

DIN EN 17549-2:2023-09 (E)

Building information modelling - Information structure based on EN ISO 16739-1 to exchange data templates and data sheets for construction objects - Part 2: Configurable construction objects and requirements; English version EN 17549-2:2023

Contents	Page
European foreword	5
Introduction	6
1 Scope.....	9
2 Normative references.....	9
3 Terms and definitions.....	9
3.1 Terms and definitions.....	9
3.2 Abbreviated terms.....	11
4 Fundamental concepts and assumptions.....	11
4.1 General.....	11
4.2 Units.....	18
4.2.1 General.....	18
4.2.2 “IfcSIUnit definition” concept.....	18
4.2.3 “IfcConversionBasedUnitWithOffset definition” concept	18
4.2.4 “UnitsInContext prohibition” concept.....	19
4.2.5 “Unit explicit definition” concept.....	20
4.2.6 “IfcDerivedUnit definition” concept.....	20
4.3 Data dictionaries.....	20
4.3.1 General.....	20
4.3.2 “IfcLibraryReference identification” concept.....	21
4.3.3 “IfcLibraryReference attributes” concept.....	21
4.4 Properties.....	22
4.4.1 General.....	22
4.4.2 “IfcSimpleProperty definition” concept.....	23
4.4.3 “IfcSimpleProperty unique definition” concept.....	23
4.4.4 “IfcSimpleProperty in property set” concept.....	24
4.4.5 “IfcProperty single, table, reference, or complex” concept	24
4.4.6 “IfcPropertySingleValue attributes” concept.....	24
4.4.7 “IfcPropertyTableValue attributes” concept	25
4.5 Dynamic properties	26
4.5.1 General.....	26
4.5.2 “IfcPropertyReferenceValue usage” concept.....	26
4.5.3 “IfcProperty dependencies” concept	26
4.6 Sets of properties	29
4.6.1 General.....	29
4.6.2 “IfcPropertySet definition” concept	30
4.6.3 “IfcPropertySet unique definition” concept	30
4.6.4 “IfcPropertySet allowed elements” concept.....	31
4.6.5 “IfcPropertySet attributes” concept.....	31
4.7 Objects	32
4.7.1 General.....	32
4.7.2 “IfcBuildingElementProxy definition” concept.....	32
4.7.3 “IfcBuildingElementProxy unique definition” concept.....	32
4.7.4 “IfcBuildingElementProxy as property sets” concept.....	34
4.7.5 “IfcBuildingElementProxy as a system” concept.....	34
4.7.6 “IfcBuildingElementProxy attributes” concept.....	35

4.8	Object types	36
4.8.1	General	36
4.8.2	“IfcBuildingElementProxyType definition” concept.....	37
4.8.3	“IfcBuildingElementProxyType unique definition” concept.....	37
4.8.4	“IfcBuildingElementProxyType as property sets” concept	38
4.8.5	“IfcBuildingElementProxyType as a system” concept.....	38
4.8.6	“ApplicableOccurrence value” concept.....	39
4.8.7	“IfcBuildingElementProxyType attributes” concept	40
4.9	Semantic relationships	40
4.9.1	General	40
4.9.2	“IfcGroup definition” concept.....	42
4.9.3	“IfcGroup unique definition” concept.....	42
4.9.4	“IfcGroup as semantic relationship” concept	43
4.10	Constraints.....	45
4.10.1	General	45
4.10.2	“ConstraintGrade value” concept.....	46
4.10.3	“IfcConstraint target” concept.....	47
4.10.4	“ObjectiveQualifier value” concept	49
4.10.5	“DataValue value” concept	50
4.10.6	“IfcConstraint definition” concept.....	50
4.10.7	“IfcObjective attributes” concept.....	51
4.10.8	“IfcMetric attributes” concept.....	53
4.11	Context composition.....	54
4.11.1	General	54
4.11.2	“IfcProject allowed decompositions” concept.....	54
4.11.3	“IfcBuilding allowed content” concept.....	55
4.11.4	“IfcProject allowed declarations” concept.....	56
4.11.5	“IfcProjectLibrary allowed declarations” concept.....	56
4.12	Root.....	57
4.12.1	“IfcRoot attributes” concept	57
5	Core data schemas.....	57
5.1	General	57
5.2	IfcKernel	58
5.2.1	General	58
5.2.2	Types	58
5.2.3	Entities.....	59
5.2.4	Functions	105
5.2.5	Rules – IfcSingleProjectInstance – Semantic definitions at the global rule.....	106
5.3	IfcControlExtension – Entities – IfcRelAssociatesConstraint.....	106
5.3.1	Semantic definitions at the entity.....	106
5.3.2	Inherited definitions from supertypes	106
5.3.3	Definitions applying to CODview2.....	107
5.4	IfcProductExtension	108
5.4.1	Entities.....	108
6	Shared element data schemas.....	126
6.1	General	126
6.2	IfcSharedBldgElements	127
6.2.1	Types.....	127
6.2.2	Entities.....	127
7	Domain specific data schemas	134
8	Resource definition data schemas.....	134

8.1	General.....	134
8.2	IfcActorResource.....	134
8.2.1	Types	134
8.2.2	Entities.....	134
8.3	IfcConstraintResource	138
8.3.1	Types	138
8.3.2	Entities.....	139
8.4	IfcCostResource	146
8.4.1	General.....	146
8.4.2	Types	146
8.4.3	Entities.....	147
8.5	IfcDateTimeResource.....	148
8.5.1	Types	148
8.6	IfcExternalReferenceResource	148
8.6.1	Schema definition	148
8.6.2	Types	149
8.6.3	Entities.....	149
8.7	IfcMeasureResource	153
8.7.1	Types	153
8.7.2	Entities.....	156
8.7.3	Functions.....	163
8.8	IfcPropertyResource.....	163
8.8.1	Schema definition	163
8.8.2	Types	164
8.8.3	Entities.....	164
8.9	IfcUtilityResource	177
8.9.1	Schema definition	177
8.9.2	Types	177
8.9.3	Entities.....	177
Annex A (normative) Computer interpretable listings – CODview2 long form schema.....		181
Annex B (informative) Examples.....		182
B.1	Preliminary examples	182
B.1.1	Dimensions and units.....	182
B.1.2	Data definition and data dictionaries: Properties and construction objects.....	184
B.1.3	Dependencies between properties: IfcAppliedValue	186
B.1.4	Dependencies between properties: JavaScript.....	188
B.1.5	Constraints on values: IfcConstraint.....	190
B.1.6	Semantic relationships: IfcGroup.....	195
B.2	Use case examples	197
B.2.1	Using requirements	197
B.2.2	Check of the consistency between the objects included in a project and the requirements defined in a previous phase.....	199
B.2.3	Semantic, concurrent, and iterative definition of an object during design phases	200
B.2.4	Product catalogue	202
B.2.5	Search in a product catalogue	207
B.2.6	Bills of quantities (pre-design programs, technical specifications, offers)	208
B.2.7	Procurement and product purchase.....	209
Bibliography		212