
**Industrial automation systems and
integration — Product data
representation and exchange —**

Part 41:

Integrated generic resource:

**Fundamentals of product description and
support**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

*Systèmes d'automatisation industrielle et intégration — Représentation
et échange de données de produits —*

<https://standards.iteh.ai/catalog/standards/sist/d6002dca-136e-4d04-885a-11762c402c18/iso-10303-41:2005>

*Partie 41: Ressources génériques intégrées: Principes de description et
de support de produits*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 10303-41:2005](#)

<https://standards.iteh.ai/catalog/standards/sist/d6002dca-f36e-4d04-885a-11782ed4092c/iso-10303-41-2005>

© ISO 2005

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
Web www.iso.org

Published in Switzerland

Contents

page

1	Scope.....	1
1.1	Generic product description resources.....	1
1.2	Generic management resources.....	2
1.3	Support resources.....	2
2	Normative references.....	3
3	Terms, definitions, and abbreviations.....	3
3.1	Terms defined in ISO 10303-1.....	3
3.2	Terms defined in ISO 8601.....	4
3.3	Other terms and definitions.....	5
3.4	Abbreviations.....	6
4	Application context.....	6
4.1	Introduction.....	7
4.2	Fundamental concepts and assumptions.....	7
4.3	Application context entity definitions.....	7
4.3.1	application_context.....	7
4.3.2	application_context_element.....	9
4.3.3	application_context_relationship.....	9
4.3.4	application_protocol_definition.....	10
4.3.5	library_context.....	11
4.3.6	product_concept_context.....	11
4.3.7	product_context.....	12
4.3.8	product_definition_context.....	12
5	Product definition.....	13
5.1	Introduction.....	14
5.2	Fundamental concepts and assumptions.....	14
5.3	Product definition type definition.....	16
5.3.1	source.....	16
5.4	Product definition entity definitions.....	16
5.4.1	product.....	16
5.4.2	product_category.....	17
5.4.3	product_category_relationship.....	18
5.4.4	product_definition.....	20
5.4.5	product_definition_context_association.....	21
5.4.6	product_definition_context_role.....	22
5.4.7	product_definition_effectivity.....	22
5.4.8	product_definition_formation.....	23
5.4.9	product_definition_formation_relationship.....	24
5.4.10	product_definition_formation_with_specified_source.....	25
5.4.11	product_definition_relationship.....	25
5.4.12	product_definition_substitute.....	27
5.4.13	product_definition_with_associated_documents.....	28
5.4.14	product_related_product_category.....	28
5.4.15	product_relationship.....	29
5.5	Product definition function definitions.....	30
5.5.1	acyclic_product_category_relationship.....	30
5.5.2	acyclic_product_definition_formation_relationship.....	30
5.5.3	acyclic_product_definition_relationship.....	32
5.5.4	acyclic_product_relationship.....	33
5.5.5	get_product_definitions.....	34
6	Product property definition.....	34

6.1	Introduction	35
6.2	Fundamental concepts and assumptions	35
6.3	Product property definition type definitions	36
6.3.1	characterized_definition	36
6.3.2	characterized_product_definition	36
6.3.3	derived_property_select	37
6.3.4	shape_definition	37
6.4	Product property definition entity definitions	37
6.4.1	characterized_object	37
6.4.2	characterized_object_relationship	38
6.4.3	general_property	39
6.4.4	general_property_association	40
6.4.5	general_property_relationship	40
6.4.6	product_definition_shape	41
6.4.7	property_definition	42
6.4.8	shape_aspect	43
6.4.9	shape_aspect_relationship	44
6.5	Product property definition function definitions	46
6.5.1	acyclic_characterized_object_relationship	46
6.5.2	acyclic_general_property_relationship	47
6.5.3	acyclic_shape_aspect_relationship	48
6.5.4	get_shape_aspects	49
7	Product property representation	50
7.1	Introduction	51
7.2	Fundamental concepts and assumptions	51
7.3	Product property representation type definition	51
7.3.1	represented_definition	51
7.4	Product property representation entity definitions	52
7.4.1	context_dependent_shape_representation	52
7.4.2	item_identified_representation_usage	53
7.4.3	property_definition_representation	54
7.4.4	shape_definition_representation	55
7.4.5	shape_representation	56
7.4.6	shape_representation_relationship	56
7.5	Product property representation function definitions	56
7.5.1	relatives_of_product_definitions	56
7.5.2	relatives_of_shape_representations	57
7.5.3	get_property_definition_representations	58
8	Management resources	59
8.1	Introduction	61
8.2	Fundamental concepts and assumptions	61
8.3	Management resources type definition	61
8.3.1	attribute_type	61
8.4	Management resources entity definitions	61
8.4.1	action_assignment	61
8.4.2	action_method_assignment	62
8.4.3	action_method_role	63
8.4.4	action_request_assignment	63
8.4.5	approval_assignment	64
8.4.6	attribute_classification_assignment	65
8.4.7	attribute_value_assignment	65
8.4.8	attribute_value_role	66
8.4.9	certification_assignment	66
8.4.10	classification_assignment	67

8.4.11	classification_role	68
8.4.12	contract_assignment	68
8.4.13	date_and_time_assignment	69
8.4.14	date_assignment	69
8.4.15	document_reference	70
8.4.16	document_usage_constraint_assignment	71
8.4.17	document_usage_role	71
8.4.18	effectivity_assignment	72
8.4.19	effectivity_context_assignment	72
8.4.20	effectivity_context_role	73
8.4.21	event_occurrence_assignment	73
8.4.22	event_occurrence_context_assignment	74
8.4.23	experience_assignment	74
8.4.24	experience_role	75
8.4.25	experience_type_assignment	75
8.4.26	experience_type_role	76
8.4.27	external_identification_assignment	76
8.4.28	external_referent_assignment	77
8.4.29	group_assignment	78
8.4.30	identification_assignment	78
8.4.31	identification_assignment_relationship	79
8.4.32	identification_role	80
8.4.33	library_assignment	80
8.4.34	location_assignment	81
8.4.35	location_representation_assignment	81
8.4.36	location_representation_role	82
8.4.37	location_role	82
8.4.38	name_assignment	83
8.4.39	organization_assignment	83
8.4.40	organization_type_assignment	84
8.4.41	organization_type_role	85
8.4.42	organizational_project_assignment	85
8.4.43	organizational_project_role	85
8.4.44	person_and_organization_assignment	86
8.4.45	person_assignment	86
8.4.46	person_type_assignment	87
8.4.47	person_type_definition_assignment	88
8.4.48	person_type_definition_role	88
8.4.49	person_type_role	89
8.4.50	position_in_organization_assignment	89
8.4.51	position_in_organization_role	90
8.4.52	position_in_organization_type_assignment	90
8.4.53	position_in_organization_type_role	91
8.4.54	qualification_assignment	91
8.4.55	qualification_role	92
8.4.56	qualification_type_assignment	92
8.4.57	qualification_type_role	93
8.4.58	security_classification_assignment	93
8.4.59	time_assignment	94
8.4.60	time_interval_assignment	95
8.5	Management resources function definition	95
8.5.1	acyclic_identification_assignment_relationship	95
9	Document	96
9.1	Introduction	97

9.2	Fundamental concepts and assumptions	97
9.3	Document type definition	97
9.3.1	product_or_formation_or_definition	97
9.4	Document entity definitions	98
9.4.1	document	98
9.4.2	document_product_association	99
9.4.3	document_relationship	99
9.4.4	document_representation_type	100
9.4.5	document_type	101
9.4.6	document_usage_constraint	101
9.4.7	document_with_class	102
9.5	Document function definition	102
9.5.1	acyclic_document_relationship	102
10	Action	103
10.1	Introduction	104
10.2	Fundamental concepts and assumptions	104
10.3	Action type definition	104
10.3.1	supported_item	104
10.4	Action entity definitions	105
10.4.1	action	105
10.4.2	action_directive	106
10.4.3	action_method	107
10.4.4	action_method_relationship	107
10.4.5	action_relationship	108
10.4.6	action_request_solution	109
10.4.7	action_request_status	110
10.4.8	action_resource	110
10.4.9	action_resource_relationship	111
10.4.10	action_resource_type	111
10.4.11	action_status	112
10.4.12	directed_action	112
10.4.13	executed_action	113
10.4.14	versioned_action_request	113
10.4.15	versioned_action_request_relationship	114
10.5	Action function definitions	115
10.5.1	acyclic_action_method_relationship	115
10.5.2	acyclic_action_relationship	116
10.5.3	acyclic_action_resource_relationship	117
10.5.4	acyclic_versioned_action_request_relationship	118
11	Certification	119
11.1	Introduction	119
11.2	Fundamental concepts and assumptions	120
11.3	Certification entity definitions	120
11.3.1	certification	120
11.3.2	certification_type	120
12	Approval	121
12.1	Introduction	122
12.2	Fundamental concepts and assumptions	122
12.3	Approval entity definitions	122
12.3.1	approval	122
12.3.2	approval_date_time	122
12.3.3	approval_person_organization	123
12.3.4	approval_relationship	124
12.3.5	approval_role	124

12.3.6	approval_status	125
12.4	Approval function definition.....	126
12.4.1	acyclic_approval_relationship.....	126
13	Contract.....	127
13.1	Introduction.....	127
13.2	Fundamental concepts and assumptions	127
13.3	Contract entity definitions.....	127
13.3.1	contract	127
13.3.2	contract_relationship.....	128
13.3.3	contract_type.....	129
13.4	Contract function definition.....	129
13.4.1	acyclic_contract_relationship.....	129
14	Security classification.....	130
14.1	Introduction.....	131
14.2	Fundamental concepts and assumptions	131
14.3	Security classification entity definitions.....	131
14.3.1	security_classification	131
14.3.2	security_classification_level	132
15	Person organization.....	132
15.1	Introduction.....	133
15.2	Fundamental concepts and assumptions	133
15.3	Person organization type definition.....	133
15.3.1	person_organization_select.....	133
15.4	Person organization entity definitions.....	134
15.4.1	address.....	134
15.4.2	organization	135
15.4.3	organization_relationship.....	136
15.4.4	organization_role	137
15.4.5	organization_type	137
15.4.6	organization_type_relationship.....	138
15.4.7	organizational_address.....	139
15.4.8	organizational_project.....	139
15.4.9	organizational_project_relationship.....	140
15.4.10	person	141
15.4.11	person_and_organization	142
15.4.12	person_and_organization_role.....	143
15.4.13	person_role	143
15.4.14	person_type.....	144
15.4.15	person_type_definition	145
15.4.16	person_type_definition_formation.....	145
15.4.17	person_type_definition_relationship.....	146
15.4.18	personal_address.....	146
15.4.19	position_in_organization.....	147
15.4.20	position_in_organization_relationship.....	147
15.4.21	position_in_organization_type.....	148
15.5	Person organization function definitions.....	149
15.5.1	acyclic_organization_relationship.....	149
15.5.2	acyclic_organization_type_relationship.....	150
15.5.3	acyclic_organizational_project_relationship.....	151
15.5.4	acyclic_person_type_definition_relationship.....	152
15.5.5	acyclic_position_in_organization_relationship.....	153
16	Date time.....	154
16.1	Introduction.....	154
16.2	Fundamental concepts and assumptions	155

16.3	Date time type definitions	155
16.3.1	ahead_or_behind	155
16.3.2	date_time_or_event_occurrence	155
16.3.3	date_time_select	155
16.3.4	day_in_month_number	156
16.3.5	day_in_week_number	156
16.3.6	day_in_year_number	156
16.3.7	hour_in_day	157
16.3.8	minute_in_hour	157
16.3.9	month_in_year_number	157
16.3.10	second_in_minute	158
16.3.11	week_in_year_number	158
16.3.12	year_number	159
16.4	Date time entity definitions	159
16.4.1	calendar_date	159
16.4.2	coordinated_universal_time_offset	160
16.4.3	date	161
16.4.4	date_and_time	161
16.4.5	date_role	161
16.4.6	date_time_role	162
16.4.7	event_occurrence	163
16.4.8	event_occurrence_context_role	163
16.4.9	event_occurrence_relationship	164
16.4.10	event_occurrence_role	165
16.4.11	local_time	165
16.4.12	ordinal_date	166
16.4.13	relative_event_occurrence	166
16.4.14	time_interval	167
16.4.15	time_interval_relationship	167
16.4.16	time_interval_role	168
16.4.17	time_interval_with_bounds	169
16.4.18	time_role	169
16.4.19	week_of_year_and_day_date	170
16.5	Date time function definitions	171
16.5.1	acyclic_event_occurrence_relationship	171
16.5.2	acyclic_time_interval_relationship	172
16.5.3	leap_year	173
16.5.4	valid_calendar_date	173
16.5.5	valid_time	174
17	Group	175
17.1	Introduction	175
17.2	Fundamental concepts and assumptions	175
17.3	Group entity definitions	175
17.3.1	group	175
17.3.2	group_relationship	176
17.4	Group function definition	177
17.4.1	acyclic_group_relationship	177
18	Effectivity	178
18.1	Introduction	179
18.2	Fundamental concepts and assumptions	179
18.3	Effectivity entity definitions	180
18.3.1	dated_effectivity	180
18.3.2	effectivity	180
18.3.3	effectivity_relationship	181

18.3.4	lot_effectivity	182
18.3.5	serial_numbered_effectivity	182
18.3.6	time_interval_based_effectivity	183
18.4	Effectivity function definition	183
18.4.1	acyclic_effectivity_relationship	183
19	External reference	184
19.1	Introduction	185
19.2	Fundamental concepts and assumptions	185
19.3	External reference type definitions	185
19.3.1	message	185
19.3.2	source_item	186
19.4	External reference entity definitions	186
19.4.1	external_source	186
19.4.2	external_source_relationship	187
19.4.3	externally_defined_item	188
19.4.4	externally_defined_item_relationship	188
19.4.5	pre_defined_item	189
19.5	External reference function definitions	189
19.5.1	acyclic_external_source_relationship	189
19.5.2	acyclic_externally_defined_item_relationship	190
20	Support resource	191
20.1	Introduction	192
20.2	Fundamental concepts and assumptions	192
20.3	Support resource type definitions	192
20.3.1	identifier	192
20.3.2	label	192
20.3.3	text	193
20.4	Support resource function definitions	193
20.4.1	bag_to_set	193
20.4.2	type_check_function	193
21	Measure	195
21.1	Introduction	195
21.2	Fundamental concepts and assumptions	196
21.3	Measure type definitions	196
21.3.1	amount_of_substance_measure	196
21.3.2	area_measure	196
21.3.3	celsius_temperature_measure	196
21.3.4	context_dependent_measure	197
21.3.5	count_measure	197
21.3.6	descriptive_measure	197
21.3.7	electric_current_measure	197
21.3.8	length_measure	197
21.3.9	luminous_intensity_measure	198
21.3.10	mass_measure	198
21.3.11	measure_value	198
21.3.12	numeric_measure	199
21.3.13	parameter_value	199
21.3.14	plane_angle_measure	199
21.3.15	positive_length_measure	200
21.3.16	positive_plane_angle_measure	200
21.3.17	positive_ratio_measure	200
21.3.18	ratio_measure	201
21.3.19	si_prefix	201
21.3.20	si_unit_name	202

21.3.21	solid_angle_measure.....	204
21.3.22	thermodynamic_temperature_measure.....	204
21.3.23	time_measure.....	205
21.3.24	unit.....	205
21.3.25	volume_measure.....	205
21.4	Measure entity definitions.....	205
21.4.1	amount_of_substance_measure_with_unit.....	205
21.4.2	amount_of_substance_unit.....	206
21.4.3	area_measure_with_unit.....	206
21.4.4	area_unit.....	207
21.4.5	celsius_temperature_measure_with_unit.....	207
21.4.6	context_dependent_unit.....	208
21.4.7	conversion_based_unit.....	208
21.4.8	derived_unit.....	209
21.4.9	derived_unit_element.....	210
21.4.10	dimensional_exponents.....	210
21.4.11	electric_current_measure_with_unit.....	211
21.4.12	electric_current_unit.....	211
21.4.13	global_unit_assigned_context.....	212
21.4.14	length_measure_with_unit.....	212
21.4.15	length_unit.....	213
21.4.16	luminous_intensity_measure_with_unit.....	213
21.4.17	luminous_intensity_unit.....	214
21.4.18	mass_measure_with_unit.....	214
21.4.19	mass_unit.....	215
21.4.20	measure_with_unit.....	215
21.4.21	named_unit.....	216
21.4.22	plane_angle_measure_with_unit.....	217
21.4.23	plane_angle_unit.....	217
21.4.24	ratio_measure_with_unit.....	218
21.4.25	ratio_unit.....	218
21.4.26	si_unit.....	219
21.4.27	solid_angle_measure_with_unit.....	219
21.4.28	solid_angle_unit.....	220
21.4.29	thermodynamic_temperature_measure_with_unit.....	220
21.4.30	thermodynamic_temperature_unit.....	221
21.4.31	time_measure_with_unit.....	221
21.4.32	time_unit.....	222
21.4.33	volume_measure_with_unit.....	222
21.4.34	volume_unit.....	222
21.5	Measure function definitions.....	223
21.5.1	derive_dimensional_exponents.....	223
21.5.2	dimensions_for_si_unit.....	224
21.5.3	valid_units.....	225
22	Basic attribute.....	228
22.1	Introduction.....	230
22.2	Fundamental concepts and assumptions.....	230
22.3	Basic attribute type definitions.....	231
22.3.1	description_attribute_select.....	231
22.3.2	id_attribute_select.....	231
22.3.3	name_attribute_select.....	232
22.3.4	role_select.....	232
22.4	Basic attribute entity definitions.....	233
22.4.1	description_attribute.....	233

22.4.2	id_attribute.....	233
22.4.3	name_attribute.....	234
22.4.4	object_role.....	234
22.4.5	role_association.....	235
22.5	Basic attribute function definitions.....	235
22.5.1	get_description_value.....	235
22.5.2	get_id_value.....	236
22.5.3	get_name_value.....	237
22.5.4	get_role.....	237
23	Experience.....	238
23.1	Introduction.....	238
23.2	Fundamental concepts and assumptions.....	238
23.3	Experience entity definitions.....	239
23.3.1	experience.....	239
23.3.2	experience_relationship.....	239
23.3.3	experience_type.....	240
23.3.4	experience_type_relationship.....	241
23.4	Experience function definitions.....	241
23.4.5	acyclic_experience_relationship.....	241
23.4.6	acyclic_experience_type_relationship.....	242
24	Qualifications.....	243
24.1	Introduction.....	244
24.2	Fundamental concepts and assumptions.....	244
24.3	Qualifications entity definitions.....	244
24.3.1	qualification.....	244
24.3.2	qualification_relationship.....	245
24.3.3	qualification_type.....	246
24.3.4	qualification_type_relationship.....	246
24.4	Qualifications function definitions.....	247
24.4.1	acyclic_qualification_relationship.....	247
24.4.2	acyclic_qualification_type_relationship.....	248
25	Location.....	249
25.1	Introduction.....	250
25.2	Fundamental concepts and assumptions.....	250
25.3	Location entity definitions.....	250
25.3.1	location.....	250
25.3.2	location_relationship.....	251
25.4	Location function definitions.....	251
25.4.3	acyclic_location_relationship.....	251
Annex A	Short names of entities.....	253
Annex B	Information object registration.....	259
B.1	Document identification.....	259
B.2	Schema identification.....	259
B.2.1	application_context_schema identification.....	259
B.2.2	product_definition_schema identification.....	259
B.2.3	product_property_definition_schema identification.....	259
B.2.4	product_property_representation_schema identification.....	260
B.2.5	management_resources_schema identification.....	260
B.2.6	document_schema identification.....	260
B.2.7	action_schema identification.....	260
B.2.8	certification_schema identification.....	260
B.2.9	approval_schema identification.....	261
B.2.10	contract_schema identification.....	261

B.2.11	security_classification_schema identification	261
B.2.12	person_organization_schema identification	261
B.2.13	date_time_schema identification	261
B.2.14	group_schema identification	262
B.2.15	effectivity_schema identification	262
B.2.16	external_reference_schema identification	262
B.2.17	support_resource_schema identification	262
B.2.18	measure_schema identification	262
B.2.19	basic_attribute_schema identification	263
B.2.20	experience_schema identification	263
B.2.21	location_schema identification	263
B.2.22	qualifications_schema identification	263
Annex C	Computer-interpretable listing	264
Annex D	EXPRESS-G diagrams	265
Annex E	Technical discussions	319
E.1	Generic product description resource structure	319
E.2	Function template for cycle detection	319
E.2.1	acyclic_object_relationship	319
E.3	Relationship template	320
E.3.1	object_relationship	320
E.4	Constraining entity instances of the basic_attribute_schema	321
Annex F	Examples	322
F.1	Use of the product_definition_schema	322
F.2	Document as product	323
F.2.1	Identification of a document	323
F.2.2	Identification of a version of a document	324
F.2.3	Identification of a definition of document	324
F.2.4	Assembly structure of a document	324
F.2.5	Association of documentation to other data	324
F.2.6	Enabling use of document specific resources	324
F.2.7	Properties of a document	325
F.3	Use of the generic management resource constructs	325
F.4	Use of the measure_schema	326
F.4.1	Derived SI units	326
F.4.2	Currency conversion	329
F.4.3	Context dependent unit	329
F.4.4	Unit conversion based on an algebraic expression	330
F.4.5	Derivation of area unit and volume unit	331
F.4.6	Use of global_unit_assigned_context	332
F.5	Use of the person_organization_schema	332
F.5.1	Address of a person in an organization	332
F.5.2	Use of person_assignment	333
Bibliography	334
Index	335

Figures

Figure 1	— The relationship of the schemas of this part to the ISO10303 integration architecture	xvii
Figure D.1	— application_context_schema - EXPRESS-G diagram 1 of 1	266
Figure D.2	— product_definition_schema - EXPRESS-G diagram 1 of 2	267
Figure D.3	— product_definition_schema - EXPRESS-G diagram 2 of 2	268
Figure D.4	— product_property_definition_schema - EXPRESS-G diagram 1 of 3	269
Figure D.5	— product_property_definition_schema - EXPRESS-G diagram 2 of 3	270
Figure D.6	— product_property_definition_schema - EXPRESS-G diagram 3 of 3	271
Figure D.7	— product_property_representation_schema - EXPRESS-G diagram 1 of 2	272

Figure D.8 — product_property_representation_schema - EXPRESS-G diagram 2 of 2.....	273
Figure D.9 — management_resources_schema - EXPRESS-G diagram 1 of 12.....	274
Figure D.10 — management_resources_schema - EXPRESS-G diagram 2 of 12.....	275
Figure D.11 — management_resources_schema - EXPRESS-G diagram 3 of 12.....	276
Figure D.12 — management_resources_schema - EXPRESS-G diagram 4 of 12.....	277
Figure D.13 — management_resources_schema - EXPRESS-G diagram 5 of 12.....	278
Figure D.14 — management_resources_schema - EXPRESS-G diagram 6 of 12.....	279
Figure D.15 — management_resources_schema - EXPRESS-G diagram 7 of 12.....	280
Figure D.16 — management_resources_schema - EXPRESS-G diagram 8 of 12.....	281
Figure D.17 — management_resources_schema - EXPRESS-G diagram 9 of 12.....	282
Figure D.18 — management_resources_schema - EXPRESS-G diagram 10 of 12.....	283
Figure D.19 — management_resources_schema - EXPRESS-G diagram 11 of 12.....	284
Figure D.20 — management_resources_schema - EXPRESS-G diagram 12 of 12.....	285
Figure D.21 — document_schema - EXPRESS-G diagram 1 of 1.....	286
Figure D.22 — action_schema - EXPRESS-G diagram 1 of 2.....	287
Figure D.23 — action_schema - EXPRESS-G diagram 2 of 2.....	288
Figure D.24 — certification_schema - EXPRESS-G diagram 1 of 1.....	289
Figure D.25 — approval_schema - EXPRESS-G diagram 1 of 1.....	290
Figure D.26 — contract_schema - EXPRESS-G diagram 1 of 1.....	291
Figure D.27 — security_classification_schema - EXPRESS-G diagram 1 of 1.....	292
Figure D.28 — person_organization_schema - EXPRESS-G diagram 1 of 5.....	293
Figure D.29 — person_organization_schema - EXPRESS-G diagram 2 of 5.....	294
Figure D.30 — person_organization_schema - EXPRESS-G diagram 3 of 5.....	295
Figure D.31 — person_organization_schema - EXPRESS-G diagram 4 of 5.....	296
Figure D.32 — person_organization_schema - EXPRESS-G diagram 5 of 5.....	297
Figure D.33 — date_time_schema - EXPRESS-G diagram 1 of 3.....	298
Figure D.34 — date_time_schema - EXPRESS-G diagram 2 of 3.....	299
Figure D.35 — date_time_schema - EXPRESS-G diagram 3 of 3.....	300
Figure D.36 — group_schema - EXPRESS-G diagram 1 of 1.....	301
Figure D.37 — effectivity_schema - EXPRESS-G diagram 1 of 1.....	302
Figure D.38 — external_reference_schema - EXPRESS-G diagram 1 of 1.....	303
Figure D.39 — support_resource_schema - EXPRESS-G diagram 1 of 1.....	304
Figure D.40 — measure_schema - EXPRESS-G diagram 1 of 6.....	305
Figure D.41 — measure_schema - EXPRESS-G diagram 2 of 6.....	306
Figure D.42 — measure_schema - EXPRESS-G diagram 3 of 6.....	307
Figure D.43 — measure_schema - EXPRESS-G diagram 4 of 6.....	308
Figure D.44 — measure_schema - EXPRESS-G diagram 5 of 6.....	309
Figure D.45 — measure_schema - EXPRESS-G diagram 6 of 6.....	310
Figure D.46 — basic_attribute_schema - EXPRESS-G diagram 1 of 5.....	311
Figure D.47 — basic_attribute_schema - EXPRESS-G diagram 2 of 5.....	312
Figure D.48 — basic_attribute_schema - EXPRESS-G diagram 3 of 5.....	313
Figure D.49 — basic_attribute_schema - EXPRESS-G diagram 4 of 5.....	314
Figure D.50 — basic_attribute_schema - EXPRESS-G diagram 5 of 5.....	315
Figure D.51 — experience_schema - EXPRESS-G diagram 1 of 1.....	316
Figure D.52 — location_schema - EXPRESS-G diagram 1 of 1.....	317
Figure D.53 — qualifications_schema - EXPRESS-G diagram 1 of 1.....	318

Tables

Table A.1 - Short names of entities.....	253
--	-----

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member 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 shall not be held responsible for identifying any or all such patent rights.

ISO ISO 10303-41 was prepared by Technical Committee ISO TC184/SC4, Industrial automation systems and integration, Subcommittee SC4 Industrial data .

This third edition of ISO 10303-41 constitutes a technical revision of the second edition (ISO 10303-41:2000), which is provisionally retained in order to support continued use and maintenance of implementations based on the second edition and to satisfy the normative references of other parts of ISO 10303.

<https://standards.iteh.ai/catalog/standards/sist/d6002dca-f36e-4d04-885a-11782cd4972c/iso-10303-41-2005>

This International Standard is organized as a series of parts, each published separately. The structure of this International Standard is described in ISO 10303-1.

Each part of this International Standard is a member of one of the following series: description methods, implementation methods, conformance testing methodology and framework, integrated generic resources, integrated application resources, application protocols, abstract test suites, application interpreted constructs, and application modules. This part is a member of the integrated resources series.

The integrated generic resources and the integrated application resources specify a single conceptual product data model.

A complete list of parts of ISO 10303 is available from the Internet:

[http://www.tc184-sc4.org/SC4_Open/SC4_Work_Products_Documents/STEP_\(10303\)/](http://www.tc184-sc4.org/SC4_Open/SC4_Work_Products_Documents/STEP_(10303)/)

Annex(es) <list of normative annex(es)> form(s) a normative part of this part of ISO <ISO standard number>. Annex(es) <list of informative annex(es)> is (are) for information only.

Annexes A and B form a normative part of this part of ISO 10303. Annexes C to F are for information only.

Introduction

ISO 10303 is an International Standard for the computer-interpretable representation and exchange of product data. The objective is to provide a neutral mechanism capable of describing product data throughout the life cycle of a product, independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases and archiving.

This part of ISO 10303 is a member of the integrated resource series. Major subdivisions of this part of ISO 10303 are:

a) generic product description resources;

- 1) **application_context_schema**;
- 2) **product_definition_schema**;
- 3) **product_property_definition_schema**;
- 4) **product_property_representation_schema**.

b) generic management resources;

- 1) **management_resources_schema**.

c) support resources.

- 1) **action_schema**;
- 2) **approval_schema**;
- 3) **certification_schema**;
- 4) **contract_schema**;
- 5) **date_time_schema**;
- 6) **document_schema**;
- 7) **effectivity_schema**;
- 8) **experience_schema**;
- 9) **external_reference_schema**;
- 10) **group_schema**;
- 11) **location_schema**;
- 12) **measure_schema**;

<https://standards.iteh.ai/catalog/standards/sist/d6002dca-f36e-4d04-885a-11782ed4092c/iso-10303-41-2005>