.7	Assumptions and dependencies	57
9.5.8	Apportioning of requirements	57
9.5.9	Specific requirements	57
9.5.10	External interfaces	58
9.5.11	Functions	58
9.5.12	Usability requirements	59
9.5.13	Performance requirements	59
9.5.14	Logical database requirements	59
9.5.15	Design constraints	60
9.5.16	Standards compliance	60
9.5.17	Software system attributes	60
9.5.18	Verification	61
9.5.19	Supporting information	61
Annex A (normative) System operational concept		62
A.1	Overview	62
A.2	Operational concept document (OpsCon)	62
A.2.1	Scope	63
A.2.2	Referenced documents	63
A.2.3	Current system or situation	63
A.2.4	Justification for and nature of changes	66
A.2.5	Concepts for the proposed system	68
A.2.6	Operational scenarios	70
A.2.7	Summary of impacts	71
A.2.8	Analysis of the proposed system	72
A.2.9	Appendices	73
A.2.10	Glossary	73
Annex B (informative) Concept of operations		74
B.1	Overview	74
B.2	Concept of operation document	74
B.2.1	Purpose	74
B.2.2	Scope	74
B.2.3	Strategic plan	74
B.2.4	Effectiveness	74
B.2.5	Overall operation	74
B.2.6	Governance	75
C.1	Stakeholder requirements definition process	76
C.2	Requirements analysis Process	77
C.3	Other technical requirements-related processes	78
Annex D (normative) Tailoring policies		80
D.1	Introduction	80
D.2	Information item tailoring process	80
D.2.1	Purpose	80
D.2.2	Outcomes	80
D.2.3	Activities and tasks	80
Bibliography		82