exchange requirements for the "Basic HandOver to Facility Management"				IFC Model View Definition	

Object Type
  Attribute Groups
    Property
	Definitions and notes	**Examples and further explanations** **Comments**	**Export**	**Import**	**IFC Model Representation**	**MVD binding**

Meta data						
Exchange file					HEADER section	
Exchange purpose	Designation of the exchange file to be "HandOver to Facility Management"	ViewDefinition [CoordinationView, FMHandOverView]' -- system to assign the standard view definition name	*[COBIE2]: defined by external specification*	M	file_description(('ViewDefinition [CoordinationView, FMHandOverView]'), '2;1');	
Author	Name of the creator of the FM HandOver data set	user setting - application need to provide UI	*[COBIE2]: reqd - worksheet.Created.By*	M	file_name with field author	
Company	Company name of the Author	user setting - application need to provide UI	*[COBIE2]: reqd - Contact.Company*	M	file_name with field organization	
Originating application	Name of the software application that created the data set	system setting by software vendor, shall be specific, i.e. including version information	*[COBIE2]: reqd if created by external system worksheet.ExtSystem*	M	file_name with field originating_system	
Date of creation	Time stamp of the creation time	2008-04-12T15:27:46	*[COBIE2]: reqd - worksheet.CreatedOn*	M	file_name with field time_stamp	
Project		there has to be exactly one project object in the exchange file	*[COBIE2]: project information required only if created by external system. See Facility worksheet*		**IfcProject**	GSC-239
Project Attributes						VBL-296
Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f25, has to be maintained by the application (e.g. for re-export)	*[FM-10]: software key, does not yield any human interpretation* *[COBIE2]: reqd if created by external system Facility.ExtProjectIdentifier*	M	IfcProject.GlobalId	VBL-170
Number (or ID)	User assigned (short) name or number	delivery contracts may demand a certain naming convention	*[COBIE2]: optional - put in Attribute worksheet if used*	M	IfcProject.Name	GSC-241
Name	User assigned name (full name)	for informational purposes only	*[COBIE2]: reqd - Facility.ProjectName*	M	IfcProject.LongName	BSA-506
Description	*User assigned optional description*	*NOT USED,, user data not required for export*	*[General]: Optional, not checked*	-	IfcProject.Description	GSC-242
Phase	*Design stage*	*NOT USED, conceptual design, detailed design, …, for informational purposes only*	*[COBIE2]: optional - put in Attribute worksheet if used*	-	IfcProject.Phase	GSC-243
Project units						VBL-359
Length unit	Default length unit for all length measures in the data set	[m], [mm], [inch], [feet]	*[COBIE2]: reqd - Facility.LinearUnit*	M	IfcProject.UnitsInContext (IfcUnitAssignment) with IfcSIUnit.Name = METRE	GSC-246
Area unit	Default area unit for all length measures in the data set	[m²], [square feet]	*[COBIE2]: reqd - Facility.AreaUnit and Facility.AreaMeasurement*	M	IfcProject.UnitsInContext (IfcUnitAssignment) with IfcSIUnit.Name = SQUARE_METRE	GSC-245
Volume unit	Default volume unit for all length measures in the data set	[m³], [cubic feet]	*[COBIE2]: reqd - Faciilty.VolumeUnit*	M	IfcProject.UnitsInContext (IfcUnitAssignment) with IfcSIUnit.Name = CUBIC_METRE	GSC-247
Project decomposition						GSC-240
Site contained in Project	Link to the top-level node of the spatial structure, being a site	either the project has a link to site, or to the building, but not both in parallel	*[General]: having a site object is optional in Basic FM HandOver* *[FM-10]: one side allowed* *[COBIE2]: one site allowed per COBie2 file*	M/O	IfcRelAggregates with RelatingObject = IfcSite	GSC-041
Building contained in Project	Link to the top-level node of the spatial structure, being a building	either the project has a link to site, or to the building, but not both in parallel	*[General]: has to be given, if there is no site* *[FM-10]: one or several buildings allowed* *[COBIE2]: one building allowed per COBie2 file*	M/O	IfcRelAggregates with RelatingObject = IfcBuilding	GSC-083

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Object Type 　Attribute Groups 　　Property	Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
Site	GSC-031		there can be zero or one site object in the exchange file	*[COBIE2]: site information required only if created by external system. See Facility worksheet*		**IfcSite**	GSC-031
Site Attributes							(GSC-033)
Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f25, has to be maintained by the application (e.g. for re-export)	*[COBIE2]: reqd if created by external system Facility.ExtSiteIdentifier*	M		IfcSite.GlobalId	VBL-170
Number (or ID)	User assigned unique number or key of the site (short name), If possible should follow coding rules of used FM guidelines		*[General]: different to the software key (GUID)* *[COBIE2]: optional - put in Attribute worksheet if used*	M		IfcSite.Name	GSC-034
Name	User assigned name (long name)		*[COBIE2]: reqd - Facility.SiteName*	M		IfcSite.LongName	BSA-508
Description	*User assigned optional description*	*not required for export*	*[COBIE2]: optional - put in Attribute worksheet if used*	O		ifcSite.Description	GSC-035
Longitude	*Geo location*	*(not required for export)* *geographic longitude in geodetic system WGS84, e.g. Chicago Harbor Light　-87.35.40 ("-" = W)*	*[General]: not supported by most alphanumeric CAFM applications - but will be important in future for GIS integration* *[FM-10]: optional, not checked* *[COBIE2]: optional - put in Attribute worksheet if used*	-		IfcSite.Longitude	VBL-312
Latitude	*Geo location*	*(not required for export)* *geographic latitude in geodetic system WGS84, e.g. Chicago Harbor Light 41.53.30　("+" = N)*	*[General]: not supported by most alphanumeric CAFM applications - but will be important in future for GIS integration* *[FM-10]: optional, not checked* *[COBIE2]: optional - put in Attribute worksheet if used*	-		IfcSite.Latitude	VBL-313
Elevation	*Site height datum*	*(not required for export)* *elevation above the height datum*	*[FM-10]: optional, not checked* *[COBIE2]: optional - put in Attribute worksheet if used*	-		IfcSite.RefElevation	VBL-314
Site Address		REQUIRED (if there is no building address)					GSC-032
Address	Address lines	depending on local usage, street number, street name, etc.	*[General]: to be used as default (i.e. if there are no specific building address data)* *[COBIE2]: n/a*	M/O		IfcSite.SiteAddress.AddressLines	(incl.)
City	Town or city name		*[COBIE2]: n/a*	M/O		IfcSite.SiteAddress.Town	(incl.)
State	State, Region, or "Länder"	optional in many countries	*[COBIE2]: n/a*	M/O		IfcSite.SiteAddress.Region	(incl.)
Zip	Postal code		*[COBIE2]: n/a*	M/O		IfcSite.SiteAddress.PostalCode	(incl.)
Site Classification							GSC-037
Classification	*Site Classification*	*NOT used for Basic FM HandOver View, requires to specify a classification system*	*[General]: In particular interesting for data exchange between CAFM inventory data* *[FM-10]: optional, not checked* *[COBIE2]: n/a*	-		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
Classification Item Key	*Key of classification item within the classification system*		*[FM-10]: optional, not checked* *[COBIE2]: n/a*	-		IfcClassificationReference.ItemReference	(incl.)
Classification Item Name	*Clear name of the classification item*		*[FM-10]: optional, not checked* *[COBIE2]: n/a*	-		IfcClassificationReference.Name	(incl.)

					Export	Import	IFC Model View Definition	
buildingSMART			*exchange requirements for the "Basic HandOver to Facility Management"*					

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		Definitions and notes	**Examples and further explanations**	**Comments**	**Export**	**Import**	**IFC Model Representation**	**MVD binding**

	Classification System Name	*Name of the classification system*		*[FM-10]: optional, not checked* *[COBIE2]: n/a*	-		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl.)
	Classification System ID	*Identifyer of the classification system*		*[FM-10]: optional, not checked* *[COBIE2]: n/a*	-		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	
	Site Base Quantities						IfcElementQuantity (through relationship IfcRelDefinedByProperties)	(BSA-438)
	Site Perimeter	*Total perimeter of the side*	*NOT used for Basic FM HandOver View*	*[COBIE2]: n/a*	-		IfcQuantityLength.Name="GrossPerimeter"	BSA-248
	Site Gross Land Area	*Total area of the building site, as projected to the horizontal plane.*	*NOT used for "Basic FM HandOver View"*	*[FM-10]: Gesamtfläche Liegenschaft* *[COBIE2]: n/a*	-		IfcQuantityArea.Name="GrossArea"	BSA-250
	Site Properties						IfcPropertySet (through relationship IfcRelDefinedByProperties)	GSC-038
	Site Common Properties	*Properties that are specified in the standard property definitions (or a relevant subset of) as defined in IFC site common properties*	*NOT used for "Basic FM HandOver View"*	*[General]: relevant subset of required properties need to be defined outside of the standard properties* *[FM-10]: n/a* *[COBIE2]: n/a*	-		IfcPropertySet with Name = "Pset_SiteCommon"	GSC-039
	Site Catalogue properties	*Property that is specified by an external catalogue. Names are valid in the local context (e.g. by country, jurisdiction, building owner), only applicable in local context by additional agreements*	*NOT used for international "Basic FM HandOver View"* *The German BRF (FM guideline) defines several properties such as area ratios ("GFZ", "GRZ") and administrative data ("Gemarkungsnummer", "Gemarkungsname", "Flur", …)*	*[General]: In particular interesting for data exchange between CAFM* *[FM-10]: local property set agreement for German BfR Gbestand* *[COBIE2]: n/a*	-		IfcPropertySet with Name = /* to be decided in local context */ and locally defined properties	GSC-040
	e.g. "tatsächliche GRZ"	*"Grundflächenzahl" Ratio between the buildable area and the total area of a site*	*NOT used for international "Basic FM HandOver View"*	*[General]: In particular interesting for data exchange between CAFM* *[FM-10]: requested is the correct name, the classification via "description field" not used for exchange from CAD/BIM* *[COBIE2]: n/a*	-		IfcPropertySingleValue .Name="tatsächliche GRZ", .Description="D_Merkmalkatalog_BFR || ZL008.11.2.102" .Value=0.65	(incl.)
	Spatial Decomposition							GSC-042
	Site contained in Project	"backlink" to the project as highest node in the project structure		*[General]: one project object allowed*	M		IfcRelAggregates with RelatingObject = IfcProject	GSC-041
	Building contained in Site	Reference to all buildings that are situated on this site.		*[FM-10]: one or several buildings allowed* *[COBIE2]: one building allowed per COBie2 file*	M		IfcRelAggregates with RelatedObject = IfcBuilding	VBL-504
	Site contained in Site	*NOT ALLOWED Needed in case a site is split into smaller parts.*	*NOT allowed for "Basic FM HandOver View"*	*[General]: used for project structures, where a site has partial sites, not included in Architectural HandOver* *[FM-10]: one site is allowed per ifc file (same as in the coordination view)* *[COBIE2]: one site allowed per COBie2 file*	N		IfcRelAggregates with RelatedObject = IfcSite	GSC-043
Building			there can be one or several building objects in the exchange file	*[COBIE2]: building information identified in Facility worksheet*			**IfcBuilding**	GSC-287
	Building Attributes							GSC-045

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Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f24, has to be maintained by the application (e.g. for re-export)	*[General]: software key, does not yield any human interpretation* *[COBIE2]: reqd if created by external system Facility.ExtFacilityIdentifier*	M	x	IfcBuilding.GlobalId	VBL-170
Number (or ID)	Unique number or key of the building (short name), If possible should follow coding rules of used FM guidelines.		*[FM-10]: required* *[COBIE2]: optional - put in Attribute worksheet if used*	M		IfcBuilding.Name	GSC-075
Name	Designer assigned name (long name)		*[FM-10]: required* *[COBIE2]: reqd - Facility.ProjectName*	M		IfcBuilding.LongName	GSC-076
Description	*OPTIONAL Designer assigned description*	*not required for export*	*[COBIE2]: optional - Facility.Desription*	O		IfcBuilding.Description	GSC-077
Building Address		REQUIRED ONLY (if there is no site address)					GSC-047
Address	*Address lines*	depending on local usage, street number, street name, etc.	*[General]: to be used, if there is no address assigned to the site (or if no site is present in the exchange file)* *[COBIE2]: n/a*	O		IfcBuilding.BuildingAddress.AddressLines	(incl)
City	*Town or city name*		*[COBIE2]: n/a*	O		IfcBuilding.BuildingAddress.Town	(incl)
State	*State, Region, or "Länder"*	optional in many countries	*[COBIE2]: n/a*	O		IfcBuilding.BuildingAddress.Region	(incl)
Zip	*Postal code*		*[COBIE2]: n/a*	O		IfcBuilding.BuildingAddress.PostalCode	(incl)
Building Classification							GSC-049
Classification	*Building Classification*	*OPTIONAL for "Basic FM HandOver View", requires to specify a classification system*	*[General]: In particular interesting for data exchange between CAFM* *[FM-10]: not required for BIM/CAD (only for CAFM to CAFM exchange)* *[COBIE2]: reqd - Facility.Category*	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
Classification Item Key	*Key of classification item within the classification system*		*[COBIE2]: reqd - Facility.Category first value of delimited list*	O		IfcClassificationReference.ItemReference	(incl)
Classification Item Name	*Clear name of the classification item*		*[COBIE2]: reqd - Facility.Category second value of delimited list*	O		IfcClassificationReference.Name	(incl)
Classification Name	*Name of the classification system*		*[COBIE2]: n/a*	O		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)
Classification System ID	*Identifyer of the classification system*		*[COBIE2]: inplicit: regional specification (Omniclass Table 11 in NA)*	O		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
Building Base Quantities		*NOT used for "Basic FM HandOver View"*				IfcElementQuantity (through relationship IfcRelDefinedByProperties)	BSA-440
~~*Height*~~	*total height of the building*		*[General]: for Architectural (CAD) HandOver only the stories should have height, it should be summed up after import* *[COBIE2]: n/a*	-		IfcQuantityLength.Name="Height"	BSA-473
~~*Net Area - All Spaces*~~	*sum of all usable space areas*		*[General]: for Architectural (CAD) HandOver only the spaces should have area, it should be summed up after import* *[COBIE2]: n/a*	-		IfcQuantityArea.Name="NetArea"	GSC-080

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Gross Area - All Stories	sum of all gross floor areas		[General]: for Architectural (CAD) HandOver only the spaces should have area, it should be summed up after import [COBIE2]: n/a	-		IfcQuantityArea.Name="GrossArea"	GSC-081
Gross Volume	gross volume of all areas enclosed by the building		[General]: for Architectural (CAD) HandOver only the spaces should have volumes, it should be summed up after import [COBIE2]: n/a	-		IfcQuantityArea.Name="GrossVolume"	GSC-082
Building Properties						IfcPropertySet (through relationship IfcRelDefinedByProperties)	GSC-051
Building Common Properies	Properties that are specified in the standard property definitions (or a relevant subset of)		[General]: relevant subset of required properties need to be defined out of the standard properties	O		IfcPropertySet with Name = "Pset_BuildingCommon"	GSC-084
Building age	Year of construction	OPTIONAL for "Basic FM HandOver View"	[COBIE2]: optional - put in Attribute worksheet if used	O		IfcPropertySingleValue (Pset_BuildingCommon, YearOfConstruction)	GSC-089
Landmark status	landmark or not	OPTIONAL for "Basic FM HandOver View"	[COBIE2]: optional - put in Attribute worksheet if used	O		IfcPropertySingleValue (Pset_BuildingCommon, IsLandmarked)	GSC-109
Building Catalogue Properties	Property that is specified by an external catalogue.	The German BRF (FM guideline) defines several properties such as area ratios ("NF", "BGF")	[General]: In particular interesting for data exchange between CAFM [FM-10]: not required for BIM/CAD (only for CAFM to CAFM exchange)	-		IfcPropertySet with Name = /* to be decided in local context */	GSC-085
Last refurbishment	Year of last refurbishment	NOT used for international "Basic FM HandOver View", may be added in local adaptations	[FM-10]: not required for BIM/CAD (only for CAFM to CAFM exchange) [COBIE2]: optional - put in Attribute worksheet if used	-		IfcPropertySingleValue .Name="letzte Instanthaltung", .Description="D_Merkmalkatalog_BFR || ZB001.14..101" .Value=1982	GSC-046
Spatial Decomposition		A building can only be contained in a project, a site, or another building, however the last is disallowed within the "Basic FM HandOver View"					GSC-042
Building contained in Project	"backlink" to the project or site as the higher node in the project structure	either the building has a link to project (if there is no site in the dataset), or to the building, but not both in parallel	[COBIE2]: one project allowed per COBie2 file	M/O		IfcRelAggregates with .RelatingObject = IfcProject and .RelatedObjects = [SELF, other buildings]	GSC-083
Building contained in Site	either contained in a site, or if no site is available, directly in the project	either the building has a link to site (if there is a site in the dataset), or to the project, but not both in parallel	[COBIE2]: one building allowed per COBie2 file	M/O		IfcRelAggregates with .RelatingObject = IfcSite and .RelatedObjects = [SELF, other buildings]	GSC-086
~~Building contained in Building~~	NOT ALLOWED	Needed in case a building is split into wings or other sections - define each wing as a building on site.		N		IfcRelAggregates with RelatedObject = IfcBuilding	GSC-087
Building Storey contained in Building	mandatory in the "Architectural HandOver" view, there has to be at least one storey		[COBIE2]: one or many floors allowed in COBie2	M		IfcRelAggregates with RelatedObject = IfcBuildingStorey	GSC-088
Building Storey		there can be one or several stories in the exchange file	[COBIE2]: building story informaiton identified in Floor worksheet			**IfcBuildingStorey**	GSC-090
Building Storey Attributes							GSC-091
Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f23, has to be maintained by the application (e.g. for re-export)	[FM-10]: software key, does not yield any human interpretation [COBIE2]: reqd if created by external system Floor.ExtIdentifier	M		IfcBuildingStorey.GlobalId	VBL-170

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	Number (or ID)	Unique number or key of the building (short name), If possible should follow coding rules of used FM guidelines.		*[FM-10]: required, short name or number* *[COBIE2]: n/a*		M		IfcBuildingStorey.Name	GSC-110
	Name	Designer assigned name (long name)		*[FM-10]: optional* *[COBIE2]: reqd - Floor.Name*		M		IfcBuildingStorey.LongName	GSC-119
	Description	*OPTIONAL Designer assigned description*	*not required for export*	*[COBIE2]: optional - Floor.Description*		O		IfcBuildingStorey.Description	GSC-112
	Elevation	Building Story datum (relative to building)	height difference to the building height, e.g. +2,80 being 2,80 m above the 0,00 reference point for the building	*[FM-10]: required as "Höhenkote"* *[COBIE2]: optional - Floor.Elevation*		M		IfcBuildingStorey.Elevation	GSC-092
Building Storey Base Quantities								IfcElementQuantity (through relationship IfcRelDefinedByProperties)	BSA-442
	Net Height	Height of the story from the top of the slab to the bottom of the ceiling		*[COBIE2]: optional - put in Attribute worksheet if used*		M		IfcQuantityLength.Name="NetHeight"	GSC-095
	Storey Height	Height of the story from the top of the slab below to the bottom of the slab above		*[COBIE2]: optional - Floor.Height*		M		IfcQuantityLength.Name="GrossHeight"	BSA-462
	~~Net Area - all spaces~~	*sum of all usable areas of spaces in that storey*		*[FM-10]: for Basic FM HandOver View" only the spaces should have areas, it should be summed up after import* *[COBIE2]: n/a*		-		IfcQuantityArea .Name="NetArea"	GSC-097
	~~Gross Area - all spaces~~	*sum of all gross floor area of spaces in that storey*		*[FM-10]: for Basic FM HandOver View" only the spaces should have areas, it should be summed up after import* *[COBIE2]: n/a*		-		IfcQuantityArea .Name="GrossArea"	GSC-098
	~~Net Volume - all spaces~~	*net volume of all areas enclosed by the building storey*		*[FM-10]: for Basic FM HandOver View" only the spaces should have volumes, it should be summed up after import* *[COBIE2]: n/a*		-		IfcQuantityVolume.Name="NetVolume"	GSC-099
	~~Gross Volume - all spaces~~	*gross volume of all areas enclosed by the building storey*		*[FM-10]: for Basic FM HandOver View" only the spaces should have volumes, it should be summed up after import* *[COBIE2]: n/a*		-		IfcQuantityVolume.Name="GrossVolume"	BSA-265
Building Storey Classification									GSC-101
	~~Classification~~	*NOT APPLICABLE Building storey classification*	*NOT used for "Basic FM HandOver View", requires to specify a classification system fro stories*	*[General]: In particular interesting for data exchange between CAFM*		-		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
	~~Classification Item Key~~	*NOT APPLICABLE Key of classification item within the classification system*		*[COBIE2]: reqd - Floor.Category = floor, roof, external*		-		IfcClassificationReference.ItemReference	(incl)
	~~Classification Item Name~~	*NOT APPLICABLE Clear name of the classification item*		*[COBIE2]: n/a*		-		IfcClassificationReference.Name	(incl)
	~~Classification System Name~~	*NOT APPLICABLE Name of the classification system*		*[COBIE2]: n/a*		-		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)
	~~Classification System ID~~	*NOT APPLICABLE Identifyer of the classification system*		*[COBIE2]: n/a*		-		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
Building Storey Properties								IfcPropertySet (through relationship IfcRelDefinedByProperties)	GSC-102

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Building Storey Common Properties	NOT APPLICABLE Properties that are specified in the standard property definitions (or a relevant subset of)	NOT used for international "Basic FM HandOver View"	[General]: relevant subset of required properties need to be defined out of the standard properties [COBIE2]: required COBie2 properties are identified for every Floor in the COBie2 file	-		IfcPropertySet with Name = "Pset_BuildingStoryCommon"	GSC-103
Building Storey Catalogue Properties	NOT APPLICABLE Properties that are specified according to an external catalogue.		[General]: In particular interesting for data exchange between CAFM [COBIE2]: n/a	-		IfcPropertySet with Name = /* to be decided in local context */	GSC-108
Heatable Area	NOT APPLICABLE heated area of the storey	NOT used for international "Basic FM HandOver View", may be added in local adaptations	[FM-10]: not required for BIM/CAD (only for CAFM to CAFM exchange) [COBIE2]: optional - put in Attribute worksheet if used	-		IfcPropertySingleValue .Name="beheizbare Fläche", .Description="D_Merkmalkatalog_BFR || ZG004.12..103 || beheizbare Fläche" .Value=1045,25	GSC-276
Load capacity	NOT APPLICABLE Load capacity of the floor	NOT used for international "Basic FM HandOver View", may be added in local adaptations	[FM-10]: not required for BIM/CAD (only for CAFM to CAFM exchange) [COBIE2]: optional - put in Attribute worksheet if used	-		IfcPropertySingleValue .Name="Deckentragfähigkeit", .Description="D_Merkmalkatalog_BFR || ZA005.11..108 || Deckentragfähigkeit" .Value=12,5	GSC-142
Spatial Decomposition		A building storey can only be contained in a building, or another building story, however the second is disallowed within the "Architectural HandOver to FM" view					GSC-042
Building Storey contained in Building		mandatory relation for the spatial structure		M		IfcRelAggregates with .RelatingObject = IfcBuilding, and RelatedObjects=[SELF, other storeys]	GSC-088
~~Building Storey contained in Building Storey~~	NOT ALLOWED	Needed in case a building storey is split into smaller parts	[General]: no sub stories contained in other stories.	N			GSC-105
Space contained in Building Storey		mandatory relation for the spatial structure	[COBIE2]: spaces assigned to single floor in COBie2	M		IfcRelAggregates with .RelatingObject=SELF, and .RelatedObject = [IfcSpace1, 2, ... n]	GSC-106
Spatial Container							GSC-026
Elements contained in Building Storey		Elements for inventories (FFE, MEP, etc.) shall be contained in spaces	[General]: as exception handling the building story container needs to be checked for elements [FM-10]: components are assigned to a space, exceptions are door/window, and components spaanning over several spaces [COBIE2]: components assigned to individual spaces in COBie2	-	M		GSC-107
Space			[COBIE2]: space informaiton identified in Space worksheet			**IfcSpace**	GSC-113
Space Attributes							GSC-114
Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f23, has to be maintained by the application (e.g. for re-export)	[FM-10]: software key, does not yield any human interpretation [COBIE2]: reqd if created by external system Floor.ExtIdentifier	M		IfcSpace.GlobalId	VLB-170
Short Name (ID)	Designer assigned name or short number	"EG-001.1"	[FM-10]: required [COBIE2]: reqd - Space.Name	M		IfcSpace.Name	GSC-116

				exchange requirements for the "Basic HandOver to Facility Management"		Export	Import	IFC Model View Definition	
Object Type								**IFC Model Representation**	**MVD binding**
	Attribute Groups								
		Property	**Definitions and notes**	**Examples and further explanations**	**Comments**				
		Long Name	Room number (long)	"Office"	*[FM-10]: required* *[COBIE2]: reqd - Space.Description*	M		IfcSpace.LongName	GSC-117
		Description	*OPTIONAL Designer assigned description, "Corner office with harbor view"*	*not required for export*	*[COBIE2]: optional - put in Attribute worksheet if used*	O		*IfcSpace.Description*	GSC-118
		Internal/External	Indication whether it is an internal or external space		*[FM-10]: required* *[COBIE2]: optional - put in Attribute worksheet if used*	M		IfcSpace.InteriorOrExteriorSpace	VBL-320
	Space Classification								GSC-115
		Space Classification	Classification	classifying the space type according to the local classification system, in Germany DIN277	*[General]: requires to specify a classification system*	M		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
			Classification Item Key	Classification notification key	HNF1	*[COBIE2]: reqd - Space.Category first value of delimited list*	M		IfcClassificationReference.ItemReference	(incl)
			Classification Item Name	Classification notification (clear) name	Wohnen	*[COBIE2]: reqd - Space.Category second value of delimited list*	M		IfcClassificationReference.Name	(incl)
			Classification System Name	Name of the classification system	DIN277-2	*[COBIE2]: n/a*	M		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)
			Classification System Edition	Edition or version of classification system	z.B. DIN277 - Name: DIN277-2, Edition: 2005	*[General]: A common way of naming the editions has to be agreed upon for the major space classification systems.* *[FM-10]: regional specification (DIN277-2)* *[COBIE2]: regional specification (Omniclass Table 13 in NA)*	O		IfcClassification.Edition (through IfcClassificationReference.ReferencedSource)	(incl)
			~~Classification System ID~~	*Identifyer of the classification system*	*unique identifier for a classification edition - not yet available*	*[COBIE2]: n/a*	-		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
	Space Base Quantities							IfcElementQuantity (through relationship IfcRelDefinedByProperties)	BSA-444
		Height	*(constant) height of the room*	*OPTIONAL for "Basic FM HandOver View"*	*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcQuantityLength.Name= "Height"	BSA-279
		~~FinishFloorHeight~~	*(constant) height of the flooring of the room*	*NOT USED for "Basic FM HandOver View"*	*[COBIE2]: optional - put in Attribute worksheet if used*	-		IfcQuantityLength.Name= "FinishFloorHeight"	GSC-122
		FinishCeilingHeight	(constant) clear height of the room (from top of flooring to bottom of (suspended) ceiling)		*[COBIE2]: optional - put in Attribute worksheet if used*	M		IfcQuantityLength.Name= "FinishCeilingHeight"	GSC-123
		Perimeter	*(constant) width of the room*	*OPTIONAL for "Basic FM HandOver View"*	*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional, derived from space coordinates*	O		IfcQuantityLength.Name= "GrossPerimeter"	BSA-283
		GrossFloorArea	*sum of all floor areas covered by the space*	*OPTIONAL for "Basic FM HandOver View"*	*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional - Space.GrossArea. Provision of this optional information grants higher ratings than files without optional information.*	O		IfcQuantityArea.Name= "GrossFloorArea"	GSC-127

			exchange requirements for the "Basic HandOver to Facility Management"					IFC Model View Definition	

Object Type **Attribute Groups** **Property**			Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
		NetFloorArea	sum of all usable floor areas covered by the space		*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional - Space.NetArea. Provision of this optional information grants higher ratings than files without optional information.*	M		IfcQuantityArea.Name= "NetFloorArea"	GSC-126
		GrossCeilingArea	*sum of all ceiling areas of the space*	*OPTIONAL for "Basic FM HandOver View"*	*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcQuantityArea.Name= "GrossCeilingArea"	GSC-128
		NetCeilingArea	sum of all ceiling areas covered by the space		*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional - put in Attribute worksheet if used*	M		IfcQuantityArea.Name= "NetCeilingArea"	GSC-129
		GrossWallArea	*sum of all wall areas bounded by the space including the area that is normally covered by doors, windows or other opening*	*OPTIONAL for "Basic FM HandOver View"*	*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcQuantityArea.Name= "GrossWallArea"	GSC-130
		NetWallArea	sum of all wall areas covered by the space		*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional - put in Attribute worksheet if used*	M		IfcQuantityArea.Name= "NetWallArea"	GSC-131
		GrossVolume	*Total volume that is enclosed by the space*	*NOT USED for "Basic FM HandOver View"*	*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional, derived from space coordinates & finish floor height*	-		IfcQuantityVolume.Name= "GrossVolume"	BSA-289
		NetVolume	*Volume that is enclosed by the space, excluding the volume of construction elements inside the space.*	*NOT USED for "Basic FM HandOver View"*	*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: optional, derived from space coordinates & finish ceiling height*	-		IfcQuantityVolume.Name= "NetVolume"	BSA-291
Space quantities									GSC-134
		FM catalogue quantity	*Quantity that is specified by an external catalogue.*	*NOT used for "Basic FM HandOver View"* *Specific space quantities measured according to a local measurement standard, like DIN277 in Germany, BOMA or GSA in US, or similar*	*[General]: In particular interesting for data exchange between CAFM* *[COBIE2]: n/a*	-		IfcElementQuantity (through relationship IfcRelDefinedByProperties)	GSC-135
Space properties									GSC-136
	Space Common Properies		Properties that are specified in the standard property definitions (or a relevant subset of)		*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: required COBie2 properties are identified for every space in the COBie2 file*	M		IfcPropertySet with Name = "Pset_SpaceCommon"	GSC-137
		Flooring	name of flooring (material finish), only to be used as a simplification, i.e. if there are no IfcCovering objects contained in the space (IfcCovering becomes manadatory, if there are two or more floorings	*e.g. carpet, tiles, etc, quantities for flooring taken from base quantity "NetFloorArea"*	*[General]: to be used, if there is no covering object* *[FM-10]: required If there is no covering object, the space net area is also the flooring area* *[COBIE2]: reqd - min one Attribute worksheet "Flooring" row for each Space.Name*	M/O		IjcPropertySingleValue with Name = "FloorCovering"	GSC-138

Object Type Attribute Groups Property	Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
exchange requirements for the "Basic HandOver to Facility Management"						**IFC Model View Definition**	
Ceiling	name of ceiling (material finish) only to be used as a simplification, i.e. if there are no IfcCovering objects contained in the space (IfcCovering becomes manadatory, if there are two or more ceilings (or complicated suspended ceiling structure)	painted, suspended ceiling, etc, quantities for ceiling taken from base quantity "NetCeilingArea"	*[General]: to be used, if there is no covering object* *[FM-10]: required If there is no covering object, the space net ceiling area is also the flooring area* *[COBIE2]: reqd - min one attribute worksheet "Ceiling" row for each Space.Name*	M/O		IjcPropertySingleValue with Name = "CeilingCovering"	GSC-139
Cladding	name of cladding (material finish) only to be used as a simplification, i.e. if there are no IfcCovering objects contained in the space (IfcCovering becomes manadatory, if there are two or more claddings	painted, wall paper, etc, quantities for cladding taken from base quantity "NetWallArea"	*[General]: to be used, if there is no covering object* *[FM-10]: required If there is no covering object, the space net wall area is also the cladding area* *[COBIE2]: reqd - min one attribute worksheet "Cladding" row for each Space.Name*	M/O		IjcPropertySingleValue with Name = "WallCovering"	GSC-140
Space Catalogue Properties	Properties that are specified according to an external catalogue.					IfcPropertySet with Name = /* to be decided in local context */	GSC-141
Load capacity	*Load capacity of the floor*	*NOT USED for "Basic FM HandOver View"*	*[General]: LoadCapacity should be included in standard space properties in future.* *[FM-10]: not required for BIM/CAD (only for CAFM to CAFM exchange)* *[COBIE2]: reqd - min one attribute worksheet "LoadCapacity" row for each Space.Name*	-		IfcPropertySingleValue .Name="Deckentragfähigkeit", .Description="D_Merkmalkatalog_BFR || ZA005.11..108 || Deckentragfähigkeit" .Value=12,5	(incl)
Spatial Decomposition		A space can only be contained in a site, a building story, or another space, however the last is disallowed within the "Architectural HandOver to FM" view	*[COBIE2]: see zones*				GSC-042
Space contained in Building Storey	Space as part of the building structure		*[COBIE2]: reqd - Space.FloorName*	M		IfcRelAggregates with .RelatingObject = IfcBuildingStorey, and RelatedObjects=[SELF, other spaces]	GSC-106
Space contained in Space	*Needed in case a building storey is split into smaller parts.*	*NOT allowed for "Basic FM HandOver View"*	*[General]: space nesting not allowed*	N			GSC-143
Spatial Container							GSC-026
Elements contained in Space	Furniture and equipment fully contained in space	required for furniture and MEP components, if fully enclosed by a space	*[General]: Required for export is assignment to space (only as fallback in extreme cases to storey (on import, both need to be supported)* *[COBIE2]: reqd - Component.SpaceNames*	M		IfcRelContainedInSpatialStructure with .RelatingStructure = SELF, and RelatedElements=[IfcFurnnishingElement, IfcBuildingElementProxy, IfcDistributionElement, etc.]	GSC-144
Coverings contained in Space	Covering elements of the space	to be included, if not to be defined by a simple property in the common property set, i.e. if a single space has two floorings (split by carpet and tiles.	*[General]: Use IfcRelContainedInSpatialStructure, not IfcRelCoversSpaces to express the spatial containment* *[FM-10]: required, if the flooring, ceiling or cladding does not cover all floor, ceiling or wall area of a space.* *[COBIE2]: n/a*	M		IfcRelContainedInSpatialStructure with .RelatingStructure = SELF, and RelatedElements=[IfcCovering, other covered elements]	GSC-145
Doors/Windows contained in Space	Doors, Windows assigned by a 1:1 containment relationship (optionally)	required for doors and windows, if already assigned to a single space	*[General]: Reference of doors, windows linked to the space (1) by containment - direct assignement of door , windowto one space, or (2) by boundary elements, i.e. linking one door , window to two spaces* *[FM-10]: either this containment is requires, or the boundary relation to one or two spaces.* *[COBIE2]: reqd - Doors/Windows identified within one or two spaces*	M/O		IfcRelContainedInSpatialStructure with .RelatingStructure = SELF, and RelatedElements=[IfcDoor, IfcWindow]	GSC-183 GSC-206
Space Boundary							VBL-417

			exchange requirements for the "Basic HandOver to Facility Management"		Export	Import	IFC Model View Definition	

| **Object Type** | | | | | **Export** | **Import** | | **MVD binding** |
| **Attribute Groups** | | | | | | | | |
Property	Definitions and notes	Examples and further explanations	Comments				**IFC Model Representation**	
Doors/Windows bounding Spaces	Doors, Windows assigned by a 1:2 boundary relationship (mandatory, if no containment)	required for doors and windows, if not already assigned to a single space	*[General]: for external doors and windows there is only one boundary to space (therefore unambiguous), for internal doors and windows there are two boundaries (to two spaces)* *[FM-10]: either the containment is requires, or this boundary relation to one or two spaces.* *[COBIE2]: reqd - min one Attribute worksheet "IsExternal" row for each appropriate object*		M/O		IfcRelSpaceBoundary with RelatingSpace=SELF, and RelatedElements=IfcDoor OR IfcWindow	GSC-184 GSC-207
Covering	Coverings are to be included as individual elements if there is not only a single ceiling, cladding and flooring, as included in the space property set. Particularly used, if there are two or several distinct floorings, claddings and/or ceilings	examples include elevated floors, suspended ceilings, wall claddings, etc. Used in particular, if a space has several floorings, ceilings, or claddings, each occupying a partial area.	*[General]: to be used, if coverings are not unique withon a space for ceiling, cladding, flooring* *[COBIE2]: simplified COBie2 models assume a space has a single type of covering. If needed break large spaces into multiple sub spaces that have common coverings*				**IfcCovering**	GSC-148
Covering attributes								GSC-149
Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f31, has to be maintained by the application (e.g. for re-export)	*[FM-10]: software key, does not yield any human interpretation*		M		IfcCovering.GlobalId	VBL-170
Name	Individual element name (for human reference)		*[FM-10]: required to identify the covering*		M		IfcCovering.Name	GSC-150
Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*			O		IfcCovering.Description	GSC-151
Predefined Covering Type Enumerator	Covering type as assigned to the individual element	being either "Ceiling, Cladding, Flooring"	*[FM-10]: required to identify the covering*		M		IfcCovering.PredefinedType	GSC-153
Covering Type								GSC-152
Covering Type	*Reference to the common covering type used for all occurrences of the covering*	*OPTIONAL for "Basic FM HandOver View"*	*[FM-10]: Types are also called "style", or "family" in CAD software*		O		IfcCoveringType (through relationship IfcRelDefinesByType)	GSC-214
Name	*Individual type name (for human reference)*				O		IfcCoveringType.Name	GSC-154
Description	*Additional description*				O		IfcCoveringType.Description	GSC-277
Type	*Covering type as assigned to the type*	*being either "Ceiling, Cladding, Flooring"*	*[General]: if a covering type is provided at both, IfcCovering and IfcCoveringType, then the type at IfcCovering overrides.*		O		IfcCoveringType.ElementType	GSC-153
Material	*Material as assigned to the type*	*material information as shown below for element materials*	*[General]: if a material is provided at both, IfcCovering and IfcCoveringType, then the material at IfcCovering overrides.*		O		IfcMaterial, or IfcMaterialLayerSet (through relationsip IfcRelAssociatesMaterial)	GSC-155
Classification	*Classification as assigned to the type*	*classification information as shown below for element classification*	*[General]: if a covering classification is provided at both, IfcCovering and IfcCoveringType, then the classification at IfcCovering overrides.*		O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-158
Properties	*Properties as assigned to the type*	*property set information as shown below for element properties*	*[General]: if a covering property is provided at both, IfcCovering and IfcCoveringType, then the property at IfcCovering overrides.*		O		IfcPropertySet (through relationship IfcRelDefinesByType and IfcCoveringType.HasPropertySets)	GSC-278

buildingSMART	**exchange requirements for the "Basic HandOver to Facility Management"**						**IFC Model View Definition**	

Object Type
  Attribute Groups
    Property
	Definitions and notes	**Examples and further explanations**	**Comments**	**Export**	**Import**		**IFC Model Representation**	**MVD binding**

Covering Material								GSC-155
Material							IfcMaterial, or IfcMaterialLayerSet (through relationsip IfcRelAssociatesMaterial)	
Material thickness	thickness of the material layer, many layers can be defined			M			IfcMaterialLayer.LayerThickness	GSC-156
Material name	name of the material, for multi-layer coverings, each layer has a material name		[FM-10]: required	M			IfcMaterial.Name	GSC-157
Covering Classification								GSC-158
Classification	*Covering classification*	*OPTIONAL for "Basic FM HandOver View", requires to specify a classification system*	*[General]: In particular interesting for data exchange between CAFM*	O			IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
Classification Item Key	*Key of classification item within the classification system*			O			IfcClassificationReference.ItemReference	(incl)
Classification Item Name	*Clear name of the classification item*			O			IfcClassificationReference.Name	(incl)
Classification System Name	*Name of the classification system*			O			IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)
~~Classification System ID~~	*Identifyer of the classification system*			-			IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
Covering Base Quantities							IfcElementQuantity (through relationship IfcRelDefinedByProperties)	GSC-159
Gross Area	Total area of the covering in the elevation view.		*[General]: definitions of base quantities taken from German QTO project PM-4*	M			IfcQuantityArea.Name="GrossArea"	GSC-160
Net Area	Area of the covering in the elevation view taking into account openings.		*[General]: definitions of base quantities taken from German QTO project PM-5* *[FM-10]: required*	M			IfcQuantityArea.Name="NetArea"	GSC-161
Spatial Container								GSC-026
Coverings contained in Space	A covering element has to be contained in a space (and not in a building storey)		*[General]: coverings must have a relationship to spaces*	M			IfcRelContainedInSpatialStructure with .RelatingStructure = SELF, and RelatedElements=[IfcCovering, other covered elements]	GSC-145
~~Covering covers Space~~		*usage of this relationship is disallowed in the "Architectural HandOver to FM" view*		N			IfcRelCoversSpace and/or IfcRelSpaceBoundary	GSC-163
Window			*[COBIE2]: object classes must be strongly typed using the Type worksheet. Instances found in Component worksheet.*				**IfcWindow**	GSC-164
Window Attributes								GSC-185
Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f61, has to be maintained by the application (e.g. for re-export)	*[FM-10]: software key, does not yield any human interpretation* *[COBIE2]: reqd if created by external system Component.ExtIdentifier*	M			IfcWindow.GlobalId	VBL-170
Name	Individual element name (for human reference)		*[COBIE2]: reqd - Component.Name*	M			IfcWindow.Name	GSC-165

			exchange requirements for the "Basic HandOver to Facility Management"		Export	Import	IFC Model View Definition	
Object Type **Attribute Groups** **Property**		**Definitions and notes**	**Examples and further explanations**	**Comments**			**IFC Model Representation**	**MVD binding**
Description		*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	[COBIE2]: reqd - Type.Description, no separate description for specific component	O		IfcWindow.Description	GSC-166
Window Type				[COBIE2]: Type worksheet holds all COBie2 types				GSC-167
Window type		Reference to the common window type used for all occurrences of the same window type	e.g one type for all Pivoting Windows 0,75x150	[FM-10]: Types are also called "style", or "family" in CAD software [COBIE2]: reqd if created by external system Type.ExtIdentifier	M		IfcWindowStyle (through relationship IfcRelDefinesByType)	GSC-171
	Name	Individual type name (for human reference)	e.g. "Klippfenster 0,76*1,51"	[COBIE2]: reqd - Type.Name	M		IfcWindowStyle.Name	GSC-238
	Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	[COBIE2]: reqd - Type.Description	O		IfcWindowStyle.Description	GSC-169
	Construction type	The construction type relates to the main material (or material combination) used for making the window, e.g. wood, aluminium, plastics, etc.	*OPTIONAL for "Basic FM HandOver View"*	[General]: to be used in absense of an individual material definition attached using ifcRelAssociatesMaterial [COBIE2]: reqd - min one attribute worksheet "ConstructionType" row for each window type	O		IfcWindowStyle.ConstructionType	GSC-168
	Operation type	The configuration of the window panels, single panel, double panel, triple panel, and whether horizontal or vertical		[FM-10]: required in combinationwith operation type [COBIE2]: reqd - min one attribute worksheet "ConfigurationType" row for each window type	M		IfcWindowStyle.OperationType	GSC-170
	Panel Operation type	The way the window is operated	sliding, pivoting, swinging, tilt&turn, etc.	[General]: note that in a multi-panel window, each panel may have a different operation type [FM-10]: required in combinationwith configuration type [COBIE2]: reqd - min one attribute worksheet "OperationType" row for each window type	M		IfcWindowPanelProperties.OperationType (through IfcWindowStyle.HasPropertySets	GSC-279
	Material	*Material as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* *material information as shown below for element materials*	[General]: if a material is provided at both, IfcWindow and IfcWindowStyle, then the material at IfcWindow overrides. [COBIE2]: reqd - min one attribute worksheet "Material" row for each window type	O		IfcMaterial, or IfcMaterialLayerSet (through relationsip IfcRelAssociatesMaterial)	(incl)
	Classification	*Classification as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* *classification information as shown below for element classification*	[General]: if a window classification is provided at both, IfcWindow and IfcWindowType, then the classification at IfcWindow overrides. [COBIE2]: see Classification below	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	(incl)
	Properties	*Properties as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* *property set information as shown below for element properties*	[General]: if a window property is provided at both, IfcWindow and IfcWindowType, then the property at IfcWindow overrides. [COBIE2]: properties of individual components that differ from type must be reported as properties of the Component.	O		IfcPropertySet (through relationship IfcRelDefinesByType and IfcWindowStyle.HasPropertySets)	(incl)
Window Classification				[COBIE2]: see Classification below				GSC-172
Classification		*Covering classification*	*OPTIONAL for "Basic FM HandOver View", requires to specify a classification system*	[General]: In particular interesting for data exchange between CAFM	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
	Classification Item Key	*Key of classification item within the classification system*	*OPTIONAL for "Basic FM HandOver View*	[COBIE2]: reqd - Type.Category first value of delimited list	O		IfcClassificationReference.ItemReference	(incl)
	Classification Item Name	*Clear name of the classification item*	*OPTIONAL for "Basic FM HandOver View*	[COBIE2]: reqd - Type.Category first value of delimited list	O		IfcClassificationReference.Name	(incl)
	Classification System Name	*Name of the classification system*	*OPTIONAL for "Basic FM HandOver View*	[COBIE2]: n/a	O		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)

		exchange requirements for the "Basic HandOver to Facility Management"			Export	Import	IFC Model View Definition	
Object Type **Attribute Groups** **Property**		**Definitions and notes**	**Examples and further explanations**	**Comments**			**IFC Model Representation**	**MVD binding**
	Classification System ID	*Identifyer of the classification system*	*OPTIONAL for "Basic FM HandOver View*	*[COBIE2]: regional specification (Omniclass Table 23 in NA)*	O		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
Window Material								GSC-173
	Material	base material for the window					IfcMaterial (through relationsip IfcRelAssociatesMaterial)	
	Material name	*name of the material*	*OPTIONAL for "Basic FM HandOver View", see IfcWindowStyle.ConstructionType*	*[COBIE2]: see previous note on Material Property*	O		IfcMaterial.Name	GSC-174
Window base quantities							IfcElementQuantity (through relationship IfcRelDefinedByProperties)	BSA-465
	Width	Width of the window lining, to be provided for rectangular windows.		*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: reqd - min one attribute worksheet "Width" row for each window type*	M/O		IfcQuantityLength.Name="Width"	BSA-405
	Height	Height of the window lining, to be provided for rectangular windows.		*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: reqd - min one attribute worksheet "Height" row for each window type*	M/O		IfcQuantityLength.Name="Height"	BSA-404
	Area	Area of the window, including frame and lining.	Note: the area contains both, framing and glazing. The glazing area is defined by Area * GlazingAreaFraction	*[General]: definitions of base quantities taken from German QTO project PM-4* *[COBIE2]: reqd - min one attribute worksheet "Area" row for each window type*	M		IfcQuantityArea.Name="Area"	BSA-410
Window properties							IfcPropertySet (through relationship IfcRelDefinedByProperties)	GSC-179
	Window Common Properies	Properties that are specified in the standard property definitions (or a relevant subset of)		*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: object properties are assigned against Type.*	M		IfcPropertySet with Name = "Pset_WindowCommon"	GSC-186
	Fire resistance	String according to national building code	e.g. F30	*[COBIE2]: reqd - min one attribute worksheet "FireRating" row for each window type*	M		IfcPropertySingleValue with Name = "FireRating"	GSC-180
	Glazing area	Provided as a fraction of the total window area	e.g. 0.8 (for 80%)	*[FM-10]: Note that the glazing area has to be calculated by GlazingAreaFraction * Area* *[COBIE2]: reqd - min one attribute worksheet "GlazingPct" row for each window type*	M		IfcPropertySingleValue with Name = "GlazingAreaFraction"	GSC-181
	Internal/External	Indication whether it is an internal or external (part of the facade) window	TRUE (external) or FALSE (internal)	*[COBIE2]: reqd - min one attribute worksheet "IsExternal" row for each window type*	M		IfcPropertySingleValue with Name = "IsExternal"	GSC-280
	Window Manufacturer Properties	*Properties that are specified in the manufacturer property definitions (or a relevant subset of)*	*OPTIONAL for "Basic FM HandOver View"*	*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: manufacturer items are evaluated only on COBie2 construction files*	O		IfcPropertySet with Name = "Pset_ManufacturerTypeInformation"	GSC-250
	Article Number	*Article number or reference*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Component.SerialNumber*	O		IfcPropertySingleValue with Name = "ArticleNumber"	GSC-251

			Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
					exchange requirements for the "Basic HandOver to Facility Management"			*IFC Model View Definition*	
Object Type									
	Attribute Groups								
		Property							
		Model Name	*The name of the manufactured item as used by the manufacturer.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ModelReference"	GSC-252
		Model Number	*The model number and/or unit designator assigned by the manufacturer*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Type.ModelNumber*	O		IfcPropertySingleValue with Name = "ModelLabel"	GSC-253
		Manufacturer	*The organization that manufactured and/or assembled the item.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Type.Manufacturer*	O		IfcPropertySingleValue with Name = "Manufacturer"	GSC-254
		Year of Production	*The year of production of the manufactured item.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ProductionYear"	GSC-260
	Spatial Container								GSC-026
		Windows contained in Building Story	A window can be contained in a building storey, if there is a boundary relationship to one or two spaces	either contained in building storey, or space (exactly one of both has to be provided)	*[FM-10]: if contained in building story, a space boundary to 1..2 spaces required* *[COBIE2]: components may only be installed within spaces in COBie2*	M/O		IfcRelContainedInSpatialStructure with .RelatingStructure = IfcBuildingStorey, and RelatedElements=[IfcWindow, other contained elements]	GSC-182
		Windows contained in Space	A window can be contained in a space, then no additional boundary relation is further analysed	either contained in building storey, or space (if already assigned to a single space in architectural CAD)	*[General]: would normally require additional input in CAD system (i.e. the user to select the space the window belongs to)* *[COBIE2]: reqd - Component.Spacenames, either using containment, or boundary relation (see below)*	M/O		IfcRelContainedInSpatialStructure with .RelatingStructure = IfcStorey, and RelatedElements=[IfcWindow, other contained elements]	GSC-183
	Space boundary								VBL-417
		Window bounding Space	A window can bound a single space (if external window, or two spaces (if internal window)		*[FM-10]: required, if not already contained in space* *[COBIE2]: all components may be identified in one or more spaces in COBie2*	M/O		IfcRelSpaceBoundary with RelatingSpace=IfcSpace, and RelatedElements=SELF	GSC-184
Door						*[COBIE2]: object classes must be strongly typed using the Type worksheet. Instances found in Component worksheet.*		**IfcDoor**	GSC-125
	Door Attributes								GSC-187
		Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f61, has to be maintained by the application (e.g. for re-export)	*[FM-10]: software key, does not yield any human interpretation* *[COBIE2]: reqd if created by external system Component.ExtIdentifier*	M		IfcDoor.GlobalId	VBL-170
		Name	Individual element name (for human reference)		*[COBIE2]: reqd - Component.Name*	M		IfcDoor.Name	GSC-188
		Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd - Type.Description, no separate description for specific component*	O		IfcDoor.Description	GSC-189
	Door Type					*[COBIE2]: Type worksheet holds all COBie2 types*			GSC-190
		Door type	Reference to the common door type used for all occurrences of the same dorr type	e.g one type for all single swing doors 0,885x2,01	*[FM-10]: Types are also called "style", or "family" in CAD software* *[COBIE2]: reqd if created by external system Type.ExtIdentifier*	M		IfcDoorStyle (through relationship IfcRelDefinesByType)	GSC-191
			Name	Individual type name (for human reference)	e.g. "Einflügeltür 0,76*2,01"	*[COBIE2]: reqd - Type.Name*	M	IfcDoorStyle.Name	GSC-274
			Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd - Type.Description*	O	IfcDoorStyle.Description	GSC-275
			Construction type	*The construction type relates to the main material (or material combination) used for making the door.*	*e.g. wood, aluminium, plastics, etc.*	*[COBIE2]: reqd - min one attribute worksheet "ConstructionType" row for each door type*	O	IfcDoorStyle.ConstructionType	GSC-192

buildingSMART	exchange requirements for the "Basic HandOver to Facility Management"			IFC Model View Definition	

Object Type
  Attribute Groups
    Property
	Definitions and notes	**Examples and further explanations**	**Comments**	Export	Import	**IFC Model Representation**	**MVD binding**

Object Type / Attribute Groups / Property	Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
Operation type	The way the door is operated, including the configuration of single or double door.	single swing, double swing, single sliding, double sliding, revolving, etc.	[COBIE2]: reqd - min one attribute worksheet "OperationType" row for each door type	M		IfcDoorStyle.OperationType	GSC-193
Material	Material as assigned to the type	OPTIONAL for "Basic FM HandOver View" material information as shown below for element materials	[General]: if a material is provided at both, IfcDoor and IfcDoorStyle, then the material at IfcDoor overrides. [COBIE2]: reqd - min one attribute worksheet "Material" row for each door type	O		IfcMaterial, or IfcMaterialLayerSet (through relationsip IfcRelAssociatesMaterial)	GSC-195
Classification	Classification as assigned to the type	OPTIONAL for "Basic FM HandOver View" classification information as shown below for element classification	[General]: if a door classification is provided at both, IfcDoor and IfcDoorType, then the classification at IfcDoor overrides. [COBIE2]: see Classification below	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-194
Properties	Properties as assigned to the type	OPTIONAL for "Basic FM HandOver View" property set information as shown below for element properties	[General]: if a door property is provided at both, IfcDoor and IfcDoorType, then the property at IfcDoor overrides. [COBIE2]: properties of individual components that differ from type must be reported as properties of the Component.	O		IfcPropertySet (through relationship IfcRelDefinesByType and IfcDoorStyle.HasPropertySets)	GSC-201
Door Classification			[COBIE2]: see Classification below				GSC-194
Classification	Door classification	OPTIONAL for "Basic FM HandOver View", requires to specify a classification system	[General]: In particular interesting for data exchange between CAFM	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
Classification Item Key	Key of classification item within the classification system	OPTIONAL for "Basic FM HandOver View"	[COBIE2]: reqd - Type.Category first value of delimited list	O		IfcClassificationReference.ItemReference	(incl)
Classification Item Name	Clear name of the classification item	OPTIONAL for "Basic FM HandOver View"	[COBIE2]: reqd - Type.Category first value of delimited list	O		IfcClassificationReference.Name	(incl)
Classification System Name	Name of the classification system	OPTIONAL for "Basic FM HandOver View"	[COBIE2]: n/a	O		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)
~~Classification System ID~~	Identifyer of the classification system	OPTIONAL for "Basic FM HandOver View"	[COBIE2]: regional specification (Omniclass Table 23 in NA)	-		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
Door Material							GSC-195
Material	base material for the door					IfcMaterial (through relationsip IfcRelAssociatesMaterial)	
Material name	name of the material		[COBIE2]: see previous note on Material Property	O		IfcMaterial.Name	GSC-174
Door base quantities						IfcElementQuantity (through relationship IfcRelDefinedByProperties)	BSA-452
Width	Width of the door lining, to be provided for rectangular doors.		[COBIE2]: reqd - min one attribute worksheet "Width" row for each door type	M/O		IfcQuantityLength.Name="Width"	BSA-340
Height	Height of the door lining, to be provided for rectangular doors.		[COBIE2]: reqd - min one attribute worksheet "Height" row for each door type	M/O		IfcQuantityLength.Name="Height"	BSA-339
Area	Area of the door, including frame and lining.	Note: the area contains both, framing and glazing. The glazing area is defined by Area * GlazingAreaFraction	[COBIE2]: reqd - min one attribute worksheet "Area" row for each door type	M		IfcQuantityArea.Name="Area"	GSC-200

					exchange requirements for the "Basic HandOver to Facility Management"		Export	Import	IFC Model View Definition	
Object Type										
	Attribute Groups									
		Property	**Definitions and notes**	**Examples and further explanations**	**Comments**		**Export**	**Import**	**IFC Model Representation**	**MVD binding**
	Door properties								IfcPropertySet (through relationship IfcRelDefinedByProperties)	GDC-201
		Door Common Properies	Properties that are specified in the standard property definitions (or a relevant subset of)		*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: object properties are assigned against Type.*		M		IfcPropertySet with Name = "Pset_DoorCommon"	GSC-202
			Fire resistance	String according to national building code	e.g. T90	*[COBIE2]: reqd - min one attribute worksheet "FireRating" row for each window type*	M		IfcPropertySingleValue with Name = "FireRating"	GSC-180
			Glazing area	Provided as a fraction of the total door area	e.g. 0.2 (for 20%)	*[COBIE2]: reqd - min one attribute worksheet "GlazingPct" row for each window type*	M		IfcPropertySingleValue with Name = "GlazingAreaFraction"	GSC-181
			Fire exit	Boolean choice whether fire exit door or not	FALSE	*[COBIE2]: reqd - min one attribute worksheet "IsFireExit" row for each window type*	M		IfcPropertySingleValue with Name = "FireExit"	GSC-204
			Internal/External	Indication whether it is an internal or external (part of the facade) door	TRUE (external) or FALSE (internal)	*[COBIE2]: reqd - min one attribute worksheet "IsExternal" row for each window type*	M		IfcPropertySingleValue with Name = "IsExternal"	ICC-272
		Door Manufacturer Properties	*Properties that are specified in the manufacturer property definitions (or a relevant subset of)*	*OPTIONAL for "Basic FM HandOver View"*	*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: manufacturer items are evaluated only on COBie2 construction files*		O		IfcPropertySet with Name = "Pset_ManufacturerTypeInformation"	GSC-255
			Article Number	*Article number or reference*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Component.SerialNumber*	O		IfcPropertySingleValue with Name = "ArticleNumber"	GSC-251
			Model Name	*The name of the manufactured item as used by the manufacturer.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ModelReference"	GSC-252
			Model Number	*The model number and/or unit designator assigned by the manufacturer*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Type.ModelNumber*	O		IfcPropertySingleValue with Name = "ModelLabel"	GSC-253
			Manufacturer	*The organization that manufactured and/or assembled the item.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Type.Manufacturer*	O		IfcPropertySingleValue with Name = "Manufacturer"	GSC-254
			Year of Production	*The year of production of the manufactured item.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ProductionYear"	GSC-260
	Spatial Container									GSC-026
		Doors contained in Building Story	A door can be contained in a building storey	either contained in building storey, or space (exactly one of both has to be provided)	*[FM-10]: if contained in building story, a space boundary to 1..2 spaces required* *[COBIE2]: components may only be installed within spaces in COBie2*		M/O		IfcRelContainedInSpatialStructure with .RelatingStructure = IfcBuildingStorey, and RelatedElements=[IfcWindow, other contained elements]	GSC-205
		Doors contained in Space	A door can be contained in a space	either contained in building storey, or space (if already assigned to a single space in architectural CAD)	*[General]: would normally require additional input in CAD system (i.e. the user to select the space the window belongs to)* *[COBIE2]: reqd - Component.Spacenames*		M/O		IfcRelContainedInSpatialStructure with .RelatingStructure = IfcStorey, and RelatedElements=[IfcWindow, other contained elements]	GSC-206
	Space Boundary									VBL-417
		Door bounding Space	A door can bound a single space (if external door, or two spaces (if internal door)		*[FM-10]: required, if not already contained in space* *[COBIE2]: all components may be identified in one or more spaces in COBie2*		M/O		IfcRelSpaceBoundary with RelatingSpace=IfcSpace, and RelatedElements=SELF	GSC-207

Object Type Attribute Groups Property	Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
			exchange requirements for the "Basic HandOver to Facility Management"			*IFC Model View Definition*	
Furnishing			*[COBIE2]: object classes must be strongly typed using the Type worksheet. Instances found in Component worksheet.*			**IfcFurnishingElement**	GSC-208
Furnishing Attributes							GSC-209
Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f61, has to be maintained by the application (e.g. for re-export)	*[FM-10]: software key, does not yield any human interpretation* *[COBIE2]: reqd if created by external system Component.ExtIdentifier*	M		IfcFurnishingElement.GlobalId	VBL-170
Name	Individual element name (for human reference)		*[COBIE2]: reqd - Component.Name*	M		IfcFurnishingElement.Name	GSC-210
Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd - Type.Description, no separate description for specific component*	O		IfcFurnishingElement.Description	GSC-211
Furnishing Type							GSC-212
Furnishing type name		e.g. chair, desk, table, …	*[COBIE2]: reqd if created by external system Type.ExtIdentifier*	M		IfcFurnishingElement.ObjectType	GSC-281
Furnishing Type	Reference to the common furniture type used for all occurrences of the furniture	required reference to a common type (family, style, etc.)	*[General]: Types are also called "style", or "family" in CAD software* *[COBIE2]: Type worksheet holds all COBie2 types*	M		IfcFurnitureType (through relationship IfcRelDefinesByType)	GSC-261
Name	Individual type name (for human reference)		*[COBIE2]: reqd - Type.Name*	M		IfcFurnitureType.Name	GSC-213
Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd - Type.Description*	O		IfcFurnitureType.Description	GSC-262
Type	*Furnishing type as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* e.g. chair, desk, table, …	*[General]: if a furnishing type is provided at both, IfcFurnishingElement and IfcFurnitureType, then the type at IfcFurnishingElement overrides.* *[COBIE2]: reqd - min one attribute worksheet "Type" row for each furnishing type*	O		IfcFurnitureType.ElementType	GSC-282
Material	*Material as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* material information as shown below for element materials	*[General]: if a material is provided at both, IfcFurnishingElement and IfcFurnitureType, then the material at IfcFurnishingElement overrides.* *[COBIE2]: reqd - min one attribute worksheet "Material" row for each furnishing type*	O		IfcMaterial, or IfcMaterialLayerSet (through relationsip IfcRelAssociatesMaterial)	GSC-215
Classification	*Classification as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* classification information as shown below for element classification	*[General]: if a furnishing classification is provided at both, IfcFurnishingElement and IfcFurnitureType, then the classification at IfcFurnishingElement overrides.* *[COBIE2]: see Classification below*	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-217
Properties	*Properties as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* property set information as shown below for element properties	*[General]: if a furnishing property is provided at both, IfcFurnishingElement and IfcFurnitureType, then the property at IfcFurnishingElement overrides.* *[COBIE2]: properties of individual components that differ from type must be reported as properties of the Component.*	O		IfcPropertySet (through relationship IfcRelDefinesByType and IfcFunitureType.HasPropertySets)	GSC-218
Furnishing Material							GSC-215
Material	base material for furniture			O		IfcMaterial (through relationsip IfcRelAssociatesMaterial)	
Material name	name of the material		*[COBIE2]: see previous note on Material Property*	O		IfcMaterial.Name	GSC-174
Furnishing Classification							GSC-217

Object Type / Attribute Groups / Property	Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
Classification	Furniture classification	*USED for "Basic FM HandOver View", requires to specify a classification system*	*[General]: In particular interesting for data exchange between CAFM* *[COBIE2]: reqd - Type.Category first value of delimited list*	M		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
Classification Item Key	Key of classification item within the classification system		*[COBIE2]: n/a*	M		IfcClassificationReference.ItemReference	(incl)
Classification Item Name	Clear name of the classification item		*[COBIE2]: regional specification (Omniclass Table 23 in NA)*	M		IfcClassificationReference.Name	(incl)
Classification System Name	Name of the classification system		*[COBIE2]: reqd - min one attribute worksheet "Material" row for each furnishing type*	M		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)
Classification System ID	*Identifyer of the classification system*		*[COBIE2]: see Classification below*	-		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
Furnishing properties						IfcPropertySet for IfcFurnishingElement (through relationship IfcRelDefinesByProperties)	GSC-218
Furniture Common Properies	Properties that are specified in the standard property definitions (or a relevant subset of)		*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: object properties are assigned against Type.*	O		IfcPropertySet with Name = "Pset_FurnitureTypeCommon"	GSc-219
Length	Overall length as provided by the manufacturer data.		*[COBIE2]: reqd - min one attribute worksheet "Width" row for each furnishing type*	O		IfcPropertySingleValue with Name = "NominalLength"	GSC-220
Depth	Overall depth as provided by the manufacturer data.		*[COBIE2]: reqd - min one attribute worksheet "Height" row for each furnishing type*	O		IfcPropertySingleValue with Name = "NominalDepth"	GSC-221
Height	Overall height as provided by the manufacturer data.		*[COBIE2]: reqd - min one attribute worksheet "Area" row for each furnishing type*	O		IfcPropertySingleValue with Name = "NominalHeight"	GSC-222
Furnishing Manufacturer Properties	*Properties that are specified in the manufacturer property definitions (or a relevant subset of)*	*OPTIONAL for "Basic FM HandOver View"*	*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: manufacturer items are evaluated only on COBie2 construction files*	O		IfcPropertySet with Name = "Pset_ManufacturerTypeInformation"	GSC-256
Article Number	*Article number or reference*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Component.SerialNumber*	O		IfcPropertySingleValue with Name = "ArticleNumber"	GSC-251
Model Name	*The name of the manufactured item as used by the manufacturer.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ModelReference"	GSC-252
Model Number	*The model number and/or unit designator assigned by the manufacturer*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Type.ModelNumber*	O		IfcPropertySingleValue with Name = "ModelLabel"	GSC-253
Manufacturer	*The organization that manufactured and/or assembled the item.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd (only construction) - Type.Manufacturer*	O		IfcPropertySingleValue with Name = "Manufacturer"	GSC-254
Year of Production	*The year of production of the manufactured item.*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ProductionYear"	GSC-260
Spatial Container							GSC-026

Table header banner: **exchange requirements for the "Basic HandOver to Facility Management"**   *IFC Model View Definition* — buildingSMART

			exchange requirements for the "Basic HandOver to Facility Management"		Export	Import	IFC Model View Definition	

Object Type
   Attribute Groups
     Property
		Definitions and notes	**Examples and further explanations**	**Comments**			**IFC Model Representation**	**MVD binding**

	~~Furniture contained in Building Story~~	*A furniture can be contained in a building storey*	Contained in building storey only in exceptional cases. I.e. on export certification checks on assignment to space, on import certification checks exception handling for furniture in building story	[General]: for import the ability has to be provided to accept furniture on storey [COBIE2]: components may only be installed within spaces in COBie2	N	M	IfcRelContainedInSpatialStructure with .RelatingStructure = IfcBuildingStorey, and RelatedElements=[IfcWindow, other contained elements]	GSC-223
	Furniture contained in Space	A furniture can be contained in a space	either contained in building storey, or space (assignment to space is required for all standard configurations)	[General]: for export the ability to assign furniture to space is essential and has to be provided [COBIE2]: reqd - Component.Spacenames	M		IfcRelContainedInSpatialStructure with .RelatingStructure = IfcStorey, and RelatedElements=[IfcWindow, other contained elements]	GSC-224
Building service elements (MEP elements)			as far as it is in scope of the architectural software application, to be in scope of MEP software	[COBIE2]: object classes must be strongly typed using the Type worksheet. Instances found in Component worksheet.			**IfcDistributionElement** (and subtypes)	GSC-258
	MEP Attributes							GSC-259
	Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f81, has to be maintained by the application (e.g. for re-export)	[FM-10]: software key, does not yield any human interpretation [COBIE2]: reqd if created by external system Component.ExtIdentifier	M		IfcDistributionElement.GlobalId	VBL-170
	Name	Individual element name (for human reference)		[COBIE2]: reqd - Component.Name	M		IfcDistributionElement.Name	GSC-216
	Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	[COBIE2]: reqd - Type.Description, no separate description for specific component	O		IfcDistributionElement.Description	GSC-203
	MEP Type							GSC-146
	MEP type name			[COBIE2]: reqd if created by external system Type.ExtIdentifier	M		IfcDistributionElement.ObjectType	GSC-283
	MEP Type	Reference to the common MEP type used for all occurrences of the MEP element	REQUIRED for "Basic FM HandOver View" for MEP Software	[FM-10]: Types are also called "style", or "family" in CAD software [COBIE2]: Type worksheet holds all COBie2 types	M		IfcDistributionElementType(subtypes) (through relationship IfcRelDefinesByType)	GSC-263
		Name	Individual type name (for human reference)	required human interpretable name	[COBIE2]: reqd - Type.Name	M		IfcDistributionElementType(subtypes) .Name	GSC-147
		Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	[COBIE2]: reqd - Type.Description	O		IfcDistributionElementType(subtypes) .Description	GSC-264
		Type	*MEP type as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* *type enumerator specific to the subtype of IfcDistributionElementType*	[COBIE2]: reqd - min one attribute worksheet "Type" row for each furnishing type	O		IfcDistributionElementType(subtypes) .ElementType	GSC-284
		Material	*Material as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* *material information as shown below for element materials*	[General]: if a material is provided at both, IfcDistributionlement and IfcDistributionElementType, then the material at IfcDistributionElement overrides. [COBIE2]: reqd - min one attribute worksheet "Material" row for each furnishing type	O		IfcMaterial, or IfcMaterialLayerSet (through relationsip IfcRelAssociatesMaterial)	GSC-266
		Classification	*Classification as assigned to the type*	*OPTIONAL for "Basic FM HandOver View"* *classification information as shown below for element classification*	[General]: if a classification is provided at both, IfcDistributionElement and IfcDistributionElementType, then the classification at IfcDistributionElement overrides. [COBIE2]: see classification below	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-265

exchange requirements for the "Basic HandOver to Facility Management"				Export	Import	IFC Model View Definition	

Object Type
    Attribute Groups
        Property
	Definitions and notes	**Examples and further explanations**	**Comments**			**IFC Model Representation**	**MVD binding**

Properties	Properties as assigned to the type	OPTIONAL for "Basic FM HandOver View" property set information as shown below for element properties	*[General]: if a property is provided at both, IfcDistributionElement and IfcDistributionElementType, then the property at IfcDistributionElement overrides.* *[COBIE2]: properties of individual components that differ from type must be reported as properties of the Component.*	O		IfcPropertySet (through relationship IfcRelDefinesByType and IfcDistributionElementType(subtypes) .HasPropertySets)	GSC-267
MEP Material							GSC-266
Material	base material for MEP element	OPTIONAL for "Basic FM HandOver View"		O		IfcMaterial (through relationsip IfcRelAssociatesMaterial)	
Material name	name of the material	OPTIONAL for "Basic FM HandOver View"	*[COBIE2]: n/a*	O		IfcMaterial.Name	GSC-174
MEP Classification			*[COBIE2]: see classification below*				GSC-265
Classification	FFE classification	REQUIRED for "Basic FM HandOver View" for MEP Software	*[General]: In particular interesting for data exchange between CAFM*	M		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
Classification Item Key	Key of classification item within the classification system		*[COBIE2]: reqd - Type.Category first value of delimited list*	M		IfcClassificationReference.ItemReferenc e	(incl)
Classification Item Name	Clear name of the classification item		*[COBIE2]: reqd - Type.Category first value of delimited list*	M		IfcClassificationReference.Name	(incl)
Classification System Name	Name of the classification system		*[COBIE2]: n/a*	M		IfcClassification.Name (through IfcClassificationReference.ReferencedSo urce)	(incl)
~~Classification System ID~~	Identifyer of the classification system		*[COBIE2]: regional specification (Omniclass Table 23 in NA)*	-		IfcClassification.Source (through IfcClassificationReference.ReferencedSo urce)	(incl)
MEP properties						IfcPropertySet for IfcDistributionElement(subtypes) (through relationship IfcRelDefinesByProperties)	GSC-267
MEP Common Properies	*Properties that are specified in the standard property definitions (or a relevant subset of)*		*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: object properties are assigned against Type.*	M		IfcPropertySet with Name = "Pset_DistributionFlowElementCommo n", or other	GSC-268
Reference	*Reference ID for this specific instance (e.g. 'WWS/VS1/400/001',*	e.g. the "AKS Nummer"	*[COBIE2]: optional - put in Attribute worksheet if used*	M		IfcPropertySingleValue with Name = "Reference"	ATC-009
MEP Manufacturer Properties	*Properties that are specified in the manufacturer property definitions (or a relevant subset of)*	OPTIONAL for "Basic FM HandOver View"	*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: manufacturer items are evaluated only on COBie2 construction files*	O		IfcPropertySet with Name = "Pset_ManufacturerTypeInformation"	GSC-269
Article Number	*Article number or reference*	OPTIONAL for "Basic FM HandOver View"	*[COBIE2]: reqd (only construction) - Component.SerialNumber*	O		IfcPropertySingleValue with Name = "ArticleNumber"	GSC-251
Model Name	*The name of the manufactured item as used by the manufacturer.*	OPTIONAL for "Basic FM HandOver View"	*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ModelReference"	GSC-252
Model Number	*The model number and/or unit designator assigned by the manufacturer*	OPTIONAL for "Basic FM HandOver View"	*[COBIE2]: reqd (only construction) - Type.ModelNumber*	O		IfcPropertySingleValue with Name = "ModelLabel"	GSC-253
Manufacturer	*The organization that manufactured and/or assembled the item.*	OPTIONAL for "Basic FM HandOver View"	*[COBIE2]: reqd (only construction) - Type.Manufacturer*	O		IfcPropertySingleValue with Name = "Manufacturer"	GSC-254

					exchange requirements for the "Basic HandOver to Facility Management"				Export	Import	IFC Model View Definition	
Object Type												**MVD binding**
	Attribute Groups											
		Property	**Definitions and notes**		**Examples and further explanations**	**Comments**					**IFC Model Representation**	
		Year of Production	*The year of production of the manufactured item.*		*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: optional - put in Attribute worksheet if used*			O		IfcPropertySingleValue with Name = "ProductionYear"	GSC-260
	Spatial Container											GSC-026
		~~MEP contained in Building Story~~	*An MEP element can be contained in a building storey, to be used ONLY, if the MEP element spans between two or more spaces*		either contained in building storey, or space (exactly one of both has to be provided) - to building story shall not be included (as far as possible)	*[General]: for import the ability has to be provided to accept furniture on storey* *[COBIE2]: Components may only be placed within specifically named spaces*			N	M	IfcRelContainedInSpatialStructure with .RelatingStructure = IfcBuildingStorey, and RelatedElements=[IfcDistributionElement, other contained elements]	GSC-270
		MEP contained in Space	A MEP element is contained in a space		either contained in building storey, or space (assignment to space is required for all standard configurations)	*[General]: for export the ability to assign furniture to space is essential and has to be provided* *[COBIE2]: reqd - Component.SpaceNames*			M		IfcRelContainedInSpatialStructure with .RelatingStructure = IfcStorey, and RelatedElements=[IfcDistributionElement, other contained elements]	GSC-271
Any other furniture, fixture and equipment					as far as it is in scope of the architectural software application, to be in scope of MEP software known semantic types have to be exchanged as subtypes of furniture or distribution element. Proxies only supported as exceptional fallbacks	*[FM-10]: on export only in exceptional cases, on import a proper exception handling shall be provided.* *[COBIE2]: object classes must be strongly typed using the Type worksheet. Instances found in Component worksheet. All ifcTypes to be included except: IfcWallType, IfcSlabType, IfcBeamType, IfcColumnType, IfcMemberType, IfcPlateType, IfcRailingType, IfcStairFlightType, IfcCurtainWallType, IfcRampFlightType*					**IfcBuildingElementProxy**	GSC-225
	Proxy Attributes											GSC-226
		Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object		70ce2f2b-a5f8-4ab7-bc7f-6a838a353f81, has to be maintained by the application (e.g. for re-export)	*[General]: software key, does not yield any human interpretation* *[COBIE2]: reqd if created by external system Component.ExtIdentifier*			M		IfcBuildingElementProxy.GlobalId	VBL-170
		Name	Individual element name (for human reference)			*[COBIE2]: reqd - Component.Name*			M		IfcBuildingElementProxy.Name	GSC-227
		Description	*Additional description*		*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: reqd - Type.Description, no separate description for specific component*			O		IfcBuildingElementProxy.Description	GSC-228
	Proxy Type					*[COBIE2]: Type worksheet holds all COBie2 types*						GSC-229
		Proxy type name				*[COBIE2]: reqd if created by external system Type.ExtIdentifier*			O		IfcBuildingElementProxy.ObjectType	GSC-285
		Proxy Type	*Reference to the common FFE type used for all occurrences of the FFE*		*OPTIONAL for "Basic FM HandOver View"*	*[General]: Types are also called "style", or "family" in CAD software* *[COBIE2]: Type worksheet holds all COBie2 types*			O		IfcBuildingElementProxyType (and subtypes) (through relationship IfcRelDefinesByType)	GSC-231
			Name	*Individual type name (for human reference)*		*[COBIE2]: reqd - Type.Name*			O		IfcBuildingElementProxyType(subtypes).Name	GSC-230
			Description	*Additional description*		*[COBIE2]: reqd - Type.Description*			O		IfcBuildingElementProxyType(subtypes).Description	GSC-272
			Type	*FFE type as assigned to the type*		*[COBIE2]: reqd - min one attribute worksheet "Type" row for each furnishing type*			O		IfcBuildingElementProxyType(subtypes).ElementType	GSC-286

		exchange requirements for the "Basic HandOver to Facility Management"			Export	Import	IFC Model View Definition	
Object Type **Attribute Groups** **Property**		**Definitions and notes**	**Examples and further explanations**	**Comments**			**IFC Model Representation**	**MVD binding**
	Material	*Material as assigned to the type*	*material information as shown below for element materials*	[General]: if a material is provided at both, IfcBuildingElementProxy and IfcBuildingElementProxyType, then the material at IfcBuildingElementProxy overrides. [COBIE2]: reqd - min one attribute worksheet "Material" row for each furnishing type	O		IfcMaterial, or IfcMaterialLayerSet (through relationsip IfcRelAssociatesMaterial)	GSC-232
	Classification	*Classification as assigned to the type*	*classification information as shown below for element classification*	[General]: if a classification is provided at both, IfcBuildingElementProxy and IfcBuildingElementProxyType, then the classification at IfcBuildingElementProxy overrides. [COBIE2]: see classification below	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-233
	Properties	*Properties as assigned to the type*	*property set information as shown below for element properties*	[General]: if a property is provided at both, IfcBuildingElementProxy and IfcBuildingElementProxyType, then the property at IfcBuildingElementProxy overrides. [COBIE2]: properties of individual components that differ from type must be reported as properties of the Component.	O		IfcPropertySet (through relationship IfcRelDefinesByType and IfcDistributionElementType(subtypes) .HasPropertySets)	GSC-234
Proxy Material								GSC-232
	Material	*base material for FFE*	*OPTIONAL for "Basic FM HandOver View"*		O		IfcMaterial (through relationsip IfcRelAssociatesMaterial)	
		Material name	*name of the material*	*OPTIONAL for "Basic FM HandOver View"*	[COBIE2]: n/a	O		IfcMaterial.Name	GSC-174
Proxy Classification								GSC-233
	Classification	*Proxy classification*	*USED for "Basic FM HandOver View", requires to specify a classification system*	[General]: In particular interesting for data exchange between CAFM	M		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
		Classification Item Key	*Key of classification item within the classification system*		[COBIE2]: reqd - Type.Category first value of delimited list	M		IfcClassificationReference.ItemReference	(incl)
		Classification Item Name	*Clear name of the classification item*		[COBIE2]: reqd - Type.Category first value of delimited list	M		IfcClassificationReference.Name	(incl)
		Classification System Name	*Name of the classification system*		[COBIE2]: n/a	M		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)
		~~Classification System ID~~	*Identifyer of the classification system*		[COBIE2]: regional specification (Omniclass Table 23 in NA)	-		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
Proxy properties								GSC-234
	Proxy Common Properies	*Properties that are specified in the standard property definitions (or a relevant subset of)*	*OPTIONAL for "Basic FM HandOver View"*	[General]: relevant subset of required properties need to be defined out of the standard properties [COBIE2]: object properties are assigned against Type.	O		IfcPropertySet with Name = "Pset_BuildingElementProxyCommon", or other	GSC-235
		Reference	*Reference ID for this specific instance (e.g. 'WWS/VS1/400/001',*	*e.g. the "AKS Nummer"*	[COBIE2]: optional - put in Attribute worksheet if used	O		IfcPropertySingleValue with Name = "Reference"	ATC-009

		exchange requirements for the "Basic HandOver to Facility Management"			Export	Import	IFC Model View Definition	
Object Type 　**Attribute Groups** 　　**Property**		**Definitions and notes**	**Examples and further explanations**	**Comments**	**Export**	**Import**	**IFC Model Representation**	**MVD binding**
Proxy Manufacturer Properties		*Properties that are specified in the manufacturer property definitions (or a relevant subset of)*		*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: manufacturer items are evaluated only on COBie2 construction files*	O		IfcPropertySet with Name = "Pset_ManufacturerTypeInformation"	GSC-273
	Article Number	*Article number or reference*		*[COBIE2]: reqd (construction) - Component.SerialNumber*	O		IfcPropertySingleValue with Name = "ArticleNumber"	GSC-251
	Model Name	*The name of the manufactured item as used by the manufacturer.*		*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ModelReference"	GSC-252
	Model Number	*The model number and/or unit designator assigned by the manufacturer*		*[COBIE2]: reqd (construction) - Type.ModelNumber*	O		IfcPropertySingleValue with Name = "ModelLabel"	GSC-253
	Manufacturer	*The organization that manufactured and/or assembled the item.*		*[COBIE2]: reqd (construction) - Type.Manufacturer*	O		IfcPropertySingleValue with Name = "Manufacturer"	GSC-254
	Year of Production	*The year of production of the manufactured item.*		*[COBIE2]: optional - put in Attribute worksheet if used*	O		IfcPropertySingleValue with Name = "ProductionYear"	GSC-260
Spatial Container								GSC-026
	~~Proxy contained in Building Story~~	*An proxy can be contained in a building storey*	either contained in building storey, or space (exactly one of both has to be provided) - to building story shall not be included (as far as possible)	*[General]: for import the ability has to be provided to accept furniture on storey* *[COBIE2]: Components may only be placed within specifically named spaces*	N	M	IfcRelContainedInSpatialStructure with .RelatingStructure = IfcBuildingStorey, and RelatedElements=[IfcBuildingElementProxy, other contained elements]	GSC-236
	Proxy contained in Space	A proxy can be contained in a space	either contained in building storey, or space (assignment to space is required for all standard configurations)	*[General]: for export the ability to assign furniture to space is essential and has to be provided* *[COBIE2]: reqd - Component.SpaceNames*	M		IfcRelContainedInSpatialStructure with .RelatingStructure = IfcStorey, and RelatedElements=[IfcBuildingElementProxy, other contained elements]	GSC-237
Zone as a logical grouping of spaces			if in scope of the architectural software	*[COBIE2]: zones are required in COBie2 files. Zones defined shared space functionality.*			**IfcZone**	VBL-270
	Zone Attributes							ICC-239
	Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software object	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f81, has to be maintained by the application (e.g. for re-export)	*[FM-10]: software key, does not yield any human interpretation* *[COBIE2]: reqd if created by external system Zone.ExtIdentifier*	M		IfcZone.GlobalId	VBL-170
	Name	Individual element name (for human reference)		*[COBIE2]: reqd - Zone.Name*	M		IfcZone.Name	ICC-240
	Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: n/a*	O		IfcZone.Description	GSC-248
	Zone Classification							GSC-249
	Classification	*Zone classification*	*OPTIONAL for "Basic FM HandOver View", requires to specify a classification system*	*[General]: In particular interesting for data exchange between CAFM*	O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
	Classification Item Key	*Key of classification item within the classification system*		*[COBIE2]: Primary key for zoning is Zone.Name and Zone.Category*	O		IfcClassificationReference.ItemReference	(incl)
	Classification Item Name	*Clear name of the classification item*		*[COBIE2]: reqd - Zone.Category Default values: Circulation, Lighting, Fire, Historical, Occupancy, Ventilation*	O		IfcClassificationReference.Name	(incl)
	Classification System Name	*Name of the classification system*		*[COBIE2]: n/a*	O		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)

Object Type / Attribute Groups / Property	Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
Classification System ID	*Identifyer of the classification system*		*[COBIE2]: Classification system self-defined within COBie2 pick lists.*	-		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
Zone properties							GSC-249
Zone Common Properies	*Properties that are specified in the standard property definitions (or a relevant subset of)*		*[General]: relevant subset of required properties need to be defined out of the standard properties* *[COBIE2]: n/a*	O		IfcPropertySet with Name = "Pset_ZoneCommon"	GSC-244
Reference	*Reference ID for this specific instance (e.g. 'WWS/VS1/400/001',*		*[COBIE2]: n/a*	O		IfcPropertySingleValue with Name = "Reference"	ATC-009
Spatial Zone Assignment							ICC-243
Grouping of system components							
Spaces assigned to zone	*Assignement of individual spaces that belong to the zone for organizational or other purposes*	e.g. assigning all spaces to a flat, or to an office unit.	*[COBIE2]: reqd - Zone.SpaceNames*	M		IfcRelAssignsToGroup with .RelatingGroup = IfcZone, and .RelatedObjects = all IfcSpace's belonging to the zone	GSC-050
Sub zones assigned to zone	*Assignment of sub zone to a parent zone*	*e.g. assigning the high security zone to the general security zone*		O		IfcRelAssignsToGroup with .RelatingGroup = IfcSystem, and .RelatedObjects = IfcZone (the sub zone)	
System as a logical grouping of elements		as far as it is in scope of the architectural software application, to be in scope of MEP software	*[COBIE2]: systems are rquired in COBie2 files. Systems define shared component functionality*			**IfcSystem**	VBL-269
System Attributes							GSC-079
Software unique id	Object identifier (formated as GUID or UUID) to uniquely identify the software obiect	70ce2f2b-a5f8-4ab7-bc7f-6a838a353f81, has to be maintained by the application (e.g. for re-export)	*[FM-10]: software key, does not yield any human interpretation* *[COBIE2]: reqd if created by external system Zone.ExtIdentifier*	M		IfcSystem.GlobalId	VBL-170
Name	Individual element name (for human reference)		*[COBIE2]: reqd - Zone.Name*	M		IfcSystem.Name	GSC-094
Description	*Additional description*	*OPTIONAL for "Basic FM HandOver View"*	*[COBIE2]: n/a*	O		IfcSystem.Description	ICC-500
System Classification							GSC-096
Classification	System classification	REQUIRED for "Basic FM HandOver View" for MEP Software	*[General]: In particular interesting for data exchange between CAFM*	M/O		IfcClassificationReference (through relationship IfcRelAssociatesClassification)	GSC-036
Classification Item Key	Key of classification item within the classification system		*[COBIE2]: reqd - System.Category first value of delimited list*	M/O		IfcClassificationReference.ItemReference	(incl)
Classification Item Name	Clear name of the classification item		*[COBIE2]: reqd - System.Category first value of delimited list*	M/O		IfcClassificationReference.Name	(incl)
Classification System Name	Name of the classification system		*[COBIE2]: n/a*	M/O		IfcClassification.Name (through IfcClassificationReference.ReferencedSource)	(incl)
Classification System ID	*Identifyer of the classification system*		*[COBIE2]: regional specification (Omniclass Table 21 in NA)*	-		IfcClassification.Source (through IfcClassificationReference.ReferencedSource)	(incl)
System properties							GSC-100

| | | | | | | exchange requirements for the "Basic HandOver to Facility Management" | | | IFC Model View Definition | |

Object Type Attribute Groups Property			Definitions and notes	Examples and further explanations	Comments	Export	Import	IFC Model Representation	MVD binding
	System Common Properies		*Properties that are specified in the standard property definitions (or a relevant subset of)*		*[General]: relevant subset of required properties need to be defined out of the standard properties [COBIE2]: n/a*	O		IfcPropertySet with Name = "Pset_ZoneCommon"	GSC-120
		Reference	*Reference ID for this specific instance (e.g. 'WWS/VS1/400/001',*	*e.g. the "AKS Nummer"*	*[COBIE2]: n/a*	O		IfcPropertySingleValue with Name = "Reference"	ATC-009
Component System Assignment									GSC-121
	Grouping of system components								
		Components assigned to system	Assignment of individual components that belong to the MEP system	e.g. assigning all MEP components belonging to a heating system, or a cold water system. Systems can have sub-systems.	*[COBIE2]: reqd - System.ComponentNames*	M		IfcRelAssignsToGroup with .RelatingGroup = IfcSystem, and .RelatedObjects = all components (subtypes of IfcDistributionElement) belonging to the system, or IfcSystem's being sub-systems	GSC-132
		Sub systems assigned to system	*Assignment of sub systems to a parent system*	*e.g. assigning the left wing heating system to the building heating system*		O		IfcRelAssignsToGroup with .RelatingGroup = IfcSystem, and .RelatedObjects = IfcSystem (the sub system)	
System Services Buildings									VBL-163
	System assigned to building structure		Assignment of the system to the level of the building structure, it serves					IfcRelAssignsToGroup with .RelatingGroup = IfcSystem, and .RelatedBuildings = levels of the building structure	GSC-133
		System assigned to story		e.g. a horizontal system only serving one or several building stories	*[COBIE2]: location of systems inferred from Component.SpaceNames referenced within System.ComponentNames*	M/O		with .RelatedBuildings = [1...n] IfcBuildingStorey	GSC-175
		System assigned to building		*e.g. a vertical system serving a whole building or building section*	*[COBIE2]: one building allowed per COBie2 file*	M/O		with .RelatedBuildings = [1...n] IfcBuilding	GSC-176
		System assigned to site		*e.g. an MEP system for delivering services on the site to the building*		M/O		with .RelatedBuildings = [1...1] IfcSite	

Legend

Property in black	required for "Basic FM Handover View"	see further explanations for restrictions, e.g only for MEP software, etc	a required property should be exported by the application, if provided as part of the data set by the user (e.g. by a property configuration, etc.). A required property should be imported, when part of the IFC data set.	M	M	M/O = one alternative is mandatory
Property in grey and italics	OPTIONAL for "Basic FM Handover View"	see further explanations for restrictions, e.g REQUIRED for MEP software, CAFM, etc		O	O	M/O = one alternative is mandatory
~~*Property in grey italic and strike through*~~	NOT USED for "Basic FM Handover View"			-	-	
~~Property in red and strike through~~	NOT ALLOWED for "Basic FM Handover View"		it is illegal to export such a property as part of the "Basic FM Handover View"	N	N	