IFC Rail Phase 2 Final Report

WP3 – Property Set Report

Overview of WP3 of IFC Rail Phase 2 project. It describes property sets defined by IFC Rail team, which are a part of IFC 4.3 Specification and provide input to buildingSMART Data Dictionary (bSDD).

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Date:	*March 2022*
Authors (Alphabetical):	*IFC Rail Team*

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1 Introduction

This document is built to summarize the scope, process, and results of Work Package 3 (WP3) of IFC Rail Phase 2 project. It is part of the official deliverables of IFC Rail Phase 2 project, as shown in Figure 1 below. Please refer to the *IFC Rail Phase 2 Final Report: Executive Summary* for further details.
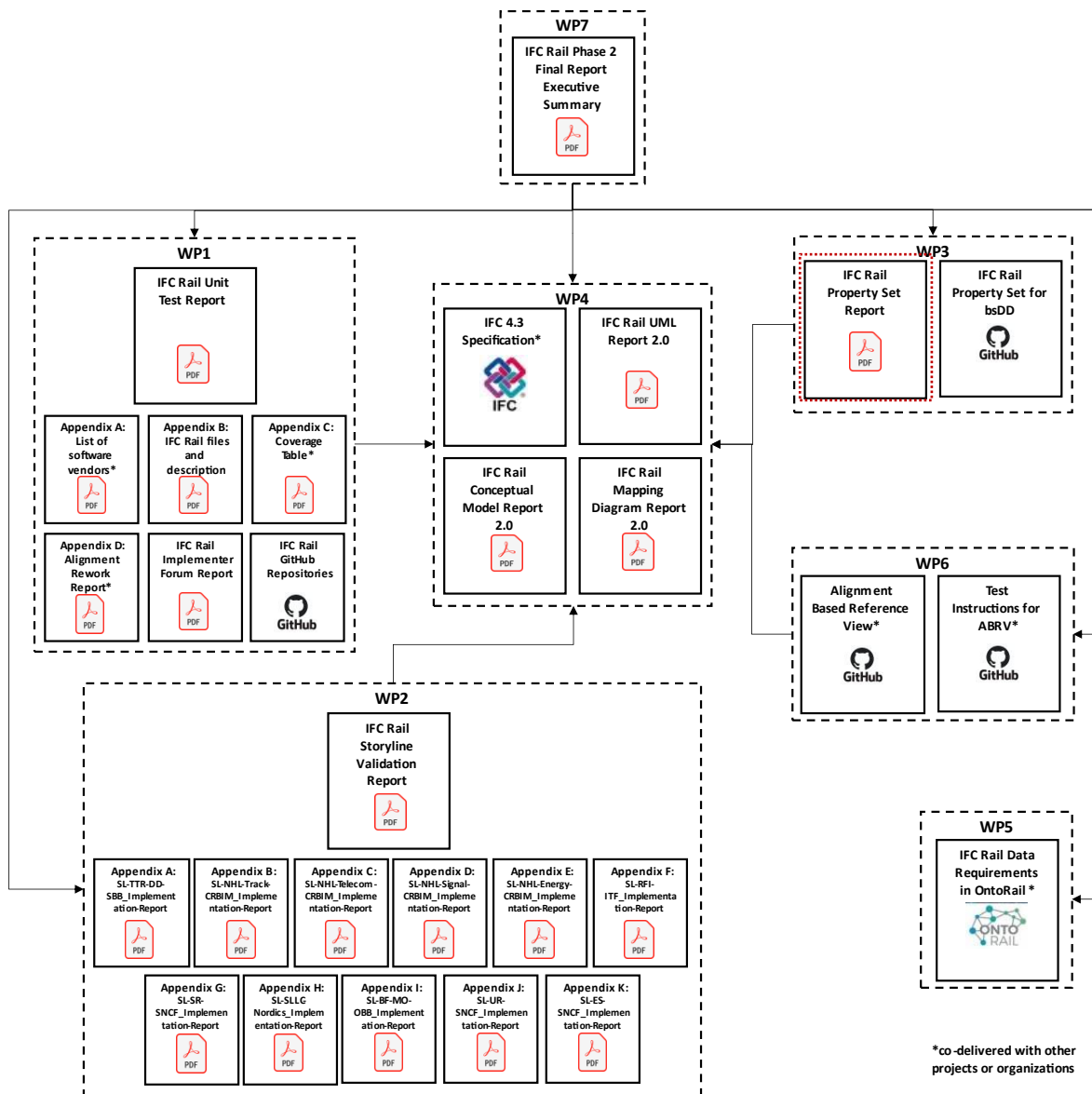
Figure 1 The position of this document in the structure of deliverables

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This document reports the work of property sets of IFC Rail Phase 2 project. Property sets are defined based on IFC Rail Data Requirements[1], and they are mapped to existing or extended properties in IFC 4.3. As a part of IFC 4.3 standard, property sets are also maintained in buildingSMART Data Dictionary (bSDD). This document reports the scope and process of this work (Chapter 2), overview of property sets (Chapter 2), and detailed UML diagrams (Chapter 3). The link to the official buildingSMART GitHub that maintains property sets for IFC and bSDD is provided in Appendix A, and Appendix B specifies the mappings from Data Requirements to properties.

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[1] Data Requirements Report from IFC Rail is available on: https://buildingsmart-1xbd3ajdayi.netdna-ssl.com/wp-content/uploads/2019/10/RWR-IFC_Rail-Data_Requirements_Report_-_.pdf.

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1.1   Scope

Property sets are defined based Data Requirements from IFC Rail project. The scope covers four domains organized by IFC Rail project. In IFC Rail Phase 2 project, the alignment and linear referencing topics are revisited, and some property sets are defined for them. The focused domains and topics are listed as follows:

- *Alignment with Cant*
- *Linear Referencing*
- *Track*
- *Energy*
- *Signalling*
- *Telecommunication*

As IFC is an data model that integrates all the focused domains and topics according to the architecture of IFC, property sets have to be shuffled and harmonized accordingly. Therefore, in this document, property sets are reported based on the IFC structure.

1.2   Process

The starting point of this process is Data Requirements that are maintained in BIMQ, which is a proprietary application used by IFC Rail project. Property sets are exported from BIMQ and imported into ifcDoc. The detailed steps are specified as follows:

- Existing properties in IFC 4.3 are imported into BIMQ
- Data Requirements are mapped to new or existing properties based on IFC 4.3 in BIMQ
- Property sets are exported from BIMQ and imported into ifcDoc repository maintained in GitHub. They are grouped into GitHub pull requests by applicable entities
- Each pull request that contains new or updated property sets are reviewed manually and harmonized based on the criteria of IFC documentation. This process also makes sure that property sets comply to the ISO 23386 standard.
- Finished property sets are exported from ifcDoc repository and delivered to the official buildingSMART repository for maintaining IFC and bSDD property sets.

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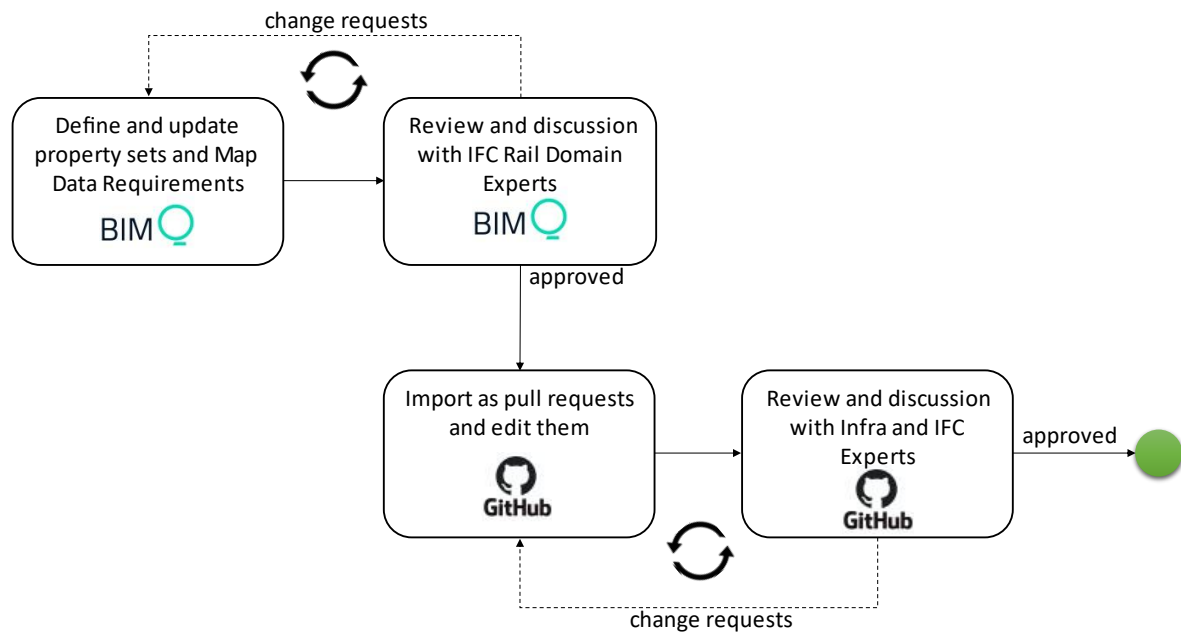
Figure 2 General process for defining property sets for railway

2 Overview of Property Sets

2.1 Added Property Sets

There are 156 new property sets and quantity sets added by IFC Rail project. They are listed as follows:

Table 1 Added property setsss

Property Set Name	Applicable Entities
Pset_AlignmentCantSegmentCommon	IfcAlignmentSegment
Pset_AlignmentVerticalSegmentCommon	IfcAlignmentSegment
Pset_AudioVisualApplianceTypeRailwayCommunicationTerminal	IfcAudioVisualAppliance/COMMUNICATIONTERMINAL
Pset_AudioVisualApplianceTypeRecordingEquipment	IfcAudioVisualAppliance/RECORDINGEQUIPMENT
Pset_AxleCountingEquipment	IfcSensor/WHEELSENSOR
Pset_BalanceWeightTensionerDesignCriteria	IfcDiscreteAccessory/TENSIONINGEQUIPMENT
Pset_BuiltSystemRailwayLine	IfcBuiltSystem/USERDEFINED
Pset_BuiltSystemTrack	IfcBuiltSystem/USERDEFINED
Pset_CableCarrierSegmentTypeCatenaryWire	IfcCableCarrierSegment/CATENARYWIRE
Pset_CableCarrierSegmentTypeDropper	IfcCableCarrierSegment/DROPPER
Pset_CableFittingTypeExit	IfcCableFitting/EXIT
Pset_CableFittingTypeFanout	IfcCableFitting/FANOUT

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Pset_CableSegmentConnector	IfcCableSegment
Pset_CableSegmentOccurenceFiberSegment	IfcCableSegment/FIBERSEGMENT
Pset_CableSegmentTypeContactWire	IfcCableSegment/CONTACTWIRESEGMENT
Pset_CableSegmentTypeEarthingConductor	IfcCableSegment/CONDUCTORSEGMENT
Pset_CableSegmentTypeFiberSegment	IfcCableSegment/FIBERSEGMENT
Pset_CableSegmentTypeFiberTubeSegment	IfcCableSegment/FIBERTUBE
Pset_CableSegmentTypeOpticalCableSegment	IfcCableSegment/OPTICALCABLESEGMENT
Pset_CableSegmentTypeStitchWire	IfcCableSegment/STITCHWIRE
Pset_CableSegmentTypeWirePairSegment	IfcCableSegment/WIREPAIRSEGMENT
Pset_CessBetweenRails	IfcSlab/TRACKSLAB
Pset_CoaxialCable	IfcCableSegment/CABLESEGMENT
Pset_CommunicationsApplianceTypeAntenna	IfcCommunicationsAppliance/ANTENNA
Pset_CommunicationsApplianceTypeAutomaton	IfcCommunicationsAppliance/AUTOMATON
Pset_CommunicationsApplianceTypeComputer	IfcCommunicationsAppliance/COMPUTER
Pset_CommunicationsApplianceTypeGateway	IfcCommunicationsAppliance/GATEWAY
Pset_CommunicationsApplianceTypeIntelligentPeripheral	IfcCommunicationsAppliance/INTELLIGENTPERIPHERAL
Pset_CommunicationsApplianceTypeIpNetworkEquipment	IfcCommunicationsAppliance/IPNETWORKEQUIPMENT
Pset_CommunicationsApplianceTypeModem	IfcCommunicationsAppliance/MODEM
Pset_CommunicationsApplianceTypeOpticalLineTerminal	IfcCommunicationsAppliance/OPTICALLINETERMINAL
Pset_CommunicationsApplianceTypeOpticalNetworkUnit	IfcCommunicationsAppliance/OPTICALNETWORKUNIT
Pset_CommunicationsApplianceTypeTelecommand	IfcCommunicationsAppliance/TELECOMMAND
Pset_CommunicationsApplianceTypeTelephonyExchange	IfcCommunicationsAppliance/TELEPHONYEXCHANGE
Pset_CommunicationsApplianceTypeTransportEquipment	IfcCommunicationsAppliance/TRANSPORTEQUIPMENT
Pset_CoveringTypeMembrane	IfcCovering/MEMBRANE
Pset_CurrentInstrumentTransformer	IfcFlowInstrument/AMMETER, IfcFlowInstrument/COMBINED
Pset_DataTransmissionUnit	IfcCommunicationsAppliance/MODEM
Pset_DiscreteAccessoryTypeBracket	IfcDiscreteAccessory/BRACKET
Pset_DiscreteAccessoryTypeCableArranger	IfcDiscreteAccessory/CABLEARRANGER
Pset_DiscreteAccessoryTypeInsulator	IfcDiscreteAccessory/INSULATOR
Pset_DiscreteAccessoryTypeLock	IfcDiscreteAccessory/LOCK
Pset_DiscreteAccessoryTypeRailBrace	IfcDiscreteAccessory/RAILBRACE
Pset_DiscreteAccessoryTypeRailLubrication	IfcDiscreteAccessory/RAIL_LUBRICATION
Pset_DiscreteAccessoryTypeRailPad	IfcDiscreteAccessory/RAILPAD
Pset_DiscreteAccessoryTypeSlidingChair	IfcDiscreteAccessory/SLIDINGCHAIR

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Pset_DiscreteAccessoryTypeSoundAbsorption	IfcDiscreteAccessory/SOUNDABSORPTION
Pset_DiscreteAccessoryTypeTensioningEquipment	IfcDiscreteAccessory/TENSIONINGEQUIPMENT
Pset_DistributionBoardTypeDispatchingBoard	IfcDistributionBoard/DISPATCHINGBOARD
Pset_DistributionBoardTypeDistributionFrame	IfcDistributionBoard/DISTRIBUTIONFRAME
Pset_DistributionSystemTypeOverheadContactlineSystem	IfcDistributionSystem/OVERHEAD_CONTACTLINE_SYSTEM
Pset_DoorTypeTurnstile	IfcDoor/TURNSTILE
Pset_ElectricalDeviceCompliance	IfcDistributionElement
Pset_ElectricalFeederLine	IfcCableSegment/CONDUCTORSEGMENT
Pset_ElectricFlowStorageDeviceTypeBattery	IfcElectricFlowStorageDevice/BATTERY
Pset_ElectricFlowStorageDeviceTypeCapacitor	IfcElectricFlowStorageDevice/CAPACITOR
Pset_ElectricFlowStorageDeviceTypeInductor	IfcElectricFlowStorageDevice/INDUCTOR
Pset_ElectricFlowStorageDeviceTypeRecharger	IfcElectricFlowStorageDevice/RECHARGER
Pset_ElectricFlowStorageDeviceTypeUPS	IfcElectricFlowStorageDevice/UPS
Pset_ElectricFlowTreatmentDeviceTypeElectronicFilter	IfcElectricFlowTreatmentDevice/ELECTRONICFILTER
Pset_ElementAssemblyTypeCantilever	IfcElementAssembly/SUSPENSIONASSEMBLY
Pset_ElementAssemblyTypeDilatationPanel	IfcElementAssembly/DILATATIONPANEL
Pset_ElementAssemblyTypeHeadSpan	IfcElementAssembly/SUPPORTINGASSEMBLY
Pset_ElementAssemblyTypeMast	IfcElementAssembly/MAST
Pset_ElementAssemblyTypeOCSSuspension	IfcElementAssembly/SUSPENSIONASSEMBLY
Pset_ElementAssemblyTypeRigidFrame	IfcElementAssembly/RIGID_FRAME
Pset_ElementAssemblyTypeSteadyDevice	IfcElementAssembly/SUSPENSIONASSEMBLY
Pset_ElementAssemblyTypeSupportingAssembly	IfcElementAssembly/SUPPORTINGASSEMBLY
Pset_ElementAssemblyTypeTrackPanel	IfcElementAssembly/TRACKPANEL
Pset_ElementAssemblyTypeTractionSwitchingAssembly	IfcElementAssembly/TRACTION_SWITCHING_ASSEMBLY
Pset_ElementAssemblyTypeTurnoutPanel	IfcElementAssembly/TURNOUTPANEL
Pset_EmbeddedTrack	IfcSlab/TRACKSLAB
Pset_EnvironmentalCondition	IfcElement
Pset_FastenerRailWeld	IfcFastener/WELD
Pset_FootingTypePadFooting	IfcFooting/PAD_FOOTING
Pset_ImpactProtectionDeviceOccurrenceBumper	IfcImpactProtectionDevice/ BUMPER
Pset_ImpactProtectionDeviceTypeBumper	IfcImpactProtectionDevice/ BUMPER
Pset_InstallationOccurrence	IfcElement,IfcAsset,IfcSystem
Pset_IpNetworkEquipmentPHistory	IfcCommunicationsAppliance/IPNETWORKEQUIPMENT
Pset_JunctionBoxTypeData	IfcJunctionBox/DATA
Pset_LinearReferencingMethod	IfcAlignment, IfcReferent
Pset_MarkerGeneral	IfcElementAssembly/SIGNALASSEMBLY

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Pset_MechanicalFastenerOCSFitting	IfcMechanicalFastener/COUPLER
Pset_MechanicalFastenerTypeRailFastening	IfcMechanicalFastener/RAILFASTENING
Pset_MechanicalFastenerTypeRailJoint	IfcMechanicalFastener/RAILJOINT
Pset_MemberTypeAnchoringBar	IfcMember/BRACE
Pset_MemberTypeCatenaryStay	IfcMember/STAY_CABLE
Pset_MemberTypeOCSRigidSupport	IfcMember/MEMBER
Pset_MemberTypePost	IfcMember/POST
Pset_MemberTypeTieBar	IfcMember/TIEBAR
Pset_MobileTelecommunicationsApplianceType AccessPoint	IfcMobileTelecommunicationsAppliance/ACCES SPOINT
Pset_MobileTelecommunicationsApplianceType BasebandUnit	IfcMobileTelecommunicationsAppliance/BASEB ANDUNIT
Pset_MobileTelecommunicationsApplianceType BaseTransceiverStation	IfcMobileTelecommunicationsAppliance/BASET RANSCEIVERSTATION
Pset_MobileTelecommunicationsApplianceType Common	IfcMobileTelecommunicationsAppliance
Pset_MobileTelecommunicationsApplianceType EUtranNodeB	IfcMobileTelecommunicationsAppliance/E_UTR AN_NODE_B
Pset_MobileTelecommunicationsApplianceType MasterUnit	IfcMobileTelecommunicationsAppliance/MASTE RUNIT
Pset_MobileTelecommunicationsApplianceType MobileSwitchingCenter	IfcMobileTelecommunicationsAppliance/MOBIL ESWITCHINGCENTER
Pset_MobileTelecommunicationsApplianceType MSCServer	IfcMobileTelecommunicationsAppliance/MSCSE RVER
Pset_MobileTeleCommunicationsApplianceTyp eRemoteRadioUnit	IfcMobileTelecommunicationsAppliance/REMO TERADIOUNIT
Pset_MobileTelecommunicationsApplianceType RemoteUnit	IfcMobileTelecommunicationsAppliance/REMO TEUNIT
Pset_OnSiteTelecomControlUnit	IfcController
Pset_OpticalAdapter	IfcCableFitting/TRANSITION
Pset_OpticalPigtail	IfcCableSegment/OPTICALCABLESEGMENT
Pset_OpticalSplitter	IfcJunctionBox/DATA
Pset_PatchCordCable	IfcCableSegment/CABLESEGMENT,IfcCableSegm ent/OPTICALCABLESEGMENT
Pset_PointMachine	IfcActuator/ELECTRICACTUATOR,IfcActuator/HY DRAULICACTUATOR,IfcActuator/HANDOPERATE DACTUATOR,IfcActuator/PNEUMATICACTUATO R
Pset_PowerControlSystem	IfcDistributionSystem/ELECTRICAL
Pset_ProtectiveDeviceTypeAntiArcingDevice	IfcProtectiveDevice/ANTI_ARCING_DEVICE
Pset_ProtectiveDeviceTypeSparkGap	IfcProtectiveDevice/VOLTAGELIMITER,IfcProtect iveDevice/SPARKGAP
Pset_RailTypeBlade	IfcRail/BLADE
Pset_RailTypeCheckRail	IfcRail/CHECKRAIL

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Pset_RailTypeGuardRail	IfcRail/GUARDRAIL
Pset_RailTypeRail	IfcRail/RAIL
Pset_RailTypeStockRail	IfcRail/STOCKRAIL
Pset_RailwayBalise	IfcCommunicationsAppliance/TRANSPONDER
Pset_RailwayCableCarrier	IfcCableCarrierSegment
Pset_RailwayLevelCrossing	IfcFacilityPartCommon/LEVELCROSSING
Pset_RailwaySignalAspect	IfcSignal,IfcSign
Pset_RailwaySignalOccurrence	IfcSignal
Pset_RailwaySignalSighting	IfcSignal,IfcSign
Pset_RailwaySignalType	IfcSignal
Pset_RailwayTrackStructurePart	IfcRailwayPart/TRACKSTRUCTURE, IfcRailwayPart/PLAINTRACKSUPESTRUCTURE, IfcRailwayPart/TURNOUTSUPERSTRUCTURE,IfcRailwayPart/DILATATIONSUPERSTRUCTURE
Pset_ReferentCommon	IfcReferent
Pset_RepairOccurrence	IfcElement,IfcAsset,IfcSystem
Pset_SectioningDevice	IfcDiscreteAccessory/INSULATOR
Pset_SectionInsulator	IfcDiscreteAccessory/INSULATOR
Pset_SensorTypeEarthquakeSensor	IfcSensor/EARTHQUAKESENSOR
Pset_SensorTypeForeignObjectDetectionSensor	IfcSensor/FOREIGNOBJECTDETECTIONSENSOR
Pset_SensorTypeRainSensor	IfcSensor/RAINSENSOR
Pset_SensorTypeSnowSensor	IfcSensor/SNOWDEPTHSENSOR
Pset_SensorTypeTurnoutClosureSensor	IfcSensor/TURNOUTCLOSURESENSOR
Pset_SignalFrame	IfcSignal
Pset_SlabTypeTrackSlab	IfcSlab/TRACKSLAB
Pset_SpringTensioner	IfcDiscreteAccessory/TENSIONINGEQUIPMENT
Pset_Stationing	IfcReferents
Pset_SwitchingDeviceTypeRelay	IfcSwitchingDevice/RELAY
Pset_SymmetricPairCable	IfcCableSegment/CABLESEGMENT
Pset_SystemFurnitureElementTypeSubrack	IfcSystemFurnitureElement/SUBRACK
Pset_TelecomCableGeneral	IfcCableSegment,IfcCableFitting
Pset_TicketProcessing	IfcDoor/TURNSTILE,IfcDoor/BOOM_BARRIER
Pset_TicketVendingMachine	IfcElectricAppliance/VENDINGMACHINE
Pset_TrackBase	IfcSlab/BASESLAB
Pset_TrackElementOccurrenceSleeper	IfcTrackElement/SLEEPER
Pset_TrackElementPHistoryDerailer	IfcTrackElement/DERAILER
Pset_TrackElementTypeDerailer	IfcTrackElement/DERAILER
Pset_TrackElementTypeSleeper	IfcTrackElement/SLEEPER
Pset_TractionPowerSystem	IfcDistributionSystem/ELECTRICAL
Pset_TransportEquipmentOTN	IfcCommunicationsAppliance/TRANSPORTEQUIPMENT
Pset_UnitaryControlElementBaseStationController	IfcUnitaryControlElement/BASESTATIONCONTROLLER

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Pset_UnitaryControlElementTypeControlPanel	IfcUnitaryControlElement/CONTROLPANEL
Pset_VoltageInstrumentTransformer	IfcFlowInstrument/VOLTMETER, IfcFlowInstrument/COMBINED
Pset_WiredCommunicationPortCommon	IfcDistributionPort/CABLE
Qto_ConduitSegmentBaseQuantities	IfcCableCarrierSegment/CONDUITSEGMENT
Qto_RailBaseQuantities	IfcRail
Qto_SleeperBaseQuantities	IfcTrackElement/SLEEPER
Qto_SpatialZoneBaseQuantities	IfcSpatialZone

2.2 Updated Property Sets

There are 24 property sets and quantity sets updated by IFC Rail project. They are listed as follows:

Table 2 Updated property sets

Property Set Name	Applicable Entities
Pset_ActuatorTypeElectricActuator	IfcActuator/ELECTRICACTUATOR
Pset_CableCarrierSegmentTypeConduitSegment	IfcCableCarrierSegment/CONDUITSEGMENT
Pset_CableSegmentOccurrence	IfcCableSegment
Pset_CableSegmentTypeBusBarSegment	IfcCableSegment/BUSBARSEGMENT
Pset_CableSegmentTypeCableSegment	IfcCableSegment/CABLESEGMENT
Pset_CableSegmentTypeConductorSegment	IfcCableSegment/CONDUCTORSEGMENT
Pset_CableSegmentTypeCoreSegment	IfcCableSegment/CORESEGMENT
Pset_Condition	IfcElement,IfcSystem,IfcAsset
Pset_DistributionChamberElementTypeFormedDuct	IfcDistributionChamberElement/FORMEDDUCT
Pset_DistributionChamberElementTypeManhole	IfcDistributionChamberElement/MANHOLE
Pset_DistributionPortTypeCable	IfcDistributionPort/CABLE
Pset_DistributionSystemTypeElectrical	IfcDistributionSystem/ELECTRICAL
Pset_ElectricalDeviceCommon	IfcDistributionElement
Pset_ElectricFlowStorageDeviceTypeCommon	IfcElectricFlowStorageDevice
Pset_JunctionBoxTypeCommon	IfcJunctionBox
Pset_ManufacturerOccurrence	IfcElement
Pset_PipeSegmentTypeCommon	IfcPipeSegment
Pset_PipeSegmentTypeGutter	IfcPipeSegment/GUTTER
Pset_ProtectiveDeviceTypeFuseDisconnector	IfcProtectiveDevice/FUSEDISCONNECTOR
Pset_ProtectiveDeviceTypeVaristor	IfcProtectiveDevice/VARISTOR
Pset_SensorTypeWindSensor	IfcSensor/WINDSENSOR
Pset_SwitchingDeviceTypeEmergencyStop	IfcSwitchingDevice/EMERGENCYSTOP
Pset_SwitchingDeviceTypeSelectorSwitch	IfcSwitchingDevice/SELECTORSWITCH
Qto_DistributionChamberElementBaseQuantities	IfcDistributionChamberElement
Qto_JunctionBoxBaseQuantities	IfcJunctionBox
Qto_PipeSegmentBaseQuantities	IfcPipeSegment

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3 Property Set Diagrams
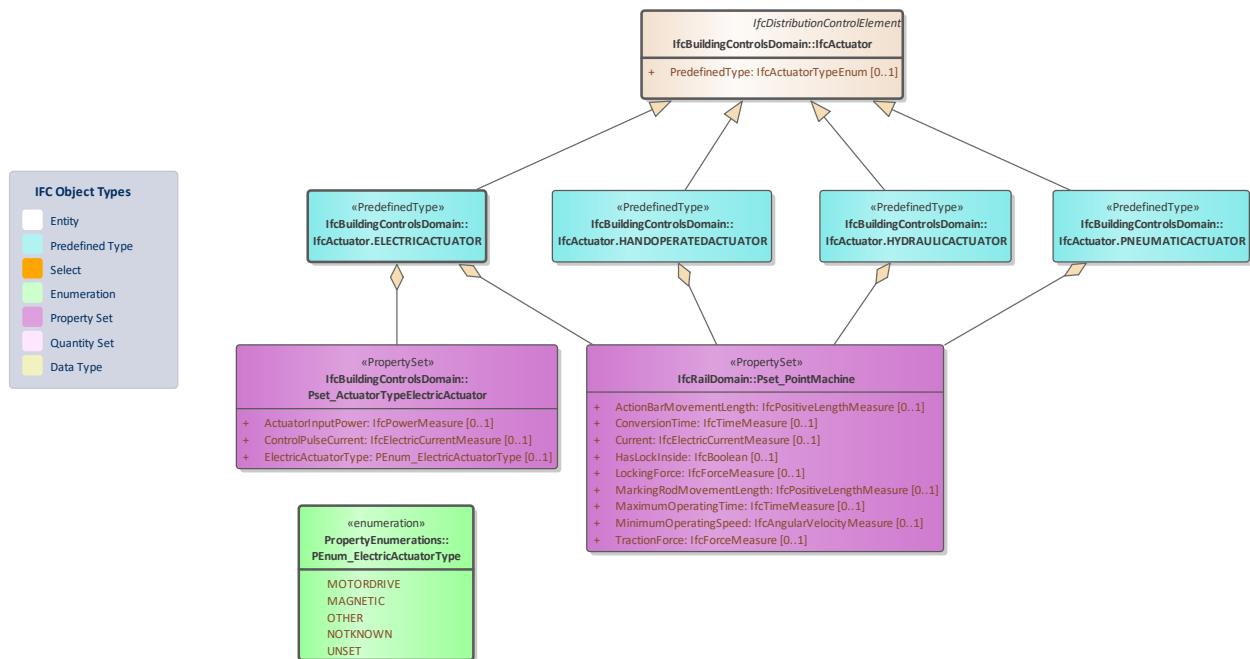
Figure 3: Psets_IfcActuator -

3.1 Property Set: Pset_ActuatorTypeElectricActuator

A device that electrically actuates a control element.bSI Documentation

Status: Proposed

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ActuatorInputPower	IfcPowerMeasure	[0..1]	Maximum input power requirement.
ControlPulseCurrent	IfcElectricCurrentMeasure	[0..1]	The current of the electric actuator control pulse.
ElectricActuatorType	PEnum_ElectricActuatorType	[0..1]	Enumeration that identifies electric actuator as defined by its operational principle.

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3.2 Property Set: Pset_PointMachine

Properties of point machine used in railway. The property set can be used by IfcActuator with predefined type set to ELECTRICACTUATOR, HYDRAULICACTUATOR, HANDOPERATEDACTUATOR, or PNEUMATICACTUATOR, indicated that such actuator is a point machine that can switch and lock the track turnout.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ActionBarMovementLength	IfcPositiveLengthMeasure	[0..1]	The movement of the bar that pulls the point of a turnout.
ConversionTime	IfcTimeMeasure	[0..1]	Turnout conversion completion time.
Current	IfcElectricCurrentMeasure	[0..1]	The actual current and operable range.
HasLockInside	IfcBoolean	[0..1]	Indicates whether the locking is inside (TRUE) or outside (FALSE) of the point machine.
LockingForce	IfcForceMeasure	[0..1]	Locking force of the point machine motor.
MarkingRodMovementLength	IfcPositiveLengthMeasure	[0..1]	The length of the movement bar which indicates the turnout position.
MaximumOperatingTime	IfcTimeMeasure	[0..1]	The maximum duration of the turnout movement before the interlocking turns to out of control status.
MinimumOperatingSpeed	IfcAngularVelocityMeasure	[0..1]	Minimum operating speed of the point machine.
TractionForce	IfcForceMeasure	[0..1]	Traction force of the point machine in turnout conversion.

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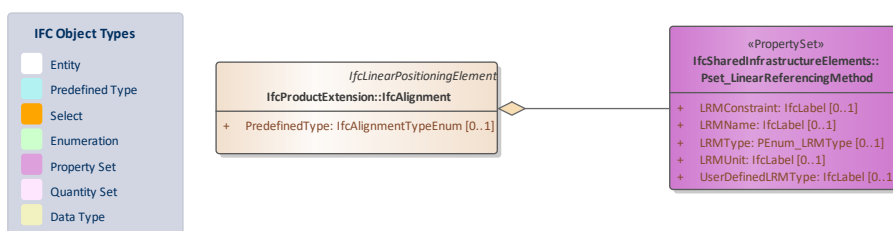
Figure 4: Psets_IfcAlignment -

3.3   Property Set: Pset_LinearReferencingMethod

Describes the manner in which measurements are made along (and optionally offset from) a linear element.

> NOTE Definition according to ISO 19148:2021

Status: Proposed

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
LRMConstraint	IfcLabel	[0..1]	Allows for the specification of constraints imposed by this Linear Referencing Method. For example, a Reference Post Linear Referencing Method may specify that referents be of type 'reference marker'. > NOTEdefinition according to ISO 19148:2021
LRMName	IfcLabel	[0..1]	Gives the name of this Linear Referencing Method, such as 'kilometre-point'. > NOTE Definition according to ISO 19148:2021. > NOTE Names of commonly used Linear Referencing Methods are included in ISO 19148, Annex C, along with recognized name aliases.
LRMType	PEnum_LRMType	[0..1]	Gives the type of this Linear Referencing Method. > NOTE Definition according to ISO 19148:2021, LRMType. > NOTE Since the definition in ISO 19148:2021, LRMType is stereotyped as a CodeList it is open for user defined extensions. In this Pset this is handled by adding the enumeration constant _LRM_USERDEFINED_ and the additional property _UserDefinedLRMType_
LRMUnit	IfcLabel	[0..1]	Specifies the units of measure used by this Linear Referencing Method for measures along the linear element being measured. > NOTE Definition according to ISO 19148:2021.

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UserDefinedLRMType	IfcLabel	[0..1]	Gives the user defined type of this Linear Referencing Method when property _LRMType_ is _LRM_USERDEFINED_.
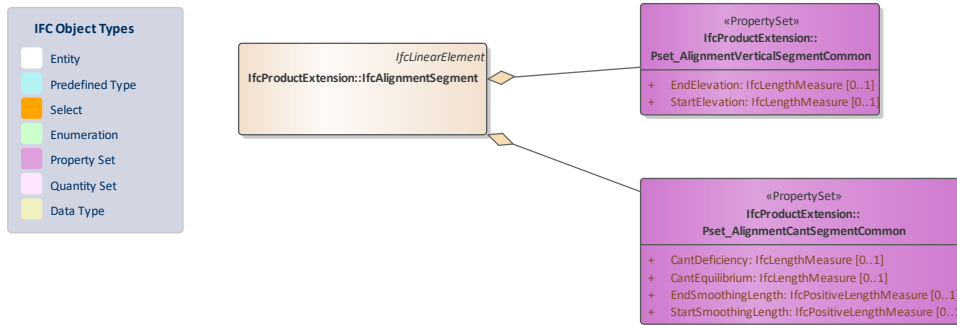
Figure 5: Psets_IfcAlignmentSegment -

3.4   Property Set: Pset_AlignmentCantSegmentCommon

Properties common to the definition of all instances of alignment cant segment.bSI Documentation

Status: Proposed

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CantDeficiency	IfcLengthMeasure	[0..1]	Difference between applied cant and a higher equilibrium cant.
CantEquilibrium	IfcLengthMeasure	[0..1]	Cant at a particular speed at which the vehicle will have a resultant force perpendicular to the running plane.
EndSmoothingLength	IfcPositiveLengthMeasure	[0..1]	Length for the circular transition change of curvature at the end of the cant segment, measured from the start of the circular transition change of curvature to the end of the cant segment.
StartSmoothingLength	IfcPositiveLengthMeasure	[0..1]	Length for the circular transition change of curvature at the start of the cant segment, measured from the start of the cant segment to the end of the circular transition change of curvature.

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3.5   Property Set: Pset_AlignmentVerticalSegmentCommon

Properties common to the definition of all instances of alignment vertical segment.bSI Documentation

Status: Proposed

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
EndElevation	IfcLengthMeasure	[0..1]	Elevation of the end point relative to the mean sea level.
StartElevation	IfcLengthMeasure	[0..1]	Elevation of the start point relative to the mean sea level.
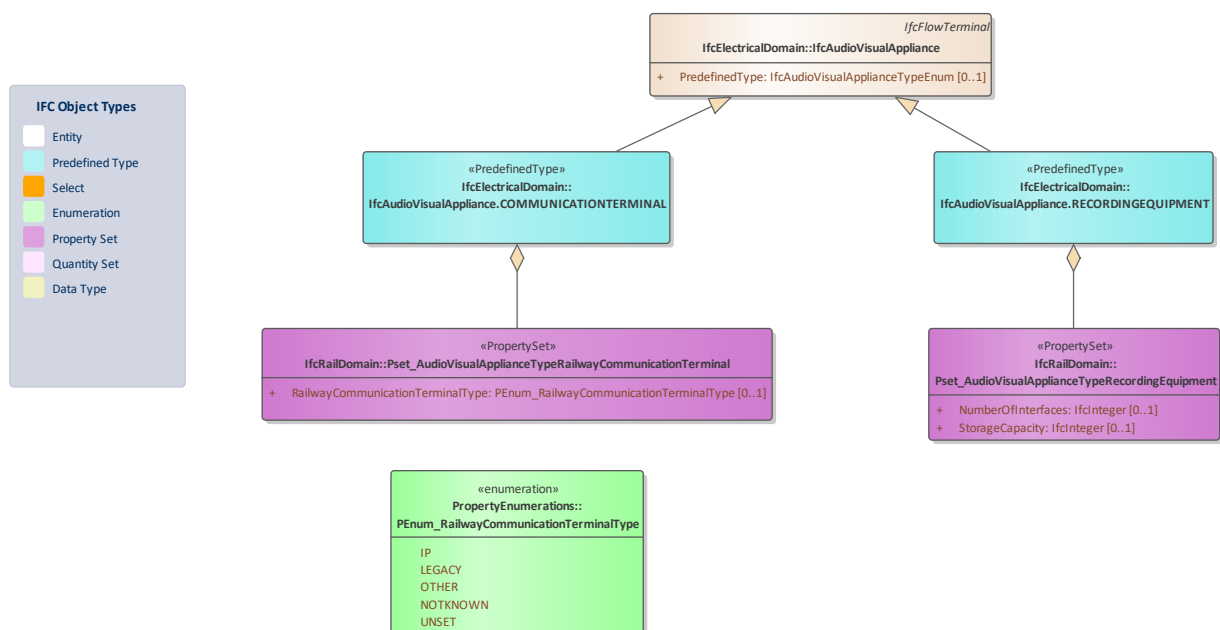
Figure 6: Psets_IfcAudioVisualAppliance -

3.6   Property   Set: Pset_AudioVisualApplianceTypeRailwayCommunicationTerminal

Properties used for railway communication terminals.

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
RailwayCommunication TerminalType	PEnum_RailwayCommuni cationTerminalType	[0..1]	Indicates the type of railway communication terminal.

3.7   Property Set: Pset_AudioVisualApplianceTypeRecordingEquipment

Properties common to _IfcAudioVisualAppliance_ with predefined type set to RECORDINGEQUIPMENT.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
StorageCapacity	IfcInteger	[0..1]	Indicates the total data storage capacity of the device. It is defined by bytes.

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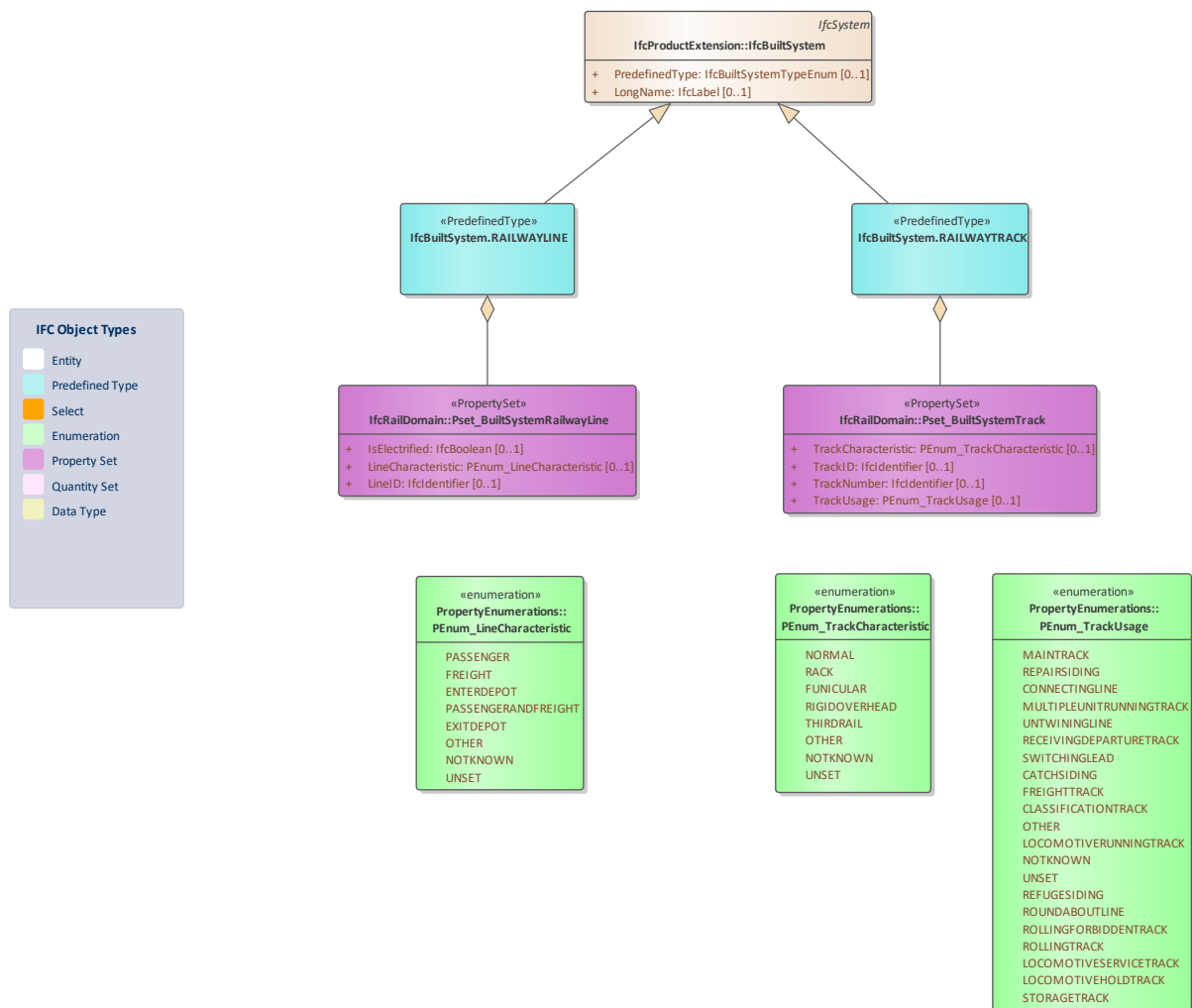
Figure 7: Psets_IfcBuiltSystem -

3.8 Property Set: Pset_BuiltSystemRailwayLine

Properties common to the definition of a railway line system, which is a set of functional tracks with explicit terminals. It is usually composed of a set of tracks with continuous track parts and alignments.\X\0D

> NOTE `IfcBuiltSystem.ObjectType` should be set to `RAILWAYLINE`

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

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Name	Type	Multiplicity	Definition
IsElectrified	IfcBoolean	[0..1]	Indicates whether the track system is electrified or not.
LineCharacteristic	PEnum_LineCharacteristic	[0..1]	Indicates the characteristic of the line.
LineID	IfcIdentifier	[0..1]	The unique identifier of the line.

3.9   Property Set: Pset_BuiltSystemTrack

Properties common to the definition of a track system. It is usually composed of continuous sequences of track parts and alignments.\X\0D

> NOTE `IfcBuiltSystem.ObjectType` should be set to `TRACK`

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
TrackCharacteristic	PEnum_TrackCharacteristic	[0..1]	Indicates the characteristic of the track.
TrackID	IfcIdentifier	[0..1]	The unique identification number of the track.
TrackNumber	IfcIdentifier	[0..1]	Indicates the local identification number of the track.
TrackUsage	PEnum_TrackUsage	[0..1]	The expected primary usage of the track.

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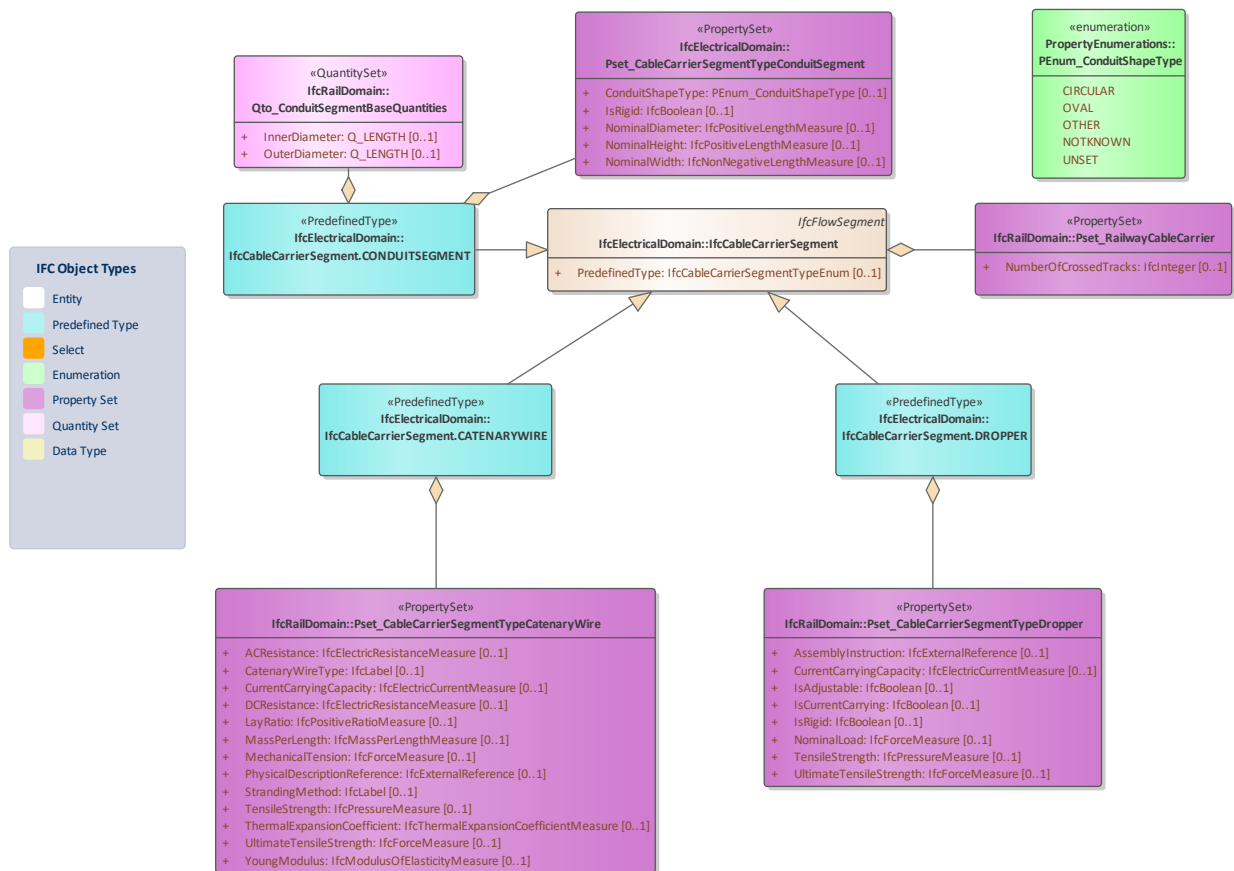
Figure 8: Psets_IfcCableCarrierSegment -

3.10 Property Set: Pset_CableCarrierSegmentTypeConduitSegment

An enclosed tubular carrier segment through which cables are pulled.\X\0D

HISTORY: IFC4 - NominalLength deleted. To be handled as a quantity measure.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ConduitShapeType	PEnum_ConduitShapeType	[0..1]	The shape of the conduit segment.

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IsRigid	IfcBoolean	[0..1]	Indication of whether the segment is rigid (= TRUE) or flexible (= FALSE).
NominalDiameter	IfcPositiveLengthMeasure	[0..1]	Nominal diameter or width of the tubes in the tube bundle.
NominalHeight	IfcPositiveLengthMeasure	[0..1]	The nominal height of the segment.
NominalWidth	IfcNonNegativeLengthMeasure	[0..1]	The nominal width of the object.

3.11 Property Set: Pset_CableCarrierSegmentTypeCatenaryWire

Properties of a catenary wire, which is a longtitudinal wire supporting the grooved contact wires. Properties in this property set are applicable to a type or an occurence _ifcCableCarrierSegment_ with predefined type of CATENARYWIRE.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ACResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under AC.
CatenaryWireType	IfcLabel	[0..1]	Indicate the type of Catenary wire.
CurrentCarryingCapacity	IfcElectricCurrentMeasure	[0..1]	Maximum value of electric current which can be carried continuously by a conductor, a device or an apparatus, under specified conditions without its steady-state temperature exceeding a specified value. Based on IEC60826-11-13. NOTE: The temperature specified value is maximum Design Ambient Temperature.
DCResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under direct current and 20 degrees centigrade.
LayRatio	IfcPositiveRatioMeasure	[0..1]	The ratio between lay length and the diameter of the single conductor.
MassPerLength	IfcMassPerLengthMeasure	[0..1]	Mass per length, i.e. mass of a beam with a unit length of extrusion. For example measured in kg/m.
MechanicalTension	IfcForceMeasure	[0..1]	Nominal value of mechanical force applied to a flow segment.

PhysicalDescriptionReference	IfcExternalReference	[0..1]	Physical description as external reference of the equipment, including e.g.weight, shape, model, length, height, diameter.
StrandingMethod	IfcLabel	[0..1]	Specifies the method used to strand the cable. Stranding is the process where a particular number of stranding elements are joined together while winding them round a common axis.
TensileStrength	IfcPressureMeasure	[0..1]	Indicates the ability to withstand breakage apart under applied force.
ThermalExpansionCoefficient	IfcThermalExpansionCoefficientMeasure	[0..1]	Quantity characterizing the variation with thermodynamic temperature T of the distance l between two points of a body, under given conditions (IEC 113-04-27). The ratio is defined per Kelvin.
UltimateTensileStrength	IfcForceMeasure	[0..1]	Indicates the maximum stress that a material or element can withstand before breaking while being stretched or pulled.
YoungModulus	IfcModulusOfElasticityMeasure	[0..1]	A measure of the Young''s modulus of elasticity of the material.

3.12 Property Set: Pset_CableCarrierSegmentTypeDropper

Properties that are applicable to a type or an occurence of dropper.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
CurrentCarryingCapacity	IfcElectricCurrentMeasure	[0..1]	Maximum value of electric current which can be carried continuously by a conductor, a device or an apparatus, under specified conditions without its steady-state temperature exceeding a specified value. Based on IEC60826-11-13. NOTE: The temperature specified value is maximum Design Ambient Temperature.
IsAdjustable	IfcBoolean	[0..1]	Indicates whether the element is adjustable or not.

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IsCurrentCarrying	IfcBoolean	[0..1]	To indicate whether the current will go through the dropper.
IsRigid	IfcBoolean	[0..1]	Indication of whether the segment is rigid (= TRUE) or flexible (= FALSE).
NominalLoad	IfcForceMeasure	[0..1]	The nominal load that a component can support.
TensileStrength	IfcPressureMeasure	[0..1]	Indicates the ability to withstand breakage apart under applied force.
UltimateTensileStrength	IfcForceMeasure	[0..1]	Indicates the maximum stress that a material or element can withstand before breaking while being stretched or pulled.

3.13 Property Set: Pset_RailwayCableCarrier

Common properties for cable carrier segments constructed in railway projects.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfCrossedTracks	IfcInteger	[0..1]	Number of tracks crossed in cable route.

3.14 Quantity Set: Qto_ConduitSegmentBaseQuantities

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«QuantitySet»

Quantities

Name	Type	Multiplicity	Definition
InnerDiameter	Q_LENGTH	[0..1]	Actual inner diameter of segment.
OuterDiameter	Q_LENGTH	[0..1]	Actual outer diameter of segment.

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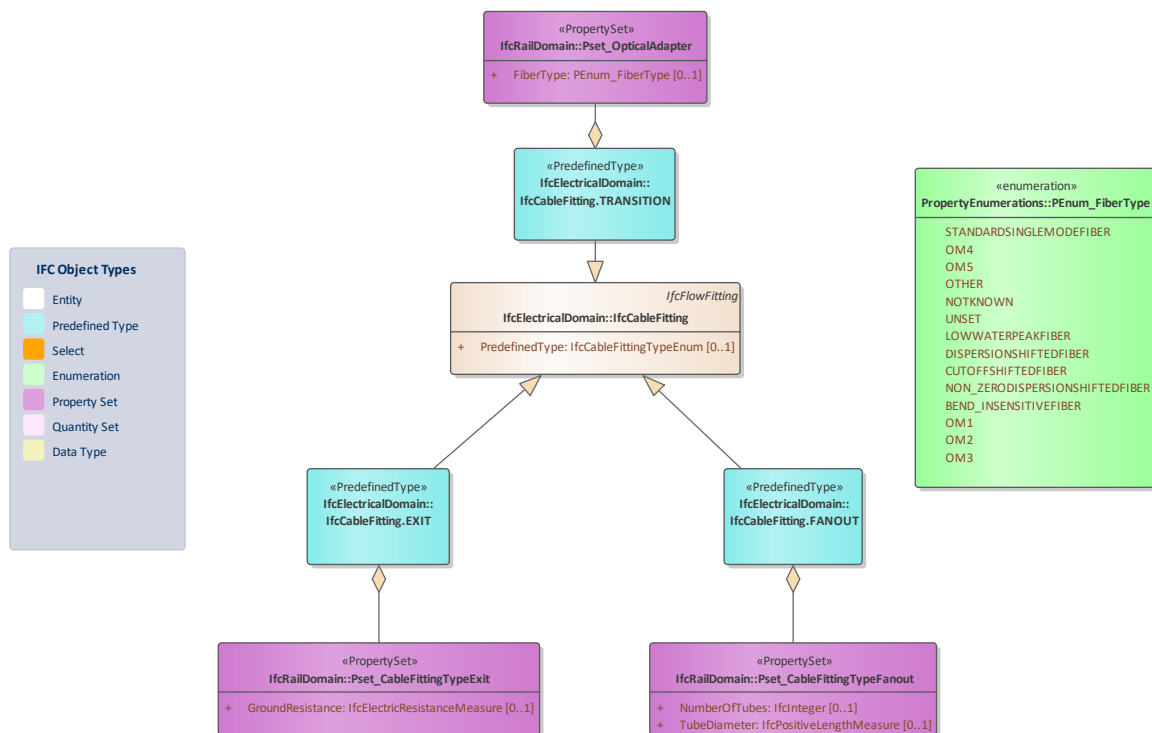
Figure 9: Psets_IfcCableFitting -

3.15 Property Set: Pset_CableFittingTypeExit

Properties of the exit type of cable fitting which ends a cable segment at a non-electric element.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
GroundResistance	IfcElectricResistanceMeasure	[0..1]	The soil or ground resistance to electrical current from the cable fitting.

3.16 Property Set: Pset_CableFittingTypeFanout

Properties of the fanout type of cable fitting.

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfTubes	IfcInteger	[0..1]	Number of fiber tubes.
TubeDiameter	IfcPositiveLengthMeasure	[0..1]	Indicates the diameter of the fiber tubes that are used in the fan out.

3.17 Property Set: Pset_OpticalAdapter

Properties in this property set are applicable to the transition type of cable fitting. Indicated that such transition is an optical adapter.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
FiberType	PEnum_FiberType	[0..1]	Indicates the type of the single fiber.

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IFC Object Types
- Entity
- Predefined Type
- Select
- Enumeration
- Property Set
- Quantity Set
- Data Type

Figure 10: Psets_IfcCableSegment -

3.18 Property Set: Pset_CableSegmentTypeBusBarSegment

Properties specific to busbar cable segments.

Status: Implemented

Set Properties

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Applicable Entities		stereotype	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ACResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under AC.
CrossSectionalArea	IfcAreaMeasure	[0..1]	Cross section area of the phase(s) lead(s).
CurrentCarryingCapacity	IfcElectricCurrentMeasure	[0..1]	Maximum value of electric current which can be carried continuously by a conductor, a device or an apparatus, under specified conditions without its steady-state temperature exceeding a specified value. Based on IEC60826-11-13. NOTE: The temperature specified value is maximum Design Ambient Temperature.
DCResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under direct current and 20 degrees centigrade.
InsulationMethod	PEnum_InsulatorType	[0..1]	The method used to insulate.
IsHorizontalBusbar	IfcBoolean	[0..1]	Indication of whether the busbar occurrences are routed horizontally (= TRUE) or vertically (= FALSE).
MassPerLength	IfcMassPerLengthMeasure	[0..1]	Mass per length, i.e. mass of a beam with a unit length of extrusion. For example measured in kg/m.
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current that is designed to be measured.
OperationalTemperatureRange	IfcThermodynamicTemperatureMeasure	[0..1]	Allowable operation ambient air temperature range.
OverallDiameter	IfcPositiveLengthMeasure	[0..1]	The overall diameter of a Cable/Bus.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.
TensileStrength	IfcPressureMeasure	[0..1]	Indicates the ability to withstand breakage apart under applied force.
ThermalExpansionCoefficient	IfcThermalExpansionCoefficientMeasure	[0..1]	Quantity characterizing the variation with thermodynamic temperature T of the distance l between two points of a body, under given conditions (IEC 113-04-27). The ratio is defined per Kelvin.

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UltimateTensileStrength	IfcForceMeasure	[0..1]	Indicates the maximum stress that a material or element can withstand before breaking while being stretched or pulled.
YoungModulus	IfcModulusOfElasticityMeasure	[0..1]	A measure of the Young''s modulus of elasticity of the material.

3.19 Property Set: Pset_CableSegmentTypeCableSegment

Electrical cable with a specific purpose to lead electric current within a circuit or any other electric construction. Includes all types of electric cables, mainly several electrical segments wrapped together, e.g. cable, tube, busbar. Note that the number of conductors within a cable is determined by an aggregation mechanism that aggregates the conductors within the cable. A single-core cable is defined in IEV 461-06-02 as being ''a cable having only one core''; a multiconductor cable is defined in IEV 461-06-03 as b eing ''a cable having more than one conductor, some of which may be uninsulated''; a mulicore cable is defined in IEV 461-06-04 as being ''a cable having more than one core''.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ACResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under AC.
CurrentCarryingCapacity	IfcElectricCurrentMeasure	[0..1]	Maximum value of electric current which can be carried continuously by a conductor, a device or an apparatus, under specified conditions without its steady-state temperature exceeding a specified value. Based on IEC60826-11-13. NOTE: The temperature specified value is maximum Design Ambient Temperature.
DCResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under direct current and 20 degrees centigrade.
FunctionReliable	IfcBoolean	[0..1]	Cable/bus maintain given properties/functions over a given (tested) time and conditions. According to IEC standard.
HalogenProof	IfcBoolean	[0..1]	Produces small amount of smoke and irritating Deaerator/Gas.
HasProtectiveEarth	IfcBoolean	[0..1]	One core has protective earth marked insulation, Yellow/Green.

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InsulationVoltage	IfcElectricVoltageMeasure	[0..1]	It indicates the wire-to-ground (metal sheath) insulation voltage or the insulation voltage between the wires.
MassPerLength	IfcMassPerLengthMeasure	[0..1]	Mass per length, i.e. mass of a beam with a unit length of extrusion. For example measured in kg/m.
MaximumBendingRadius	IfcPositiveLengthMeasure	[0..1]	The maximum bending radius that the cable could withstand.
MaximumCurrent	IfcElectricCurrentMeasure	[0..1]	The maximum allowed current that a device is certified to handle.
MaximumOperatingTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	The maximum temperature at which a cable or bus is certified to operate.
MaximumShortCircuitTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	The maximum short circuit temperature at which a cable or bus is certified to operate.
NumberOfCores	IfcInteger	[0..1]	The number of cores in Cable/Bus.
NumberOfWires	IfcInteger	[0..1]	The number of wires used in the element.
OverallDiameter	IfcPositiveLengthMeasure	[0..1]	The overall diameter of a Cable/Bus.
RatedTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	The range of allowed temerature that a device is certified to handle. The upper bound of this value is the maximum.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.
ScreenDiameter	IfcPositiveLengthMeasure	[0..1]	The diameter of the screen around a cable or bus segment (if present).
SelfExtinguishing60332_1	IfcBoolean	[0..1]	Self Extinguishing cable/core according to IEC 60332.1.
SelfExtinguishing60332_3	IfcBoolean	[0..1]	Self Extinguishing cable/core according to IEC 60332.3.
SpecialConstruction	IfcLabel	[0..1]	Special construction capabilities like self-supporting, flat devidable cable or bus flat non devidable cable or bus supporting elements inside (steal, textile, concentric conductor). Note that materials used should be agreed between exchange participants before use.
Standard	IfcLabel	[0..1]	The designation of the standard applicable for the definition of the Cable/Bus used.

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Weight	IfcMassMeasure	[0..1]	Weight of cable kg/km.

3.20 Property Set: Pset_CableSegmentTypeConductorSegment

An electrical conductor is a single linear element with the specific purpose to lead electric current. The core of one lead is normally single wired or multiwired which are intertwined. According to IEC 60050: IEV 195-01-07, a conductor is a conductive part intended to carry a specified electric current.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ACResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under AC.
Construction	PEnum_ConstructionEnum	[0..1]	Purpose of informing on how the vonductor is constucted (interwined or solid). I.e. Solid (IEV 461-01-06), stranded (IEV 461-01-07), solid-/finestranded(IEV 461-01-11) (not flexible/flexible).
CrossSectionalArea	IfcAreaMeasure	[0..1]	Cross section area of the phase(s) lead(s).
CurrentCarryingCapacity	IfcElectricCurrentMeasure	[0..1]	Maximum value of electric current which can be carried continuously by a conductor, a device or an apparatus, under specified conditions without its steady-state temperature exceeding a specified value. Based on IEC60826-11-13. NOTE: The temperature specified value is maximum Design Ambient Temperature.
DCResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under direct current and 20 degrees centigrade.
Function	PEnum_FunctionEnum	[0..1]	Type of function for which the conductor is intended.
MassPerLength	IfcMassPerLengthMeasure	[0..1]	Mass per length, i.e. mass of a beam with a unit length of extrusion. For example measured in kg/m.
Material	PEnum_MaterialEnum	[0..1]	Type of material from which the conductor is constructed.
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current that is designed to be measured.
NumberOfCores	IfcInteger	[0..1]	The number of cores in Cable/Bus.

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OverallDiameter	IfcPositiveLengthMeasure	[0..1]	The overall diameter of a Cable/Bus.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.
Shape	PEnum_ShapeEnum	[0..1]	Indication of the shape of the conductor.
TensileStrength	IfcPressureMeasure	[0..1]	Indicates the ability to withstand breakage apart under applied force.
ThermalExpansionCoefficient	IfcThermalExpansionCoefficientMeasure	[0..1]	Quantity characterizing the variation with thermodynamic temperature T of the distance l between two points of a body, under given conditions (IEC 113-04-27). The ratio is defined per Kelvin.
UltimateTensileStrength	IfcForceMeasure	[0..1]	Indicates the maximum stress that a material or element can withstand before breaking while being stretched or pulled.
YoungModulus	IfcModulusOfElasticityMeasure	[0..1]	A measure of the Young''s modulus of elasticity of the material.

3.21 Property Set: Pset_CableSegmentTypeCoreSegment

An assembly comprising a conductor with its own insulation (and screens if any)

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ACResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under AC.
CoreIdentifier	IfcIdentifier	[0..1]	The core identification used Identifiers may be used such as by color (Black, Brown, Grey) or by number (1, 2, 3) or by IEC phase reference (L1, L2, L3) etc.
CurrentCarryingCapacity	IfcElectricCurrentMeasure	[0..1]	Maximum value of electric current which can be carried continuously by a conductor, a device or an apparatus, under specified conditions without its steady-state temperature exceeding a specified value. Based on IEC60826-11-13. NOTE: The temperature specified value is maximum Design Ambient Temperature.

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DCResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under direct current and 20 degrees centigrade.
FunctionReliable	IfcBoolean	[0..1]	Core maintain given properties/functions over a given (tested) time and conditions. According to (IEC) standard.
HalogenProof	IfcBoolean	[0..1]	Produces small amount of smoke and irritating deaerator/gas.
LayRatio	IfcPositiveRatioMeasure	[0..1]	The ratio between lay length and the diameter of the single conductor.
MassPerLength	IfcMassPerLengthMeasure	[0..1]	Mass per length, i.e. mass of a beam with a unit length of extrusion. For example measured in kg/m.
OverallDiameter	IfcPositiveLengthMeasure	[0..1]	The overall diameter of a core (maximun space used).
RatedTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	The range of allowed temerature that a device is certified to handle. The upper bound of this value is the maximum.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.
ScreenDiameter	IfcPositiveLengthMeasure	[0..1]	The diameter of the screen around a core segment (if present).
SelfExtinguishing60332_1	IfcBoolean	[0..1]	Self Extinguishing cable/core according to IEC 60332.1.
SelfExtinguishing60332_3	IfcBoolean	[0..1]	Self Extinguishing cable/core according to IEC 60332.3.
SheathColors	PEnum_CoreColorsEnum	[0..1]	Colour of the core (derived from IEC 60757). Note that the combined color ''GreenAndYellow'' shall be used only as Protective Earth (PE) conductors according to the requirements of IEC 60446.
Standard	IfcLabel	[0..1]	The designation of the standard applicable for the definition of the core used.
StrandingMethod	IfcLabel	[0..1]	Specifies the method used to strand the cable. Stranding is the process where a particular number of stranding elements are joined together while winding them round a common axis.
TensileStrength	IfcPressureMeasure	[0..1]	Indicates the ability to withstand breakage apart under applied force.

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ThermalExpansionCoeff icient	IfcThermalExpansionCoeff icientMeasure	[0..1]	Quantity characterizing the variation with thermodynamic temperature T of the distance l between two points of a body, under given conditions (IEC 113-04-27). The ratio is defined per Kelvin.
UltimateTensileStrengt h	IfcForceMeasure	[0..1]	Indicates the maximum stress that a material or element can withstand before breaking while being stretched or pulled.
Weight	IfcMassMeasure	[0..1]	Weight of core kg/km.
YoungModulus	IfcModulusOfElasticityMe asure	[0..1]	A measure of the Young''s modulus of elasticity of the material.

3.22 Property Set: Pset_CableSegmentConnector

Properties about cable connectors. This property set is applicable to a type or occurence of _IfcCableSegment_, indicated that the cable segment has one or two connectors affiliated.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ConnectorAColour	IfcLabel	[0..1]	Indicates the colour A- end of connector.
ConnectorAGender	PEnum_DistributionPortG ender	[0..1]	Indicates the gender of A-end connector.
ConnectorAType	IfcLabel	[0..1]	Indicates the type of A-end connector.
ConnectorBColour	IfcLabel	[0..1]	Indicates the colour B- end of connector.
ConnectorBGender	PEnum_DistributionPortG ender	[0..1]	Indicates the gender of B-end connector.
ConnectorBType	IfcLabel	[0..1]	Indicates the type of B-end connector.

3.23 Property Set: Pset_CableSegmentOccurenceFiberSegment

Properties of fiber segment occurrences. This property set is applicable to occurences of _IfcCableSegment_ with predefined type FIBERSEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
InUse	IfcBoolean	[0..1]	Indicates whether the fiber has been assigned to some specific use.

3.24 Property Set: Pset_CableSegmentTypeContactWire

Properties of contact wires used in overhead contact line systems. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type CONTACTWIRESEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ACResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under AC.
CrossSectionalArea	IfcAreaMeasure	[0..1]	Cross section area of the phase(s) lead(s).
CurrentCarryingCapacity	IfcElectricCurrentMeasure	[0..1]	Maximum value of electric current which can be carried continuously by a conductor, a device or an apparatus, under specified conditions without its steady-state temperature exceeding a specified value. Based on IEC60826-11-13. NOTE: The temperature specified value is maximum Design Ambient Temperature.
DCResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under direct current and 20 degrees centigrade.
MassPerLength	IfcMassPerLengthMeasure	[0..1]	Mass per length, i.e. mass of a beam with a unit length of extrusion. For example measured in kg/m.
TensileStrength	IfcPressureMeasure	[0..1]	Indicates the ability to withstand breakage apart under applied force.
ThermalExpansionCoefficient	IfcThermalExpansionCoefficientMeasure	[0..1]	Quantity characterizing the variation with thermodynamic temperature T of the distance l between two points of a body, under given conditions (IEC 113-04-27). The ratio is defined per Kelvin.
TorsionalStrength	IfcPressureMeasure	[0..1]	Shear strength in torsion.

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YoungModulus	IfcModulusOfElasticityMeasure	[0..1]	A measure of the Young''s modulus of elasticity of the material.

3.25 Property Set: Pset_CableSegmentTypeEarthingConductor

Properties of earthing conductors used in overhead contact line systems. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type CONDUCTORSEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ResistanceToGround	IfcElectricResistanceMeasure	[0..1]	The resistance through earthing conductor to the ground. Real part of the impedance to earth [SOURCE IEC: 195-01-18]

3.26 Property Set: Pset_CableSegmentTypeFiberSegment

Properties of fiber segments. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type FIBERSEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
FiberColour	PEnum_FiberColour	[0..1]	Indicates the colour of a single fiber.
FiberType	PEnum_FiberType	[0..1]	Indicates the type of the single fiber.
HasTightJacket	IfcBoolean	[0..1]	Indicates whether the fiber has a tight jacket or not.

3.27 Property Set: Pset_CableSegmentTypeFiberTubeSegment

Properties of Fiber tubes segments. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type FIBERTUBESEGMENT.

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
FiberTubeColour	PEnum_FiberColour	[0..1]	Indicates the colour of a single fiber tube.
NumberOfFibers	IfcInteger	[0..1]	Indicates the number of fibers in the single tube or cable.

3.28 Property Set: Pset_CableSegmentTypeOpticalCableSegment

Properties of optical cables segments. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type OPTICALCABLESEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
FiberMode	PEnum_FiberMode	[0..1]	Indicates the fiber mode.
NumberOfFibers	IfcInteger	[0..1]	Indicates the number of fibers in the single tube or cable.
NumberOfMultiModeFibers	IfcInteger	[0..1]	Total number of multi-mode fibers in the optical fiber cable.
NumberOfSingleModeFibers	IfcInteger	[0..1]	Total number of single-mode fibers in the optical fiber cable.
NumberOfTubes	IfcInteger	[0..1]	Number of fiber tubes.
OpticalCableStructure	PEnum_OpticalCableStructureType	[0..1]	Distinguishes between different structures of an optical fiber cable.

3.29 Property Set: Pset_CableSegmentTypeStitchWire

Properties of stitch wires. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type STICHWIRE.

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
MechanicalTension	IfcForceMeasure	[0..1]	Nominal value of mechanical force applied to a flow segment.
NominalLength	IfcNonNegativeLengthMeasure	[0..1]	Nominal length of the object.
TensileStrength	IfcPressureMeasure	[0..1]	Indicates the ability to withstand breakage apart under applied force.
UltimateTensileStrength	IfcForceMeasure	[0..1]	Indicates the maximum stress that a material or element can withstand before breaking while being stretched or pulled.

3.30 Property Set: Pset_CableSegmentTypeWirePairSegment

Properties of wire pair segments. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type WIREPAIRSEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CharacteristicImpedance	IfcElectricResistanceMeasure	[0..1]	A quantity defined for a mode of propagation at a given frequency in a specific uniform transmission line or uniform waveguide by one of the three following relations: \X\0D $Z_1 = S /$ |I|2\X\0D $Z_2 = $ |U|2 $/ S$\X\0D $Z_3 = U / I$\X\0D where Z is the complex characteristic impedance, S the complex power and U and I are the values, usually complex, respectively of a voltage and a current conventionally defined for each type of

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			mode by analogy with transmission line equations.
ConductorDiameter	IfcPositiveLengthMeasure	[0..1]	Indicates the conductor diameter. It is only used for twisted and untwisted wire pair.
CoreConductorDiameter	IfcPositiveLengthMeasure	[0..1]	Indicates the core conductor diameter. It is only used for coaxial wire pair.
JacketColour	IfcLabel	[0..1]	Indicates the colour of the cable or fitting jacket.
ShieldConductorDiameter	IfcPositiveLengthMeasure	[0..1]	Indicates the shielded conductor diameter. It is only used for coaxial wire pair.
WirePairType	PEnum_WirePairType	[0..1]	Indicates the type of wire pair, i.e., twisted, untwisted or coaxial pair.

3.31 Property Set: Pset_CoaxialCable

Properties applicable to a coaxial cable, which is a copper cable with a variable number of copper coaxial pair conductors used to transmit data by means of electrical signals, especially at radio frequency. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type CABLESEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CharacteristicImpedance	IfcElectricResistanceMeasure	[0..1]	A quantity defined for a mode of propagation at a given frequency in a specific uniform transmission line or uniform waveguide by one of the three following relations: \X\0D $Z1 = S/ |I|2$\X\0D $Z2 = |U|2 / S$\X\0D $Z3 = U / I$\X\0D where Z is the complex characteristic impedance, S the complex power and U and I are the values, usually complex, respectively of a voltage and a current conventionally defined for each type of mode by analogy with transmission line equations.

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CouplingLoss	IfcNormalisedRatioMeasure	[0..1]	Indicates the coupling loss of a leaky coaxial cable (radiating cable).
MaximumTransmissionAttenuation	IfcSoundPowerLevelMeasure	[0..1]	Indicates the Maximum transmission attenuation of feeder.
NumberOfCoaxialPairs	IfcInteger	[0..1]	Indicates the total number of coaxial pairs in the coaxial cable.
PropagationSpeedCoefficient	IfcRatioMeasure	[0..1]	Indicates the propagation speed coefficient.
RadiantFrequency	IfcFrequencyMeasure	[0..1]	Indicates the radiant frequency of the leaky coaxial cable (radiating cable).
TransmissionLoss	IfcNormalisedRatioMeasure	[0..1]	Indicates the transmission loss of the leaky coaxial cable (radiating cable).

3.32 Property Set: Pset_ElectricalFeederLine

Properties of conductors used as feeder line. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type CONDUCTORSEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CurrentCarryingCapacity	IfcElectricCurrentMeasure	[0..1]	Maximum value of electric current which can be carried continuously by a conductor, a device or an apparatus, under specified conditions without its steady-state temperature exceeding a specified value. Based on IEC60826-11-13. NOTE: The temperature specified value is maximum Design Ambient Temperature.
DesignAmbientTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	The highest and lowest local ambient temperature likely to be encountered.
ElectricalClearanceDistance	IfcPositiveLengthMeasure	[0..1]	The distance between two conductive parts along a string stretched the shortest way between these conductive parts. (IEV ref 441-17-31)
ElectricalFeederType	PEnum_ElectricalFeederType	[0..1]	Type of electrical feeder.

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3.33 Property Set: Pset_OpticalPigtail

Property set for optical pigtail. This property set is applicable to a type or occurence of _IfcCableSegment_ with predefined type OPTICALCABLESEGMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ConnectorType	IfcLabel	[0..1]	Indicates the type of connector.
FiberType	PEnum_FiberType	[0..1]	Indicates the type of the single fiber.
JacketColour	IfcLabel	[0..1]	Indicates the colour of the cable or fitting jacket.

3.34 Property Set: Pset_PatchCordCable

This property set has properties that are applicable to cable segment and optical cable segment, indicated that the cable is a patch cord cable, which is fitted with connectors at both ends, allowing it to be rapidly and conveniently connected to other cables or to distribution panels.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
JacketColour	IfcLabel	[0..1]	Indicates the colour of the cable or fitting jacket.

3.35 Property Set: Pset_SymmetricPairCable

Properties applicable to a symmetric pair cable, which is is a copper cable with a variable number of copper twisted symmetric pair conductors used to transmit data by means of electrical signals. this property set is applicable to type or occurence of _IfcCableSegment_ with predefined type CABLESEGMENTbSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
NumberOfTwistedPairs	IfcInteger	[0..1]	Total number of twisted wire pairs in copper pair cables.
NumberOfUntwistedPairs	IfcInteger	[0..1]	Total number of untwisted wire pairs in the copper pair cable.

3.36 Property Set: Pset_TelecomCableGeneral

Properties common to occurrences and types of IfcCableSegment and IfcCableFitting applied in telecommunication domain.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
Attenuation	IfcReal	[0..1]	Indicates the optical or electrical attenuation of the cable measured in dB, at a certain wavelength or frequency, changing with the length of the cable.
CableArmourType	PEnum_CableArmourType	[0..1]	The armour type of the cable for mechanical protection.
CableFunctionType	PEnum_CableFunctionType	[0..1]	Distinguishes between Telecom and Power Supply cables.
FireRating	IfcLabel	[0..1]	Fire rating for this object.\X\0D It is given according to the national fire safety classification.
IsFireResistant	IfcBoolean	[0..1]	Indicates whether the cable is fire resistant.
JacketColour	IfcLabel	[0..1]	Indicates the colour of the cable or fitting jacket.
NominalDiameter	IfcPositiveLengthMeasure	[0..1]	The nominal diameter of the segment.

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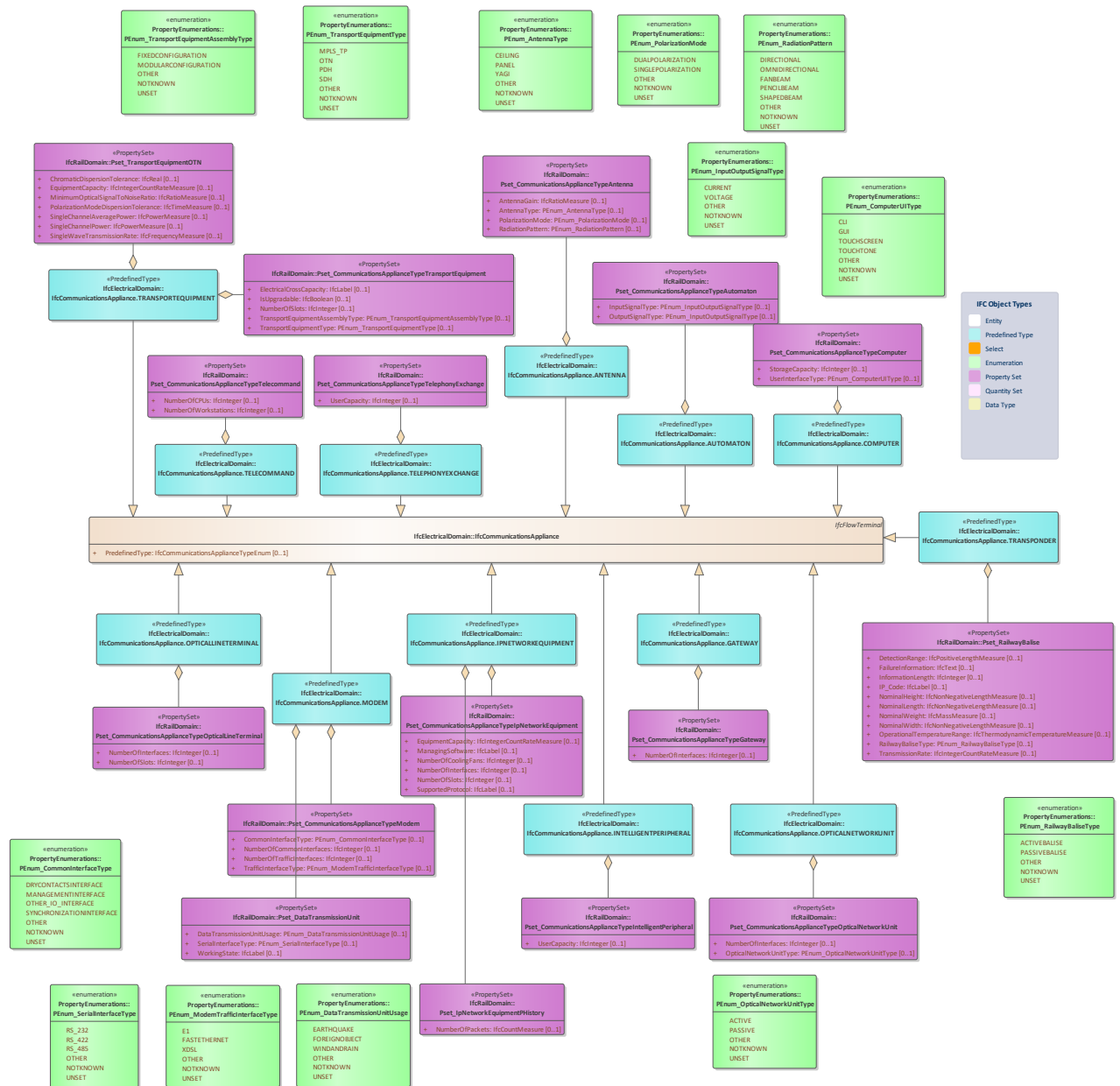
Figure 11: Psets_IfcCommunicationsAppliance -

3.37 Property Set: Pset_CommunicationsApplianceTypeAntenna

Properties common to an antenna. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with the predefined type ANTENNA.

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AntennaGain	IfcRatioMeasure	[0..1]	Indicates the antenna gain, which is a ratio of the power transmitted by an antenna in a specific direction compared to an isotropic antenna.
AntennaType	PEnum_AntennaType	[0..1]	Indicates the type of antenna.
PolarizationMode	PEnum_PolarizationMode	[0..1]	Indicates the polarization mode of antenna.
RadiationPattern	PEnum_RadiationPattern	[0..1]	Indicates the radiation pattern of antenna.

3.38 Property Set: Pset_CommunicationsApplianceTypeAutomaton

Properties common to automaton appliances. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type of AUTOMATON.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
InputSignalType	PEnum_InputOutputSignalType	[0..1]	The type of the input signal.
OutputSignalType	PEnum_InputOutputSignalType	[0..1]	The type of the output signal.

3.39 Property Set: Pset_CommunicationsApplianceTypeComputer

Properties common to a computer. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type of COMPUTER.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

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Name	Type	Multiplicity	Definition
StorageCapacity	IfcInteger	[0..1]	Indicates the storage capacity defined by bytes that can be handled by the appliance.
UserInterfaceType	PEnum_ComputerUIType	[0..1]	Indicates the user interface of the computer.

3.40 Property Set: Pset_CommunicationsApplianceTypeGateway

Properties common to a gateway. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type of GATEWAY.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.

3.41 Property Set: Pset_CommunicationsApplianceTypeIntelligentPeripheral

Properties common to a intelligent peripheral. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type of INTELLIGENT_PERIPHERAL.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
UserCapacity	IfcInteger	[0..1]	Indicates the user capacity of the device, defined as the maximum number of users that can be active at the same time.

3.42 Property Set: Pset_CommunicationsApplianceTypeIpNetworkEquipment

Properties common to a IP network equipment. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type of IP_NETWORK_EQUIPMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
EquipmentCapacity	IfcIntegerCountRateMeasure	[0..1]	Indicates the equipment capacity of the appliance. The value is defined in bits/s.
ManagingSoftware	IfcLabel	[0..1]	Indicates the type of software responsible for managing the equipment.
NumberOfCoolingFans	IfcInteger	[0..1]	Indicates the number of cooling fans in the equipment.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
NumberOfSlots	IfcInteger	[0..1]	Indicates the number of device slots.
SupportedProtocol	IfcLabel	[0..1]	Indicates the protocol supported by the IP network equipment.

3.43 Property Set: Pset_CommunicationsApplianceTypeModem

Properties common to a modem. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type MODEM.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CommonInterfaceType	PEnum_CommonInterfaceType	[0..1]	Indicates the type of the device common interfaces.
NumberOfCommonInterfaces	IfcInteger	[0..1]	Indicates the number of common interfaces on the device.
NumberOfTrafficInterfaces	IfcInteger	[0..1]	Indicates the number of traffic interfaces on the device.
TrafficInterfaceType	PEnum_ModemTrafficInterfaceType	[0..1]	Indicates the type of the device traffic interfaces.

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3.44 Property Set: Pset_CommunicationsApplianceTypeOpticalLineTerminal

Properties common to a optical line terminal. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type OPTICALLINETERMINAL.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
NumberOfSlots	IfcInteger	[0..1]	Indicates the number of device slots.

3.45 Property Set: Pset_CommunicationsApplianceTypeOpticalNetworkUnit

Properties common to a optical network unit. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type OPTICAL_NETWORK_UNIT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
OpticalNetworkUnitType	PEnum_OpticalNetworkUnitType	[0..1]	Indicates the type of the optical network unit equipment.

3.46 Property Set: Pset_CommunicationsApplianceTypeTelecommand

Properties common to a telecommand. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type TELECOMMAND.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
NumberOfCPUs	IfcInteger	[0..1]	The number of CPUs used by the equipment.
NumberOfWorkstations	IfcInteger	[0..1]	Indicates the types or purposes of workstations and their number in the equipment. The defined purpose can be e.g. ''Diagnostic and maintenance'', ''Traffic and electric traction'', etc.

3.47 Property Set: Pset_CommunicationsApplianceTypeTelephonyExchange

Properties common to a telephony exchange. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type TELEPHONYEXCHANGE.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
UserCapacity	IfcInteger	[0..1]	Indicates the user capacity of the device, defined as the maximum number of users that can be active at the same time.

3.48 Property Set: Pset_CommunicationsApplianceTypeTransportEquipment

Properties common to a transport equipment. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type TRANSPORTEQUIPMENT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ElectricalCrossCapacity	IfcLabel	[0..1]	Indicates the electrical cross capacity of the transport equipment.
IsUpgradable	IfcBoolean	[0..1]	Indicates whether the transport equipment can be upgraded or not.

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NumberOfSlots	IfcInteger	[0..1]	Indicates the number of device slots.
TransportEquipmentAssemblyType	PEnum_TransportEquipmentAssemblyType	[0..1]	Indicates the type of transport equipment assembly.
TransportEquipmentType	PEnum_TransportEquipmentType	[0..1]	Indicates the type of transport equipment.

3.49 Property Set: Pset_DataTransmissionUnit

Properties common to a data transmission unit. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type MODEM.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DataTransmissionUnitUsage	PEnum_DataTransmissionUnitUsage	[0..1]	Indicates the usage of the data transmission unit. It can be used to transmit data for different types of sensors.
SerialInterfaceType	PEnum_SerialInterfaceType	[0..1]	Indicates the type of serial interface used by the device.
WorkingState	IfcLabel	[0..1]	Indicates the working state of device or system.

3.50 Property Set: Pset_IpNetworkEquipmentPHistory

Properties defining performance information for IP network equipments.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfPackets	IfcCountMeasure	[0..1]	Indicates the number of packets of the IP network equipment.

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3.51 Property Set: Pset_RailwayBalise

Properties applicable to a railway balise. This property set is applied to a type or occurrence of _IfcCommunicationsAppliance_ with predefined type TRANSPONDER.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DetectionRange	IfcPositiveLengthMeasure	[0..1]	The detection range of the equipment.
FailureInformation	IfcText	[0..1]	The information for failure description.
InformationLength	IfcInteger	[0..1]	Indicates supported bytes of the data Information, e.g.127 bytes.
IP_Code	IfcLabel	[0..1]	IP Code, the International Protection Marking, IEC 60529), classifies and rates the degree of protection provided against intrusion.
NominalHeight	IfcNonNegativeLengthMeasure	[0..1]	Nominal height of the object.
NominalLength	IfcNonNegativeLengthMeasure	[0..1]	Nominal length of the object.
NominalWeight	IfcMassMeasure	[0..1]	Nominal weight of the object.
NominalWidth	IfcNonNegativeLengthMeasure	[0..1]	The nominal width of the object.
OperationalTemperatureRange	IfcThermodynamicTemperatureMeasure	[0..1]	Allowable operation ambient air temperature range.
RailwayBaliseType	PEnum_RailwayBaliseType	[0..1]	Type of the railway balise.
TransmissionRate	IfcIntegerCountRateMeasure	[0..1]	Data transmission rate between the device and the receiving module in bits per second.

3.52 Property Set: Pset_TransportEquipmentOTN

Properties in this property set are applied to transport equipment that act in optical transport network (OTN) system.

Status: Implemented

Set Properties

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Applicable Entities		stereotype	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ChromaticDispersionTolerance	IfcReal	[0..1]	Indicates the tolerance of the transport equipment chromatic dispersion. The value is defined by picosecond per nanometer (ps/nm).
EquipmentCapacity	IfcIntegerCountRateMeasure	[0..1]	Indicates the equipment capacity of the appliance. The value is defined in bits/s.
MinimumOpticalSignalToNoiseRatio	IfcRatioMeasure	[0..1]	Indicates the minimum optical signal to noise ratio of the transport equipment.
PolarizationModeDispersionTolerance	IfcTimeMeasure	[0..1]	Indicates the polarization mode dispersion tolerance of the transport equipment. It is usually measured by picosecond.
SingleChannelAveragePower	IfcPowerMeasure	[0..1]	Indicates the average power of a single channel of the transport equipment.
SingleChannelPower	IfcPowerMeasure	[0..1]	Indicates the power range of a single channel of the transport equipment.
SingleWaveTransmissionRate	IfcFrequencyMeasure	[0..1]	Indicates the single wave transmission rate of the transport equipment.
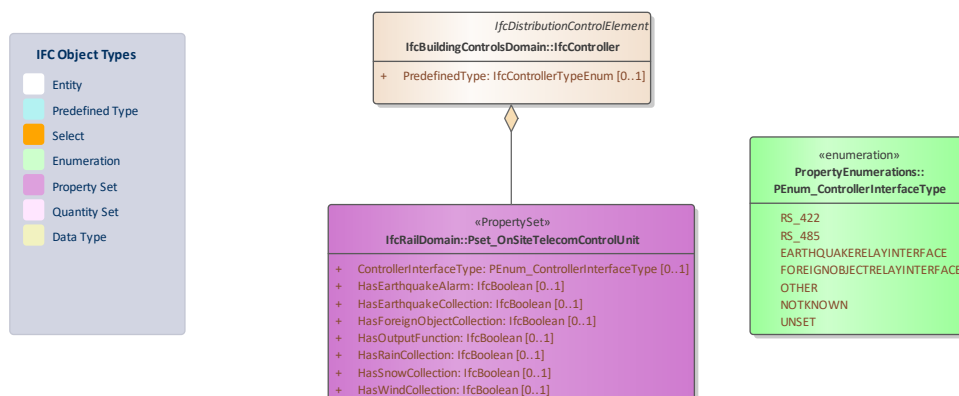
Figure 12: Psets_IfcController -

3.53 Property Set: Pset_OnSiteTelecomControlUnit

Properties for on-site telecom control unit used for railway.

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ControllerInterfaceType	PEnum_ControllerInterfaceType	[0..1]	Indicates the type of serial interface used by the device.
HasEarthquakeAlarm	IfcBoolean	[0..1]	Indicates whether the on-site control unit includes earthquake alarm function.
HasEarthquakeCollection	IfcBoolean	[0..1]	Indicates whether the on-site control unit collects earthquake information.
HasForeignObjectCollection	IfcBoolean	[0..1]	Indicates whether the on-site control unit collects foreign object information.
HasOutputFunction	IfcBoolean	[0..1]	Indicates whether the on-site control unit includes an output function.
HasRainCollection	IfcBoolean	[0..1]	Indicates whether the on-site control unit collects information on rain.
HasSnowCollection	IfcBoolean	[0..1]	Indicates whether the on-site control unit collects information on snow depth.
HasWindCollection	IfcBoolean	[0..1]	Indicates whether the on-site control unit collects information on wind.
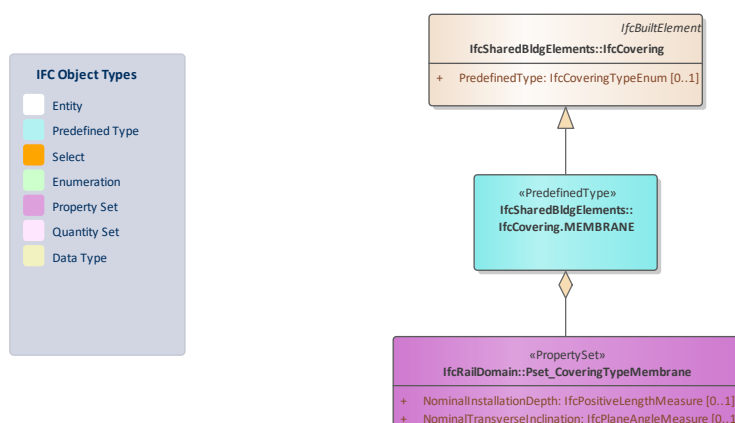
Figure 13: Psets_IfcCovering -

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3.54 Property Set: Pset_CoveringTypeMembrane

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NominalInstallationDepth	IfcPositiveLengthMeasure	[0..1]	Nominal installation depth underground.
NominalTransverseInclination	IfcPlaneAngleMeasure	[0..1]	Required nominal angle of transverse slope.

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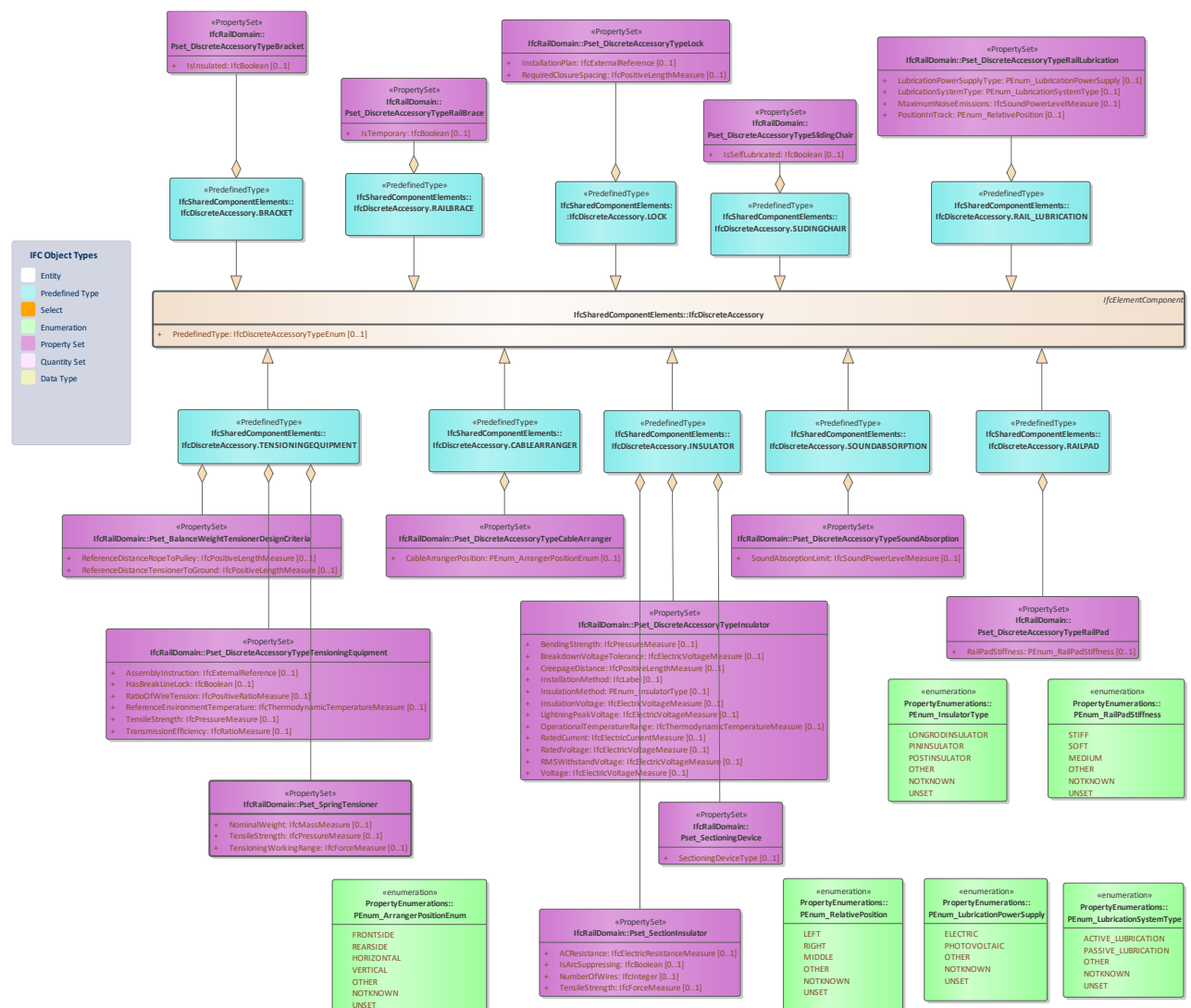
Figure 14: Psets_IfcDicreteAccessory -

3.55 Property Set: Pset_BalanceWeightTensionerDesignCriteria

Properties of a weight tensioner. The property set can be used by the predefined type TENSIONINGEQUIPMENT of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

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ReferenceDistanceRope ToPulley	IfcPositiveLengthMeasure	[0..1]	The reference design criteria for distance from the end of the rope to the fixed pulley.It defines the nominal distance in relation to temperature.
ReferenceDistanceTens ionerToGround	IfcPositiveLengthMeasure	[0..1]	The reference design criteria distance from the last tensioner to the ground or the base surface (B value). It defines the nominal distance in relation to temperature.

3.56 Property Set: Pset_DiscreteAccessoryTypeBracket

Properties of a bracket. The property set can be used by the predefined type BRACKET of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
IsInsulated	IfcBoolean	[0..1]	Indicates whether the element is insulated or not.

3.57 Property Set: Pset_DiscreteAccessoryTypeCableArranger

Properties used for a cable arranger. The property set can be used by the predefined type CABLEARRANGER of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CableArrangerPosition	PEnum_ArrangerPosition Enum	[0..1]	Indicates the directional position of the cable arranger: vertical, horizontal, front or rear. It is relative to the element (usually a cabinet) that the cable arranger is affiliated.

3.58 Property Set: Pset_DiscreteAccessoryTypeInsulator

Properties of an insulator. The property set can be used by the predefined type INSULATOR of IfcDiscreteAccessory.

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
BendingStrength	IfcPressureMeasure	[0..1]	Bending strength.
BreakdownVoltageTolerance	IfcElectricVoltageMeasure	[0..1]	Nominal value of the spark gap breakdown voltage tolerance.
CreepageDistance	IfcPositiveLengthMeasure	[0..1]	Shortest distance or the sum of the shortest distances along the surface on an insulator between two conductive parts which normally have the operating voltage between them. (IEV ref 471-01-04)
InstallationMethod	IfcLabel	[0..1]	Method of installation of cable/conductor or other elements. Installation methods are typically defined by reference in standards such as IEC 60364-5-52, table 52A-1 or BS7671 Appendix 4 Table 4A1 etc. Selection of the value to be used should be determined from such a standard according to local usage.
InsulationMethod	PEnum_InsulatorType	[0..1]	The method used to insulate.
InsulationVoltage	IfcElectricVoltageMeasure	[0..1]	The max voltage for normal insulation operation.
LightningPeakVoltage	IfcElectricVoltageMeasure	[0..1]	The peak lightning voltage that the insulator could withstand.
OperationalTemperatureRange	IfcThermodynamicTemperatureMeasure	[0..1]	The temperature range in which the device operates normally.
RatedCurrent	IfcElectricCurrentMeasure	[0..1]	The current that a device is designed to handle.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.
RMSWithstandVoltage	IfcElectricVoltageMeasure	[0..1]	Rms value of sinusoidal power frequency voltage that the insulation of the given equipment can withstand during tests made under specified conditions and for a specified duration. (IEV ref 614-03-22\X2\FF09\X0\

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| Voltage | IfcElectricVoltageMeasure | [0..1] | The actual voltage and operable range. |

3.59 Property Set: Pset_DiscreteAccessoryTypeLock

Properties of locking equipment. The property set can be used by the predefined type LOCK of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
InstallationPlan	IfcExternalReference	[0..1]	Reference to external information source about installation or construction plan of the element.
RequiredClosureSpacing	IfcPositiveLengthMeasure	[0..1]	Required length of the closure spacing.

3.60 Property Set: Pset_DiscreteAccessoryTypeRailBrace

Properties of a rail brace. The property set can be used by the predefined type RAILBRACE of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
IsTemporary	IfcBoolean	[0..1]	Indicates if the installation of the element is temporary or not.

3.61 Property Set: Pset_DiscreteAccessoryTypeRailLubrication

Properties of rail lubrication equipment. The property set can be used by the predefined type RAIL_LUBRICATION of IfcDiscreteAccessory.

Status: Implemented

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Set Properties			
Applicable Entities		stereotype	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
LubricationPowerSupplyType	PEnum_LubricationPowerSupply	[0..1]	Type of power supply method used by the rail lubrication.
LubricationSystemType	PEnum_LubricationSystemType	[0..1]	Design and type of lubricating system e.g. active, passive.
MaximumNoiseEmissions	IfcSoundPowerLevelMeasure	[0..1]	Maximum noise emissions limit at this location.
PositionInTrack	PEnum_RelativePosition	[0..1]	Indicates the relative position of the element in track, which lies to the left or right as facing in the direction of increasing stationing values.

3.62 Property Set: Pset_DiscreteAccessoryTypeRailPad

Properties of rail pads. The property set can be used by the predefined type RAILPAD of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		stereotype	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
RailPadStiffness	PEnum_RailPadStiffness	[0..1]	Indicates the stiffness of a rail pad.

3.63 Property Set: Pset_DiscreteAccessoryTypeSlidingChair

Properties of a sliding chair. The property set can be used by the predefined type SLIDINGCHAIR of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		stereotype	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
IsSelfLubricated	IfcBoolean	[0..1]	Indicates whether the element is self lubricated or not.

3.64 Property Set: Pset_DiscreteAccessoryTypeSoundAbsorption

Properties of sound absorption equipment used in railway. The property set can be used by the predefined type SOUNDABSORPTION of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
SoundAbsorptionLimit	IfcSoundPowerLevelMeasure	[0..1]	Mandatory limit values in sound absorption.

3.65 Property Set: Pset_DiscreteAccessoryTypeTensioningEquipment

Properties of tensioning equipment used in railway. The property set can be used by the predefined type TENSIONINGEQUIPMENT of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
HasBreakLineLock	IfcBoolean	[0..1]	Indicates whether the equipment has the function of brake line lock or not.
RatioOfWireTension	IfcPositiveRatioMeasure	[0..1]	The ratio of wire tension to tensioner weight.
ReferenceEnvironmentTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	Ideal temperature range.

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| TensileStrength | IfcPressureMeasure | [0..1] | Indicates the ability to withstand breakage apart under applied force. |
| TransmissionEfficiency | IfcRatioMeasure | [0..1] | Transmission efficiency of the tensioning equipment. |

3.66 Property Set: Pset_SectioningDevice

Properties of sectioning device used in railway. The property set can be used by the predefined type INSULATOR of IfcDiscreteAccessory.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
SectioningDeviceType		[0..1]	Indicates the sectioning device type.

3.67 Property Set: Pset_SectionInsulator

Properties applicable to the insulator type of discrete accessory, indicated that the insulator is a section insulator used in the overhead contact line system.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ACResistance	IfcElectricResistanceMeasure	[0..1]	The resistance under AC.
IsArcSuppressing	IfcBoolean	[0..1]	Indicates whether the element has the ability to suppress an arc.
NumberOfWires	IfcInteger	[0..1]	The number of wires used in the element.
TensileStrength	IfcForceMeasure	[0..1]	Measurement of the ability to withstand breakage under applied force.

3.68 Property Set: Pset_SpringTensioner

Properties of spring tensioner used in railway. The property set can be used by the predefined type TENSIONINGEQUIPMENT of IfcDiscreteAccessory.

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NominalWeight	IfcMassMeasure	[0..1]	Nominal weight of the object.
TensileStrength	IfcPressureMeasure	[0..1]	Indicates the ability to withstand breakage apart under applied force.
TensioningWorkingRange	IfcForceMeasure	[0..1]	The working range of the tensioning equipment under normal operation.
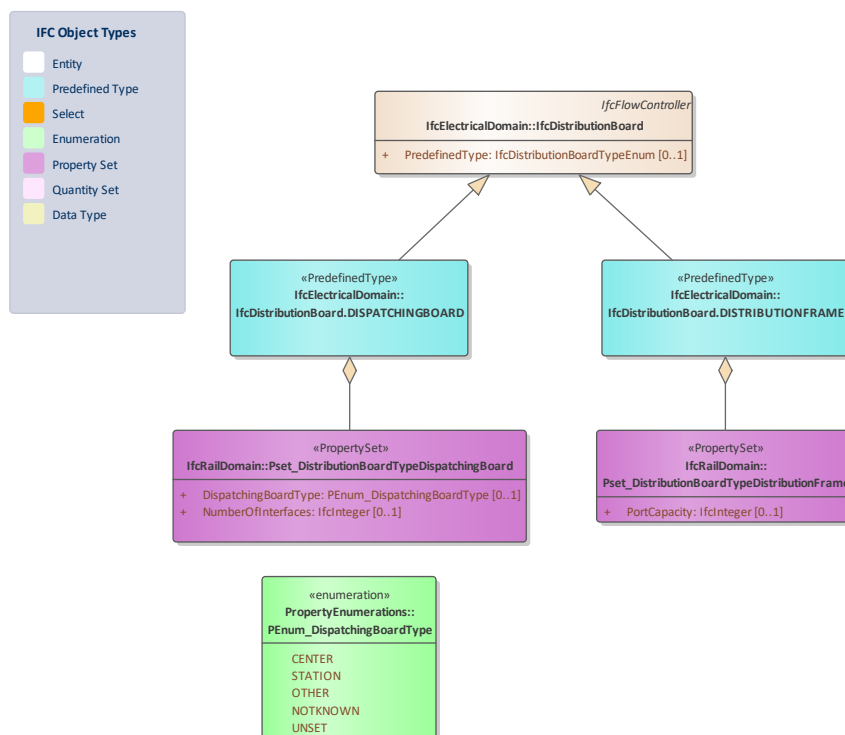
Figure 15: Psets_IfcDistributionBoard -

3.69 Property Set: Pset_DistributionBoardTypeDispatchingBoard

Properties for _IfcDistributionBoard_ with PredefinedType DISPATCHINGBOARD.

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DispatchingBoardType	PEnum_DispatchingBoardType	[0..1]	Indicates the type of dispatching board.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.

3.70 Property Set: Pset_DistributionBoardTypeDistributionFrame

Properties for _IfcDistributionBoard_ with PredefinedType DISTRIBUTIONFRAME.

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
PortCapacity	IfcInteger	[0..1]	Indicates the number of ports in the passive device that can be used to interconnect cables.

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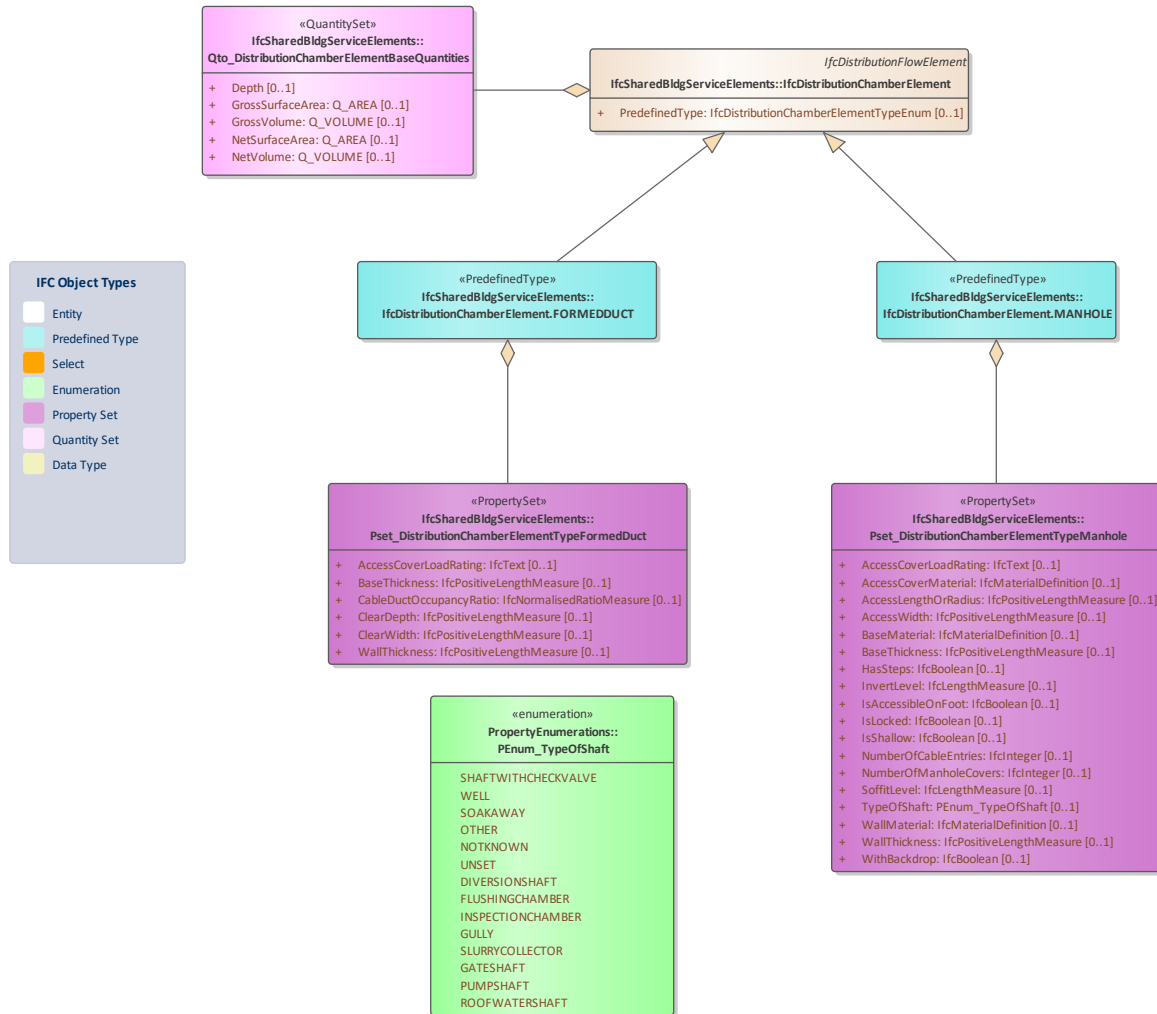
Figure 16: Psets_IfcDistributionChamberElement -

3.71 Property Set: Pset_DistributionChamberElementTypeFormedDuct

Space formed in the ground for the passage of pipes, cables, ducts.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

AccessCoverLoadRating	IfcText	[0..1]	The load rating of the access cover (which may be a value or an alphanumerically defined class rating).
BaseThickness	IfcPositiveLengthMeasure	[0..1]	The thickness of the duct base construction\X\0D NOTE: It is assumed that duct base will be constructed at a single thickness.
CableDuctOccupancyRatio	IfcNormalisedRatioMeasure	[0..1]	Indicates the ratio between the number of cables in the duct and the maximum number of cables that the duct can contain.
ClearDepth	IfcPositiveLengthMeasure	[0..1]	The depth of the formed space in the duct.
ClearWidth	IfcPositiveLengthMeasure	[0..1]	The width of the formed space in the duct.
WallThickness	IfcPositiveLengthMeasure	[0..1]	The thickness of the duct wall construction\X\0D NOTE: It is assumed that chamber walls will be constructed at a single thickness.

3.72 Property Set: Pset_DistributionChamberElementTypeManhole

Chamber constructed on a drain, sewer or pipeline and with a removable cover, that permits the entry of a person.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AccessCoverLoadRating	IfcText	[0..1]	The load rating of the access cover (which may be a value or an alphanumerically defined class rating).
AccessCoverMaterial	IfcMaterialDefinition	[0..1]	The material from which the access cover to the chamber is constructed.\X\0D NOTE: It is assumed that chamber walls will be constructed of a single material.
AccessLengthOrRadius	IfcPositiveLengthMeasure	[0..1]	The length of the chamber access cover or, where the plan shape of the cover is circular, the radius.
AccessWidth	IfcPositiveLengthMeasure	[0..1]	The width of the chamber access cover where the plan shape of the cover is not circular.
BaseMaterial	IfcMaterialDefinition	[0..1]	The material from which the base of the chamber is constructed.\X\0D

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			NOTE: It is assumed that chamber base will be constructed of a single material.
BaseThickness	IfcPositiveLengthMeasure	[0..1]	The thickness of the chamber base construction\X\0D NOTE: It is assumed that chamber base will be constructed at a single thickness.
HasSteps	IfcBoolean	[0..1]	Indicates whether the chamber has steps (TRUE) or not (FALSE).
InvertLevel	IfcLengthMeasure	[0..1]	Level of the lowest part of the cross section as measured from ground level.
IsAccessibleOnFoot	IfcBoolean	[0..1]	Indicates whether the element is accessible on foot (TRUE) or not (FALSE).
IsLocked	IfcBoolean	[0..1]	Indicates whether the element is locked (TRUE) or not (FALSE).
IsShallow	IfcBoolean	[0..1]	Indicates whether the chamber has been designed as being shallow (TRUE) or deep (FALSE).
NumberOfCableEntries	IfcInteger	[0..1]	Indicates the number of cable entries in the manhole.
NumberOfManholeCovers	IfcInteger	[0..1]	Indicates the number of manhole covers.
SoffitLevel	IfcLengthMeasure	[0..1]	Level of the highest internal part of the cross section as measured from ground level.
TypeOfShaft	PEnum_TypeOfShaft	[0..1]	Additional information on the purpose of the shaft.
WallMaterial	IfcMaterialDefinition	[0..1]	The material from which the wall of the chamber is constructed.\X\0D NOTE: It is assumed that chamber walls will be constructed of a single material.
WallThickness	IfcPositiveLengthMeasure	[0..1]	The thickness of the chamber wall construction\X\0D NOTE: It is assumed that chamber walls will be constructed at a single thickness.
WithBackdrop	IfcBoolean	[0..1]	Indicates whether the chamber has a backdrop or tumbling bay (TRUE) or not (FALSE).

3.73 Quantity Set: Qto_DistributionChamberElementBaseQuantities

Base quantities that are common to the definition of all occurrences of distribution chamber elements.bSI Documentation

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«QuantitySet»

Quantities

Name	Type	Multiplicity	Definition
Depth		[0..1]	Indicates the depth of the element.
GrossSurfaceArea	Q_AREA	[0..1]	Total gross area of the inner surface of the chamber, not taking into account openings such as for pipes, ducts, or cables.
GrossVolume	Q_VOLUME	[0..1]	Total gross volume of the chamber, not taking into account any enclosed elements such as pipes, ducts, cables, or equipment.
NetSurfaceArea	Q_AREA	[0..1]	Total net area of the inner surface of the chamber, subtracting any openings such as for pipes, ducts, or cables.
NetVolume	Q_VOLUME	[0..1]	Total net volume of the chamber, subtracting any enclosed elements such as pipes, ducts, cables, or equipment.
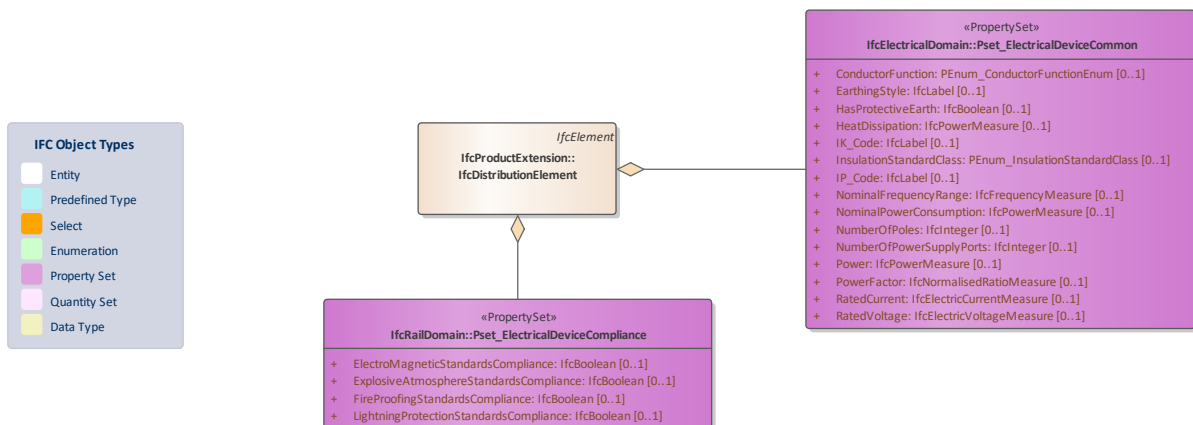
Figure 17: Psets_IfcDistributionElement -

3.74 Property Set: Pset_ElectricalDeviceCommon
A collection of properties that are commonly used by electrical device types.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
ConductorFunction	PEnum_ConductorFunctionEnum	[0..1]	Function of a line conductor to which a device is intended to be connected where L1, L2 and L3 represent the phase lines according to IEC 60446 notation (sometimes phase lines may be referenced by color [Red, Blue, Yellow] or by number [1, 2, 3] etc). Protective Earth is sometimes also known as CPC or common protective conductor. Note that for an electrical device, a set of line conductor functions may be applied.
EarthingStyle	IfcLabel	[0..1]	Indicates the earthing style of the electric device.
HasProtectiveEarth	IfcBoolean	[0..1]	Indicates whether the electrical device has a protective earth connection (=TRUE) or not (= FALSE).
HeatDissipation	IfcPowerMeasure	[0..1]	Indicates the heat dissipation of the electric device measured in power.
IK_Code	IfcLabel	[0..1]	IK Code according to IEC 62262 (2002) is a numeric classification for the degree of protection provided by enclosures for electrical equipment against external mechanical impacts.\X\0D > NOTE In earlier labeling, the third numeral (1..) had been occasionally added to the closely related IP Code on ingress protection, to indicate the level of impact protection.
InsulationStandardClass	PEnum_InsulationStandardClass	[0..1]	Insulation standard classes provides basic protection information against electric shock. Defines levels of insulation required in terms of constructional requirements (creepage and clearance distances) and electrical requirements (compliance with electric strength tests). Basic insulation is considered to be shorted under single fault conditions. The actual values required depend on the working voltage to which the insulation is subjected, as well as other factors. Also indicates whether the electrical device has a protective earth connection.
IP_Code	IfcLabel	[0..1]	IP Code, the International Protection Marking, IEC 60529), classifies and rates the degree of protection provided against intrusion.

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NominalFrequencyRange	IfcFrequencyMeasure	[0..1]	The upper and lower limits of frequency for which the operation of the device is certified.
NominalPowerConsumption	IfcPowerMeasure	[0..1]	Nominal total power consumption.
NumberOfPoles	IfcInteger	[0..1]	The number of live lines that is intended to be handled by the device.
NumberOfPowerSupplyPorts	IfcInteger	[0..1]	Indicates the number of power supply ports of the electric device.
Power	IfcPowerMeasure	[0..1]	The actual power and operable range.
PowerFactor	IfcNormalisedRatioMeasure	[0..1]	The ratio between the rated electrical power and the product of the rated current and rated voltage
RatedCurrent	IfcElectricCurrentMeasure	[0..1]	The current that a device is designed to handle.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The voltage that a device is designed to handle.

3.75 Property Set: Pset_ElectricalDeviceCompliance

Properties related to information about compliance to standards or regulations of electric devices.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ElectroMagneticStandardsCompliance	IfcBoolean	[0..1]	Information about compliance with regard to electro magnetic related standards.
ExplosiveAtmosphereStandardsCompliance	IfcBoolean	[0..1]	Information about compliance with regard to explosive atmosphere related standards.
FireProofingStandardsCompliance	IfcBoolean	[0..1]	Information about compliance with regard to fire proofing related standards.

LightningProtectionSta ndardsCompliance	IfcBoolean	[0..1]	Information about compliance with regard to lightning protection related standards.
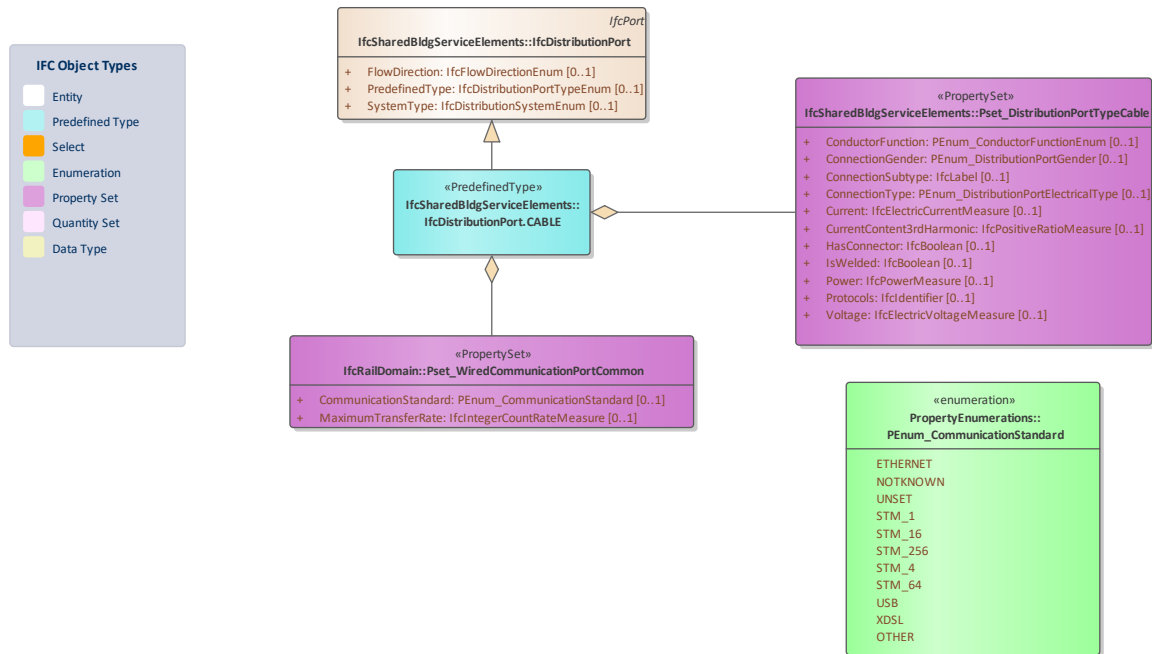
Figure 18: Psets_IfcDistributionPort -

3.76 Property Set: Pset_WiredCommunicationPortCommon
Properties used for wired communication port.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CommunicationStandard	PEnum_CommunicationStandard	[0..1]	Indicates the communication standard supported by the physical wired communication port.
MaximumTransferRate	IfcIntegerCountRateMeasure	[0..1]	Indicates the transmission rate in bit/s over the wired port.

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3.77 Property Set: Pset_DistributionPortTypeCable

Cable port occurrence attributes attached to an instance of IfcDistributionPort.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ConductorFunction	PEnum_ConductorFunctionEnum	[0..1]	For ports distributing power, indicates function of the conductors to which the load is connected.
ConnectionGender	PEnum_DistributionPortGender	[0..1]	The physical connection gender.
ConnectionSubtype	IfcLabel	[0..1]	The physical port connection subtype that further qualifies the ConnectionType. The following values are recommended:\X\0D \X\0D * ACPLUG: A, B, C, D, E, F, EF, G, H, I, J, K, L, M\X\0D * DIN: Mini3P, Mini4P, Mini5P, Mini6P, Mini7P, Mini8P, Mini9P\X\0D * DSub: DA15, DB25, DC37, DD50, DE9, DE15\X\0D * EIAJ: RC5720\X\0D * HDMI: A, B, C\X\0D * RADIO: IEEE802.11g, IEEE802.11n \X\0D * RJ: 4P4C, 6P2C, 8P8C\X\0D * SOCKET: E-11, E-12, E-14, E-17, E-26, E-27, E-39, E-40\X\0D * TRS: TS_Mini, TS_SubMini, TRS_Mini, TRS_SubMini
ConnectionType	PEnum_DistributionPortElectricalType	[0..1]	The physical port connection:\X\0D \X\0D ACPLUG: AC plug\X\0D DCPLUG: DC plug\X\0D CRIMP: bare wire
Current	IfcElectricCurrentMeasure	[0..1]	The actual current and operable range.

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CurrentContent3rdHarmonic	IfcPositiveRatioMeasure	[0..1]	The ratio between the third harmonic current and the phase current.
HasConnector	IfcBoolean	[0..1]	Indicate whether the wire pair end point is terminated with a connector or not.
IsWelded	IfcBoolean	[0..1]	Indicates whether the wire pair end point is joined to another wire pair end point by means of a welded junction.
Power	IfcPowerMeasure	[0..1]	The actual power and operable range.
Protocols	IfcIdentifier	[0..1]	For data ports, identifies the protocols used as defined by the Open System Interconnection (OSI) Basic Reference Model (ISO 7498). Layers include: 1. Physical; 2. DataLink; 3. Network; 4. Transport; 5. Session; 6. Presentation; 7. Application. Example: 3:IP, 4:TCP, 5:HTTP
Voltage	IfcElectricVoltageMeasure	[0..1]	The actual voltage and operable range.
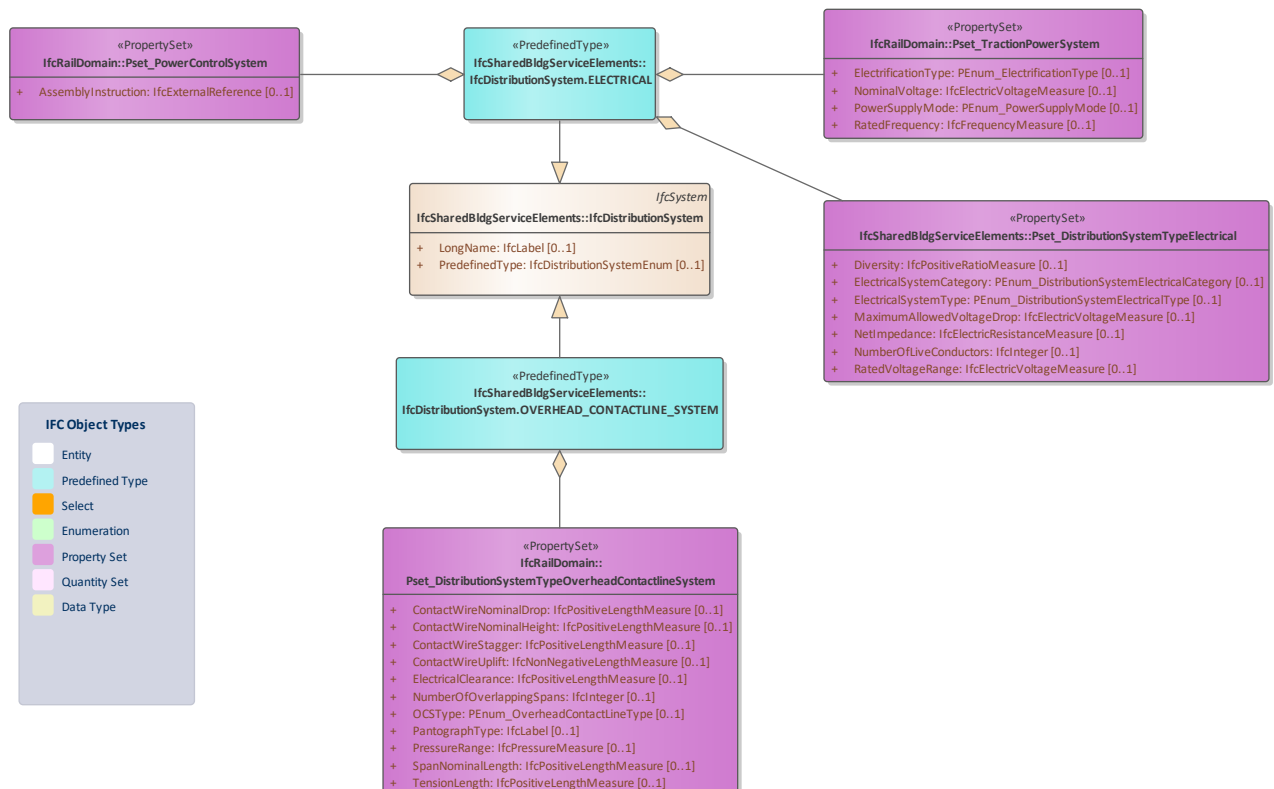
Figure 19: Psets_IfcDistributionSystem -

3.78 Property Set: Pset_DistributionSystemTypeOverheadContactlineSystem

Properties of an overhead contact line system. The property set is associated with the predefined type OVERHEAD_CONTACT_LINE_SYSTEM of _IfcDistributionSystem_.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ContactWireNominalDrop	IfcPositiveLengthMeasure	[0..1]	Vertical distance between the main catenary wire and the contact wire measured at a support point.
ContactWireNominalHeight	IfcPositiveLengthMeasure	[0..1]	Nominal distance from the top of the rail to the lower face of the contact wire, measured perpendicular to the track.
ContactWireStagger	IfcPositiveLengthMeasure	[0..1]	Lateral displacement of the contact wire to opposite sides of the track centre at successive supports.
ContactWireUplift	IfcNonNegativeLengthMeasure	[0..1]	Vertical upward movement of the contact wire due to the force produced from the pantograph.
ElectricalClearance	IfcPositiveLengthMeasure	[0..1]	The recommended air clearances between earth and the live parts of the overhead contactline system.
NumberOfOverlappingSpans	IfcInteger	[0..1]	Number of overlapping spans in the overhead contactline system.
OCSType	PEnum_OverheadContactLineType	[0..1]	Indicates the type of overhead contactline system (OCS).
PantographType	IfcLabel	[0..1]	Indicates the type of pantograph as a desgin parameter for the overhead contactline system.
PressureRange	IfcPressureMeasure	[0..1]	Allowable maximum and minimum working pressure (relative to ambient pressure).
SpanNominalLength	IfcPositiveLengthMeasure	[0..1]	The length of span as a design parameter for the overhead contactline system.
TensionLength	IfcPositiveLengthMeasure	[0..1]	Length of overhead contactline between two teminating points. It is a design parameter for the overhead contactline system.

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3.79 Property Set: Pset_PowerControlSystem

Properties of power control system. The property set can be used by the predefined type ELECTRICAL of IfcDistributionSystem. The property set can be used to characterize the system that controls the railway energy network.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.

3.80 Property Set: Pset_TractionPowerSystem

Properties of a traction power system. The property is associated to the predefined type ELECTRICAL of _IfcDistributionSystem_, and is used to characterise systems such as railway electrical distribution networks used to provide energy for rolling stock.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ElectrificationType	PEnum_ElectrificationType	[0..1]	Indicates the type of railway electrification.
NominalVoltage	IfcElectricVoltageMeasure	[0..1]	The optimum voltage for the electrical appliance or system.
PowerSupplyMode	PEnum_PowerSupplyMode	[0..1]	Power supply mode of the equipment or system.
RatedFrequency	IfcFrequencyMeasure	[0..1]	Frequency at which an AC electric power system reaches its optimum operating condition.

3.81 Property Set: Pset_DistributionSystemTypeElectrical

Properties of electrical circuits.

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
Diversity	IfcPositiveRatioMeasure	[0..1]	The ratio, expressed as a numerical\X\0D value or as a percentage, of the\X\0D simultaneous maximum demand of\X\0D a group of electrical appliances or\X\0D consumers within a specified period,\X\0D to the sum of their individual maximum\X\0D demands within the same\X\0D period. The group of electrical appliances is in this case connected to this circuit. Defenition from IEC 60050, IEV 691-10-04 \X\0D NOTE1: It is often not desirable to size each conductor in a distribution system to support the total connected load at that point in the network. Diversity is applied on the basis of the anticipated loadings that are likely to result from all loads not being connected at the same time.\X\0D NOTE2: Diversity is applied to final circuits only, not to sub-main circuits supplying other DBs.
ElectricalSystemCategory	PEnum_DistributionSystemElectricalCategory	[0..1]	Designates the voltage range of the circuit, according to IEC. HIGHVOLTAGE indicates >1000V AC or >1500V DV; LOWVOLTAGE indicates 50-1000V AC or 120-1500V DC; EXTRALOWVOLTAGE indicates <50V AC or <120V DC.
ElectricalSystemType	PEnum_DistributionSystemElectricalType	[0..1]	For certain purposes of electrical regulations, IEC 60364 defines types of system using type identifiers. Assignment of identifiers depends upon the relationship of the source, and of exposed conductive parts of the installation, to Ground (Earth). Identifiers that may be assigned through IEC 60364 are: \X\0D \X\0D \X2\2022\X0\TN type system, a system having one or more points of the source of energy directly earthed, the exposed conductive parts of

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			the installation being connected to that point by protective conductors, \X\0D
			\X2\2022\X0\TN C type system, a TN type system in which neutral and protective functions are combined in a single conductor throughout the system, \X\0D
			\X2\2022\X0\TN S type system, a TN type system having separate neutral and protective conductors throughout the system, \X\0D
			\X2\2022\X0\TN C S type system, a TN type system in which neutral and protective functions are combined in a single conductor in part of the system, \X\0D
			\X2\2022\X0\TT type system, a system having one point of the source of energy directly earthed, the exposed conductive parts of the installation being connected to earth electrodes electrically independent of the earth electrodes of the source, \X\0D
			\X2\2022\X0\IT type system, a system having no direct connection between live parts and Earth, the exposed conductive parts of the electrical installation being earthed.
MaximumAllowedVoltageDrop	IfcElectricVoltageMeasure	[0..1]	The maximum voltage drop across the circuit that must not be exceeded. \X\0D There are two voltage drop limit settings that may be applied; one for sub-main circuits, and one in each Distribution Board or Consumer Unit for final circuits connected to that board. The settings should limit the overall voltage drop to the required level. Default settings of 1.5% for sub-main circuits and 2.5% for final circuits, giving an overall limit of 4% may be applied.\X\0D NOTE: This value may also be specified as a constraint within an IFC model if required but is included within the property set at this stage pending implementation of the required capabilities within software applications.
NetImpedance	IfcElectricResistanceMeasure	[0..1]	The maximum earth loop impedance upstream of a circuit (typically stated as the variable Zs). This value is for 55o C (130oF) Celsius usage.

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NumberOfLiveConductors	IfcInteger	[0..1]	Number of live conductors within this circuit. Either this property or the ConductorFunction property (if only one) may be asserted.
RatedVoltageRange	IfcElectricVoltageMeasure	[0..1]	Voltage range as declared by the manufacturer expressed by its lower and upper rated voltages [Source : IEC 62368-1:2010, 3.3.10.5].
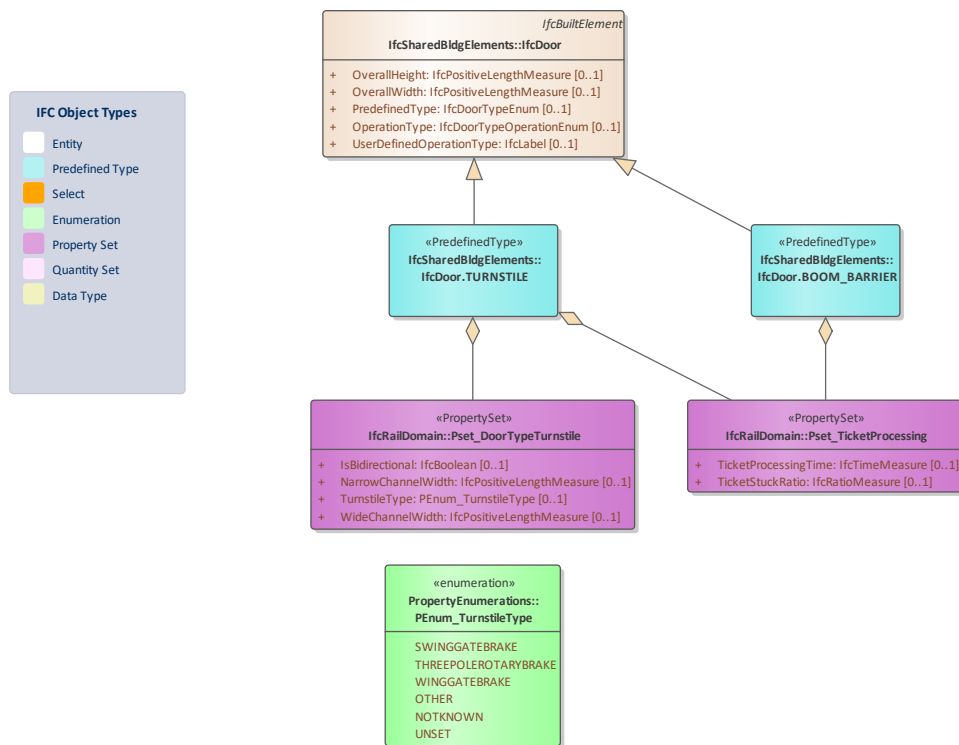
Figure 20: Psets_IfcDoor -

3.82 Property Set: Pset_DoorTypeTurnstile

Properties common to turnstiles or automatic gates used to control the flow of people or vehicles. This property set is applied to IfcDoor instances of predefined type TURNSTILE.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

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IsBidirectional	IfcBoolean	[0..1]	Indicates whether the turnstile is bidirectional.
NarrowChannelWidth	IfcPositiveLengthMeasure	[0..1]	Indicates the width of the narrow channel.
TurnstileType	PEnum_TurnstileType	[0..1]	Indicates the type of turnstile gate.
WideChannelWidth	IfcPositiveLengthMeasure	[0..1]	Indicates the width of the wide channel.

3.83 Property Set: Pset_TicketProcessing

Properties for indicating performance ratings for ticket processing of entry elements (e.g. turnstile, boom barrier).

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
TicketProcessingTime	IfcTimeMeasure	[0..1]	Indicates the processing time of a ticket.
TicketStuckRatio	IfcRatioMeasure	[0..1]	Indicates the ratio of tickets being stuck or jammed in the appliance.
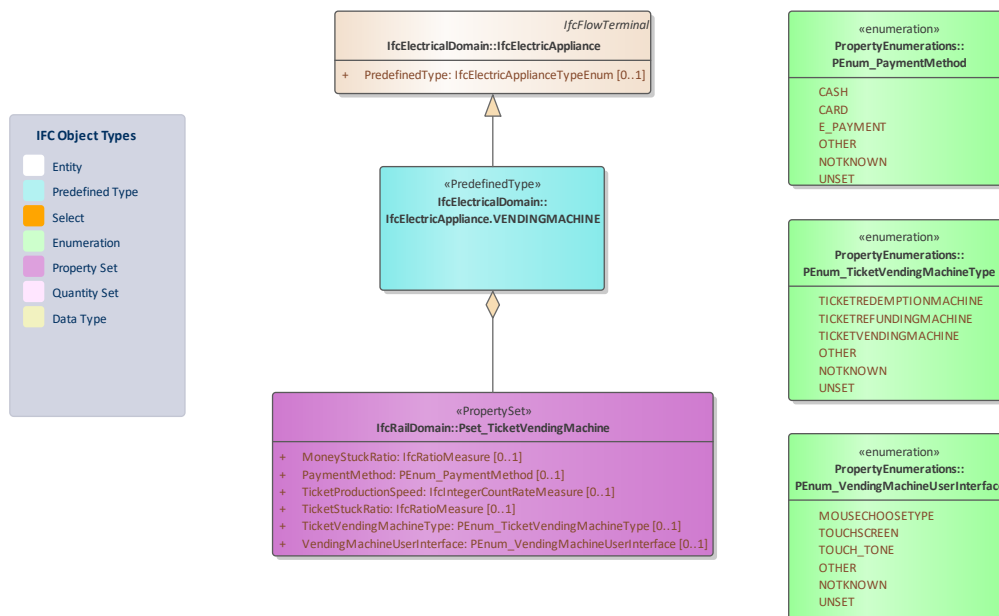
Figure 21: Psets_IfcElectricAppliance -

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3.84 Property Set: Pset_TicketVendingMachine

Properties of ticket vending machine. The property set can be used by _IfcElectricAppliance_ with PredefinedType VENDINGMACHINE.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
MoneyStuckRatio	IfcRatioMeasure	[0..1]	Indicates the ratio of money being stuck or jammed in appliance.
PaymentMethod	PEnum_PaymentMethod	[0..1]	Indicates the vending machine payment method.
TicketProductionSpeed	IfcIntegerCountRateMeasure	[0..1]	Indicates the production speed of the ticket. It is measured by counting the number of tickets that can be produced per hour.
TicketStuckRatio	IfcRatioMeasure	[0..1]	Indicates the ratio of tickets being stuck or jammed in the appliance.
TicketVendingMachineType	PEnum_TicketVendingMachineType	[0..1]	Indicates the type of ticket vending machine.
VendingMachineUserInterface	PEnum_VendingMachineUserInterface	[0..1]	Indicates the type of vending machine user interface.

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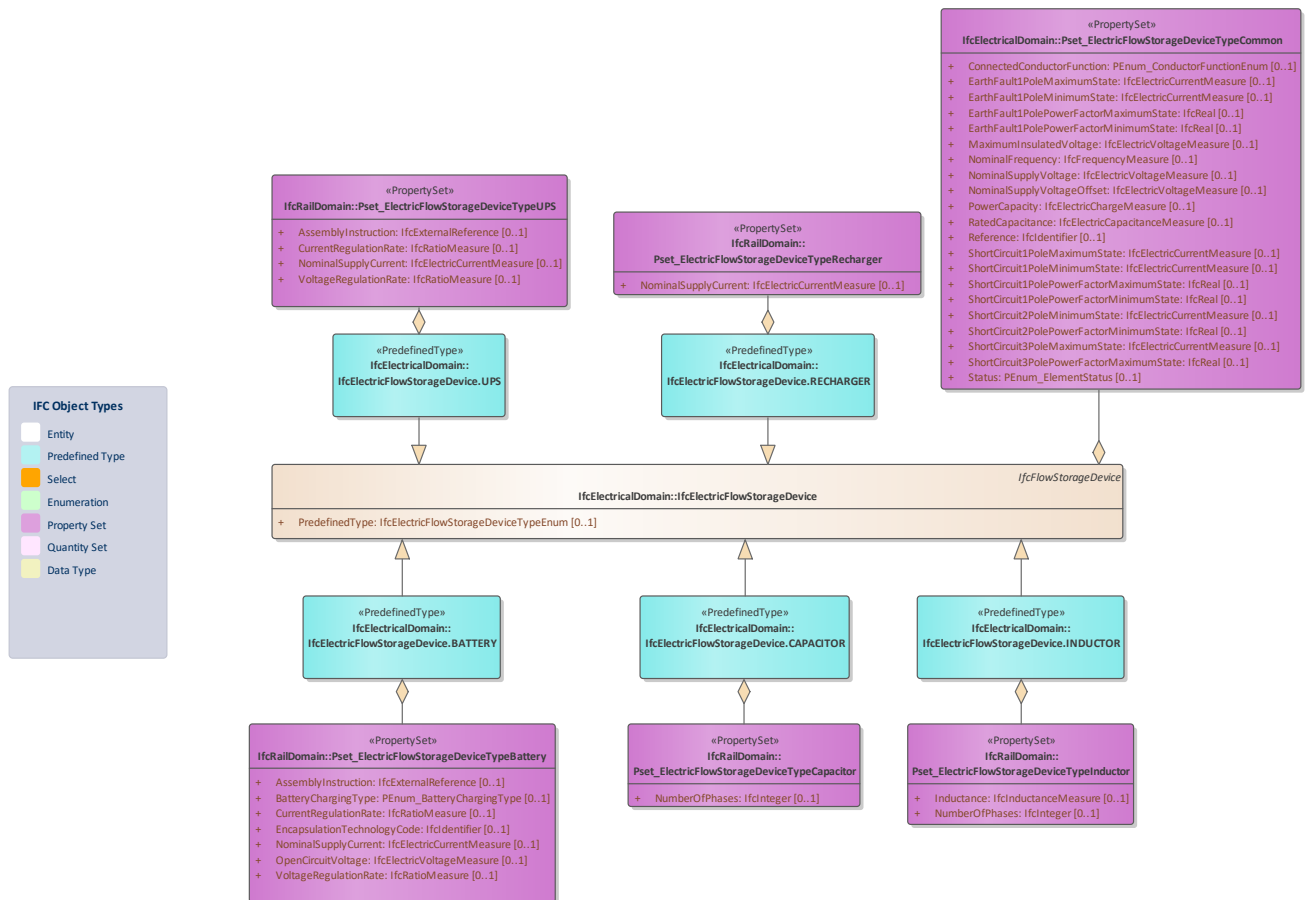
Figure 22: Psets_IfcElectricFlowStorageDevice -

3.85 Property Set: Pset_ElectricFlowStorageDeviceTypeCommon

The characteristics of the supply associated with an electrical device occurrence acting as a source of supply to an electrical distribution system NOTE: Properties within this property set should ONLY be used in circumstances when an electrical supply is applied. The property set, the properties contained and their values are not applicable to a circumstance where the sypply is not being applied to the eletrical system or is temporarily disconnected. All properties within this property set are considered to represent a steady state situation.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

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Name	Type	Multiplicity	Definition
ConnectedConductorFunction	PEnum_ConductorFunctionEnum	[0..1]	Function of the conductors to which the load is connected.
EarthFault1PoleMaximumState	IfcElectricCurrentMeasure	[0..1]	Maximum 1 pole earth fault current provided at the point of supply i.e. the fault between 1 phase and PE/PEN.
EarthFault1PoleMinimumState	IfcElectricCurrentMeasure	[0..1]	Minimum 1 pole earth fault current provided at the point of supply i.e. the fault between 1 phase and PE/PEN.
EarthFault1PolePowerFactorMaximumState	IfcReal	[0..1]	Power factor of the maximum 1 pole earth fault current provided at the point of supply i.e. the fault between 1 phase and PE/PEN.
EarthFault1PolePowerFactorMinimumState	IfcReal	[0..1]	Power factor of the minimum 1 pole earth fault current provided at the point of supply i.e. the fault between 1 phase and PE/PEN.
MaximumInsulatedVoltage	IfcElectricVoltageMeasure	[0..1]	The max voltage that the insulation would operate normally
NominalFrequency	IfcFrequencyMeasure	[0..1]	The nominal frequency of the supply.
NominalSupplyVoltage	IfcElectricVoltageMeasure	[0..1]	The nominal voltage of the supply.
NominalSupplyVoltageOffset	IfcElectricVoltageMeasure	[0..1]	The maximum and minimum allowed voltage of the supply e.g. boundaries of 380V/440V may be applied for a nominal voltage of 400V.
PowerCapacity	IfcElectricChargeMeasure	[0..1]	Power capacity of the equipment
RatedCapacitance	IfcElectricCapacitanceMeasure	[0..1]	Capacitance value determined under specified conditions and declared by the manufacturer.
Reference	IfcIdentifier	[0..1]	Reference ID for this specified type in this project (e.g. type ''A-1''), provided, if there is no classification reference to a recognized classification system used.
ShortCircuit1PoleMaximumState	IfcElectricCurrentMeasure	[0..1]	Maximum 1 pole short circuit current provided at the point of supply i.e. the fault between 1 phase and N.
ShortCircuit1PoleMinimumState	IfcElectricCurrentMeasure	[0..1]	Minimum 1 pole short circuit current provided at the point of supply i.e. the fault between 1 phase and N.
ShortCircuit1PolePowerFactorMaximumState	IfcReal	[0..1]	Power factor of the maximum 1 pole short circuit current provided at the point of supply i.e. the fault between 1 phase and N.

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ShortCircuit1PolePowerFactorMinimumState	IfcReal	[0..1]	Power factor of the minimum 1 pole short circuit current provided at the point of supply i.e. the fault between 1 phase and N.
ShortCircuit2PoleMinimumState	IfcElectricCurrentMeasure	[0..1]	Minimum 2 pole short circuit current provided at the point of supply.
ShortCircuit2PolePowerFactorMinimumState	IfcReal	[0..1]	Power factor of the minimum 2 pole short circuit current provided at the point of supply.
ShortCircuit3PoleMaximumState	IfcElectricCurrentMeasure	[0..1]	Maximum 3 pole short circuit current provided at the point of supply.
ShortCircuit3PolePowerFactorMaximumState	IfcReal	[0..1]	Power factor of the maximum 3 pole short circuit current provided at the point of supply.
Status	PEnum_ElementStatus	[0..1]	Status of the element, predominately used in renovation or retrofitting projects. The status can be assigned to as "New" - element designed as new addition, "Existing" - element exists and remains, "Demolish" - element existed but is to be demolished, "Temporary" - element will exists only temporary (like a temporary support structure).

3.86 Property Set: Pset_ElectricFlowStorageDeviceTypeBattery

Properties of batteries. The property set can be used by the predefined type BATTERY of IfcElectricFlowStorageDevice.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
BatteryChargingType	PEnum_BatteryChargingType	[0..1]	Identifies the predefined types of battery charging.
CurrentRegulationRate	IfcRatioMeasure	[0..1]	It shows the ability of DC regulated power supply to suppress the fluctuation of output voltage

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			caused by the change of load current (output current) when the input voltage is constant.
EncapsulationTechnologyCode	IfcIdentifier	[0..1]	Code indicating the encapsulation technology which has been applied in an electric, electronic or electromechanical component.
NominalSupplyCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current of the supply.
OpenCircuitVoltage	IfcElectricVoltageMeasure	[0..1]	Voltage of a cell or battery when the discharge current is zero [Source IEC 482-03-32]
VoltageRegulationRate	IfcRatioMeasure	[0..1]	When the input side voltage changes from the lowest allowable input value to the specified maximum value, the relative change value of the output voltage is the percentage of the rated output voltage.

3.87 Property Set: Pset_ElectricFlowStorageDeviceTypeCapacitor

Properties of capacitors. The property set can be used by the predefined type CAPACITOR of IfcElectricFlowStorageDevice.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfPhases	IfcInteger	[0..1]	Number of phases that the equipment operates on.

3.88 Property Set: Pset_ElectricFlowStorageDeviceTypeInductor

Properties of inductors. The property set can be used by the predefined type INDUCTOR of IfcElectricFlowStorageDevice.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

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| Inductance | IfcInductanceMeasure | [0..1] | Measure of the Inductance. |
| NumberOfPhases | IfcInteger | [0..1] | Number of phases that the equipment operates on. |

3.89 Property Set: Pset_ElectricFlowStorageDeviceTypeRecharger

Properties of battery rechargers. The property set can be used by the predefined type RECHARGER of IfcElectricFlowStorageDevice.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NominalSupplyCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current of the supply.

3.90 Property Set: Pset_ElectricFlowStorageDeviceTypeUPS

Properties of uninterruptible power supply equipment. The property set can be used by the predefined type UPS of IfcElectricFlowStorageDevice.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
CurrentRegulationRate	IfcRatioMeasure	[0..1]	It shows the ability of DC regulated power supply to suppress the fluctuation of output voltage caused by the change of load current (output current) when the input voltage is constant.
NominalSupplyCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current of the supply.
VoltageRegulationRate	IfcRatioMeasure	[0..1]	When the input side voltage changes from the lowest allowable input value to the specified maximum value, the relative change value of the

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| | | | output voltage is the percentage of the rated output voltage. |

Figure 23: Psets_IfcElectricFlowTreatmentDevice -

3.91 Property Set: Pset_ElectricFlowTreatmentDeviceTypeElectronicFilter

Properties associated to electronic filter.

An electronic filter is a device designed to transmit spectral components of signals according to a specified law, generally in order to pass the components in certain frequency bands and to attenuate those in other bands (IEC702-09-17)

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ElectronicFilterType	PEnum_ElectronicFilterType	[0..1]	Type of electronic filter.
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current that is designed to be measured.

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NominalPower	IfcPowerMeasure	[0..1]	A conventional value of apparent power determining a value of the rated current that may be carried with rated voltage applied, under specified conditions. (IEV ref 421-04-04)
PrimaryFrequency	IfcFrequencyMeasure	[0..1]	The frequency that is going to be transformed and that runs into the transformer on the primary side.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.
SecondaryFrequency	IfcFrequencyMeasure	[0..1]	The frequency that has been transformed and is running out of the transformer on the secondary side.
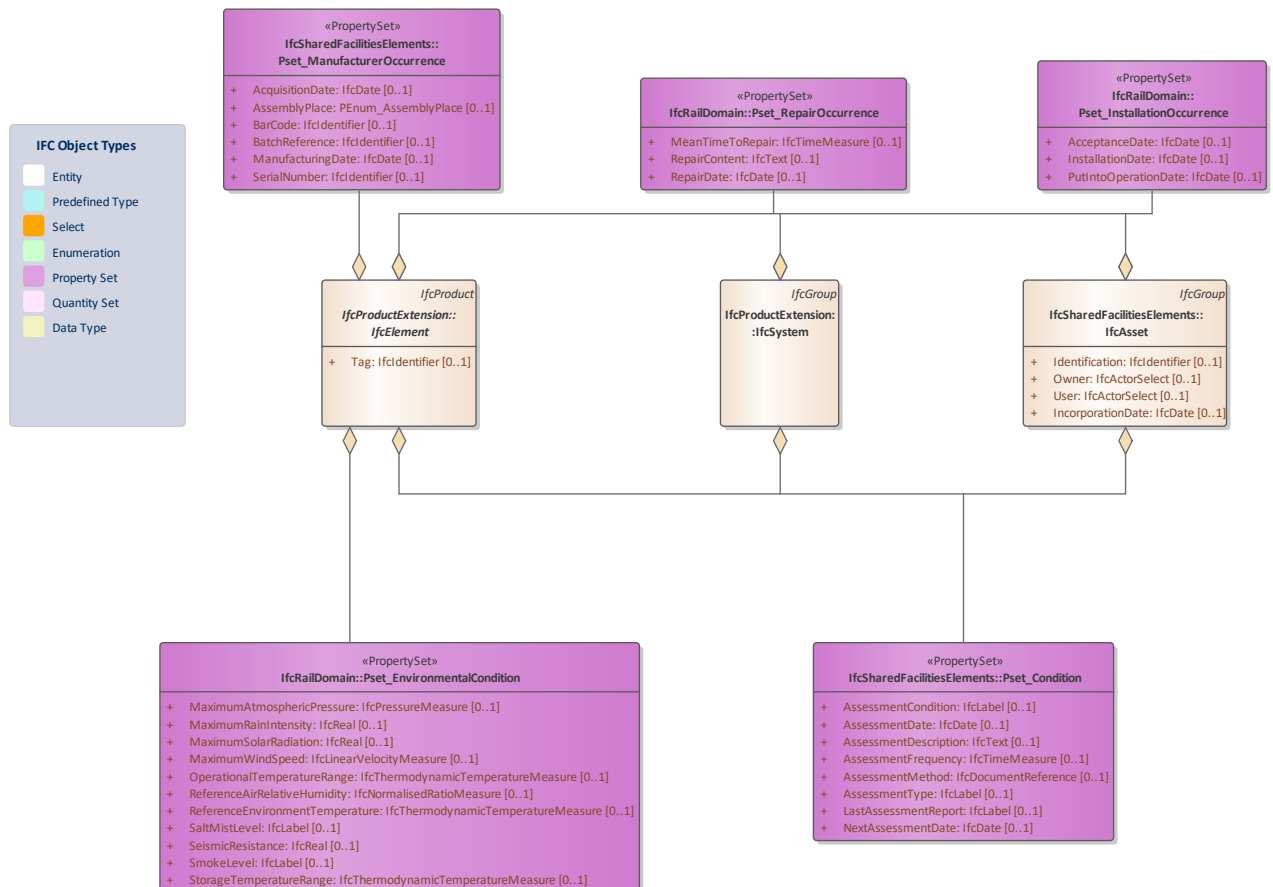
Figure 24: Psets_IfcElement -

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3.92 Property Set: Pset_EnvironmentalCondition

Properties defining environment conditions required by the element.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
MaximumAtmospheric Pressure	IfcPressureMeasure	[0..1]	Maximum level of atmospheric pressure that the equipment can operate effectively in.
MaximumRainIntensity	IfcReal	[0..1]	Maximum level of rain intensity that the equipment can operate effectively in. It is usually measured in millimeter per hour (mm/h).
MaximumSolarRadiatio n	IfcReal	[0..1]	Maximum level of solar irradiance that the equipment can operate effectively in. This is usually tested and measured by a national or international standard. The value indicates power density measured in watt per square meter (w/m2).
MaximumWindSpeed	IfcLinearVelocityMeasure	[0..1]	Maximum resistance to wind load exposure.
OperationalTemperatur eRange	IfcThermodynamicTempe ratureMeasure	[0..1]	Allowable operation ambient air temperature range.
ReferenceAirRelativeHu midity	IfcNormalisedRatioMeasu re	[0..1]	Measurement of the ratio of water vapor in the air.
ReferenceEnvironment Temperature	IfcThermodynamicTempe ratureMeasure	[0..1]	Ideal temperature range.
SaltMistLevel	IfcLabel	[0..1]	Maximum level of salt mist that the equipment can operate effectively in. It is provided according to an international or national standard.
SeismicResistance	IfcReal	[0..1]	Maximum magnitude of earthquake that the equipment complies with. The value indicates earthquake intensity measured in Richter scale.
SmokeLevel	IfcLabel	[0..1]	Maximum level of smoke that the equipment complies with. It is provided according to an international or national standard.

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StorageTemperatureRange	IfcThermodynamicTemperatureMeasure	[0..1]	Allowed storage temperature range that the element complies with.

3.93 Property Set: Pset_InstallationOccurrence

Properties defining installation information for occurrences of element, asset or system.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AcceptanceDate	IfcDate	[0..1]	Date on which the element is accepted by the manager or administrator.
InstallationDate	IfcDate	[0..1]	Date on which the element is installed.
PutIntoOperationDate	IfcDate	[0..1]	Date on which the element is put into operation.

3.94 Property Set: Pset_RepairOccurrence

Properties defining repair information for occurrences of element, asset or system.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
MeanTimeToRepair	IfcTimeMeasure	[0..1]	Mean time to repair.
RepairContent	IfcText	[0..1]	Content of repair, reason and nature can be given, e.g. display faults, communication failure, display exchange.
RepairDate	IfcDate	[0..1]	Date on which the last repair is done on the asset.

3.95 Property Set: Pset_Condition

Determines the state or condition of an element at a particular point in time.

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssessmentCondition	IfcLabel	[0..1]	The overall condition of a product based on an assessment of the contributions to the overall condition made by the various criteria considered. The meanings given to the values of assessed condition should be agreed and documented by local agreements. For instance, is overall condition measured on a scale of 1 - 10 or by assigning names such as Good, OK, Poor.
AssessmentDate	IfcDate	[0..1]	Date on which the overall condition is assessed
AssessmentDescription	IfcText	[0..1]	Qualitative description of the condition.
AssessmentFrequency	IfcTimeMeasure	[0..1]	Indicates how often the equipment should be assessed, to have a clear estimation on its working state, based on which the maintenance staff can decide whether it requires maintenance or requires to be updated or replaced.
AssessmentMethod	IfcDocumentReference	[0..1]	External reference to assessment method or application used to perform the assessment.
AssessmentType	IfcLabel	[0..1]	Category of latest condition assessment report of the asset.
LastAssessmentReport	IfcLabel	[0..1]	Reference to latest condition (state of health) report.
NextAssessmentDate	IfcDate	[0..1]	Date of next condition inspection

3.96 Property Set: Pset_ManufacturerOccurrence

Defines properties of individual instances of manufactured products that may be given by the manufacturer.

HISTORY: IFC 2x4: AssemblyPlace property added. This property does not need to be asserted if Pset_ManufacturerTypeInformation is allocated to the type and the AssemblyPlace property is asserted there.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
AcquisitionDate	IfcDate	[0..1]	The date that the manufactured item was purchased.
AssemblyPlace	PEnum_AssemblyPlace	[0..1]	Enumeration defining where the assembly is intended to take place, either in a factory, other offsite location or on the building site.
BarCode	IfcIdentifier	[0..1]	The identity of the bar code given to an occurrence of the product.
BatchReference	IfcIdentifier	[0..1]	The identity of the batch reference from which an occurrence of a product is taken.
ManufacturingDate	IfcDate	[0..1]	Date on which the element was manufactured.
SerialNumber	IfcIdentifier	[0..1]	The serial number assigned to an occurrence of a product.

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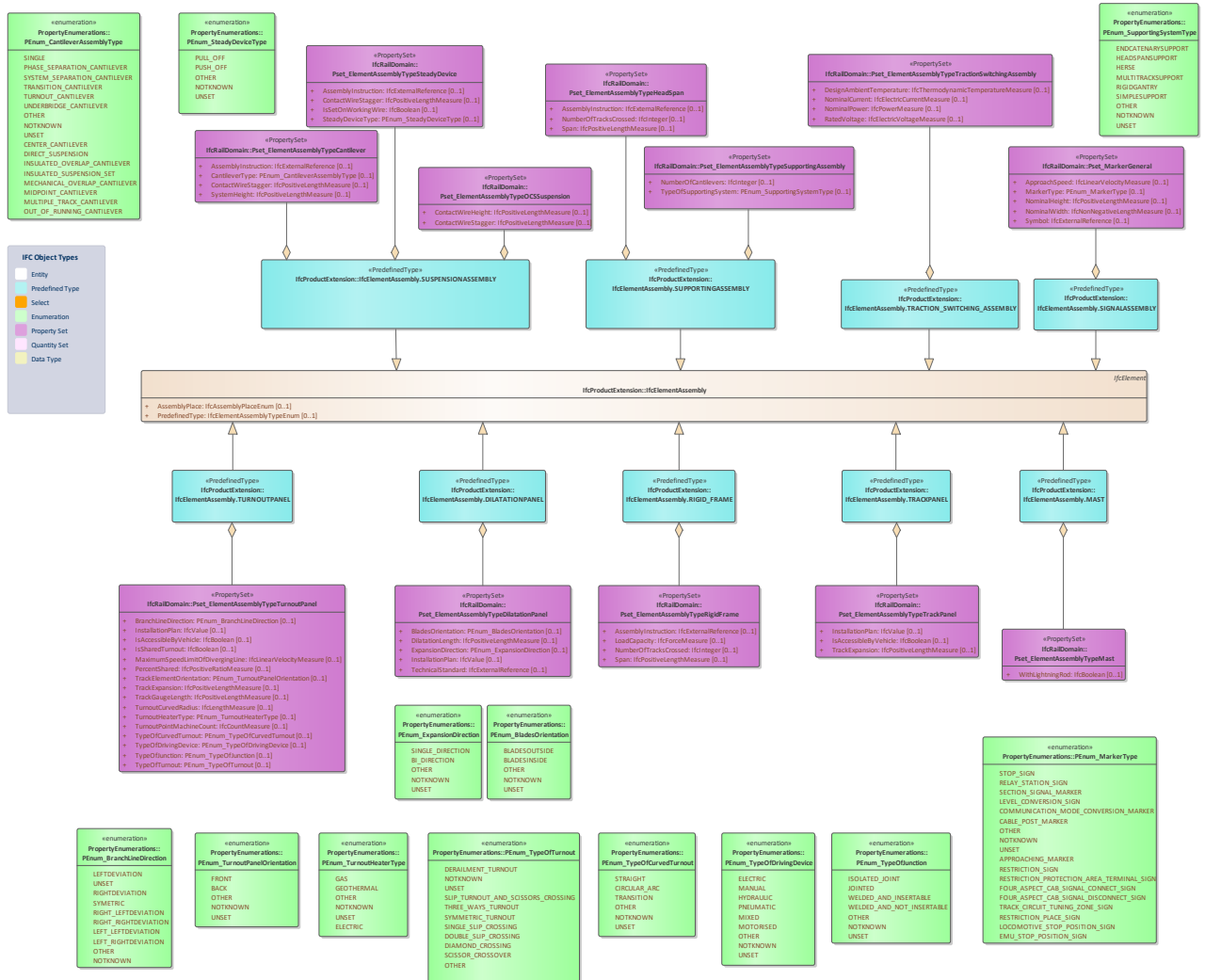
Figure 25: Psets_IfcElementAssembly -

3.97 Property Set: Pset_ElementAssemblyTypeCantilever

Energy cantilever properties used in railway. The property set can be used by the predefined type SUSPENSION_ASSEMBLY of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

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Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
CantileverType	PEnum_CantileverAssemblyType	[0..1]	Type of cantilever assembly.
ContactWireStagger	IfcPositiveLengthMeasure	[0..1]	Lateral displacement of the contact wire to opposite sides of the track centre at successive supports.
SystemHeight	IfcPositiveLengthMeasure	[0..1]	Vertical distance between the main catenary wire and the contact wire measured at a support point.

3.98 Property Set: Pset_ElementAssemblyTypeDilatationPanel

Adjustment switch panel properties used in railway. The property set can be used by the predefined type DILATATION_PANEL of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
BladesOrientation	PEnum_BladesOrientation	[0..1]	Orientation of internal blades.
DilatationLength	IfcPositiveLengthMeasure	[0..1]	Length dilatation admitted by the element.
ExpansionDirection	PEnum_ExpansionDirection	[0..1]	The expansion direction, e.g. single direction, bi-direction
InstallationPlan	IfcValue	[0..1]	Identifier of the corresponding installation plan.
TechnicalStandard	IfcExternalReference	[0..1]	The technical standard which the element should comply with.

3.99 Property Set: Pset_ElementAssemblyTypeHeadSpan

Energy Head Span properties used in railway. The property set can be used by the predefined type SUSPENSION_ASSEMBLY of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
NumberOfTracksCrossed	IfcInteger	[0..1]	Indicates the number of tracks which OCS supporting system crosses.
Span	IfcPositiveLengthMeasure	[0..1]	Clear span for this object.\X\0D \X\0D The shape information is provided in addition to the shape representation and the geometric parameters used within. In cases of inconsistency between the geometric parameters and the shape properties, provided in the attached property, the geometric parameters take precedence. For geometry editing applications, like CAD: this value should be write-only.

3.100 Property Set: Pset_ElementAssemblyTypeMast

Telecom Tower properties used in railway. The property set can be used by the predefined type MAST of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
WithLightningRod	IfcBoolean	[0..1]	Indicates whether the element is equipped with a lightning rod (TRUE) or not (FALSE).

3.101 Property Set: Pset_ElementAssemblyTypeOCSSuspension

Common energy suspension properties used in railway. The property set can be used by the predefined type SUSPENSION_ASSEMBLY of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ContactWireHeight	IfcPositiveLengthMeasure	[0..1]	Distance from the top of the rail to the lower face of the contact wire, measured perpendicular to the track.
ContactWireStagger	IfcPositiveLengthMeasure	[0..1]	Lateral displacement of the contact wire to opposite sides of the track centre at successive supports.

3.102 Property Set: Pset_ElementAssemblyTypeRigidFrame

Energy Cross Beam properties used in railway. The property set can be used by the predefined type RIGID_FRAME of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
LoadCapacity	IfcForceMeasure	[0..1]	Indicates the highest permissible load capacity.
NumberOfTracksCrossed	IfcInteger	[0..1]	Indicates the number of tracks which OCS supporting system crosses.
Span	IfcPositiveLengthMeasure	[0..1]	Clear span for this object.\X\0D \X\0D The shape information is provided in addition to the shape representation and the geometric parameters used within. In cases of inconsistency between the geometric parameters and the shape properties, provided in the attached property, the geometric parameters take precedence. For geometry editing applications, like CAD: this value should be write-only.

3.103 Property Set: Pset_ElementAssemblyTypeSteadyDevice

Energy steady device properties used in railway. The property set can be used by the predefined type SUSPENSION_ASSEMBLY of IfcElementAssembly.

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
ContactWireStagger	IfcPositiveLengthMeasure	[0..1]	Lateral displacement of the contact wire to opposite sides of the track centre at successive supports.
IsSetOnWorkingWire	IfcBoolean	[0..1]	Indicates whether the steady device is set on the working wire.
SteadyDeviceType	PEnum_SteadyDeviceType	[0..1]	Type of Steady Device: To indicate the mode of registration.

3.104 Property Set: Pset_ElementAssemblyTypeSupportingAssembly

Energy supporting assembly properties used in railway. The property set can be used by the predefined type SUPPORTING_ASSEMBLY of IfcElementAssembly.

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfCantilevers	IfcInteger	[0..1]	Indicates the number of cantilevers in the OCS supporting system.
TypeOfSupportingSystem	PEnum_SupportingSystemType	[0..1]	Type of foundation in the OCS supporting system.

3.105 Property Set: Pset_ElementAssemblyTypeTrackPanel

Track panel properties used in railway. The property set can be used by the predefined type TRACK_PANEL of IfcElementAssembly.

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
InstallationPlan	IfcValue	[0..1]	Identifier of the corresponding installation plan.
IsAccessibleByVehicle	IfcBoolean	[0..1]	Indicates whether the element is accessible by a vehicle or not.
TrackExpansion	IfcPositiveLengthMeasure	[0..1]	In curvature context, bounded value of the expansion distance that can be added to rail gauge.

3.106 Property Set: Pset_ElementAssemblyTypeTractionSwitchingAssembly

Energy switching assembly properties used in railway. The property set can be used by the predefined type TRACTION_SWITCHING_ASSEMBLY of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DesignAmbientTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	The highest and lowest local ambient temperature likely to be encountered.
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	A set of nominal currents in [A] for which the data of this instance is valid. At least one value shall be provided. Any value in the set shall not exceed the value of the \X\0D UltimateRatedCurrent associated with the same breaker unit.
NominalPower	IfcPowerMeasure	[0..1]	A conventional value of apparent power determining a value of the rated current that may be carried with rated voltage applied, under specified conditions. (IEV ref 421-04-04)
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.

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3.107 Property Set: Pset_ElementAssemblyTypeTurnoutPanel

Turnout panel properties used in railway. The property set can be used by the predefined type TURNOUT_PANEL of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
BranchLineDirection	PEnum_BranchLineDirection	[0..1]	Describes the direction associated to the branch line of the turnout (deviated branch).
InstallationPlan	IfcValue	[0..1]	Identifier of the corresponding installation plan.
IsAccessibleByVehicle	IfcBoolean	[0..1]	Indicates whether the element is accessible by a vehicle or not.
IsSharedTurnout	IfcBoolean	[0..1]	Indicates if the turnout makes a connection to another infrastructure owner (for sharing costs).
MaximumSpeedLimitOfDivergingLine	IfcLinearVelocityMeasure	[0..1]	Maximum speed for diverging line that corresponds to the type of turnout and design constraints.
PercentShared	IfcPositiveRatioMeasure	[0..1]	Percent of costs paid by the other infrastructure owner.
TrackElementOrientation	PEnum_TurnoutPanelOrientation	[0..1]	Turnout panels can be placed in 2 mirror-symmetric directions in the field. To distinguish both ends of the turnout panel, a definition of an orientation system with respect to the panel is necessary. The orientation defines, if the panel is oriented in a way or opposite with respect to the direction of the alignment/stationing.
TrackExpansion	IfcPositiveLengthMeasure	[0..1]	In curvature context, bounded value of the expansion distance that can be added to rail gauge.
TrackGaugeLength	IfcPositiveLengthMeasure	[0..1]	Basic track gauge of permanent way.
TurnoutCurvedRadius	IfcLengthMeasure	[0..1]	If turnout is curved, the main branch radius of curvature.
TurnoutHeaterType	PEnum_TurnoutHeaterType	[0..1]	Defines the kind of turnout heater installed.
TurnoutPointMachineCount	IfcCountMeasure	[0..1]	Count of point machines inside turnout panel.

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TypeOfCurvedTurnout	PEnum_TypeOfCurvedTurnout	[0..1]	Turnouts that are positioned in the curved part of the alignment.
TypeOfDrivingDevice	PEnum_TypeOfDrivingDevice	[0..1]	Type of the driving device used for the turnout.
TypeOfJunction	PEnum_TypeOfJunction	[0..1]	The turnout part of the continuous welded rail.
TypeOfTurnout	PEnum_TypeOfTurnout	[0..1]	Type of turnout.

3.108 Property Set: Pset_MarkerGeneral

Properties common to a signalling marker made as an assembly of elements. The property set can be used by the predefined type SIGNAL_ASSEMBLY of IfcElementAssembly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ApproachSpeed	IfcLinearVelocityMeasure	[0..1]	The design speed of trains approaching the signal if different from the line speed.
MarkerType	PEnum_MarkerType	[0..1]	The type of marker (sign) e.g. stop signal, restriction signal, track circuit tuning zone sign or others specified in _PEnum_MarkerType_.
NominalHeight	IfcPositiveLengthMeasure	[0..1]	The nominal height of the furniture of this type. The size information is provided in addition to the shape representation and the geometric parameters used within. In cases of inconsistency between the geometric parameters and the size properties, provided in the attached property set, the geometric parameters take precedence.
NominalWidth	IfcNonNegativeLengthMeasure	[0..1]	The nominal width of the object.
Symbol	IfcExternalReference	[0..1]	Content which is shown on the sign, e.g. text, number, arrow or icon. The string can also be a pointer to a symbol catalog.

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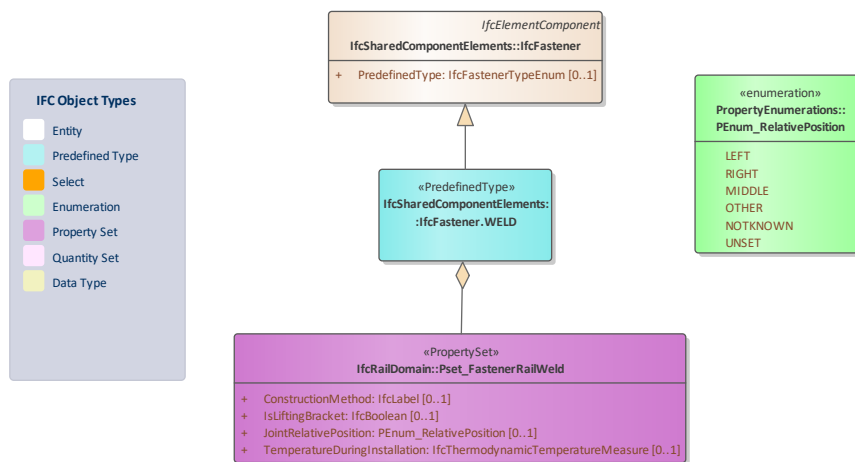
Figure 26: Psets_IfcFastner -

3.109 Property Set: Pset_FastenerRailWeld

Properties of Welded rail joint used in railway. The property set can be used by the predefined type WELD of IfcFastener.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ConstructionMethod	IfcLabel	[0..1]	Designator for whether the element is constructed/welded on site or prefabricated. Example of allowed values : ''On-site'' vs ''Prefabricated''.
IsLiftingBracket	IfcBoolean	[0..1]	Indicates whether the connection is done between rail with different height (TRUE) or with same height (FALSE).
JointRelativePosition	PEnum_RelativePosition	[0..1]	Indicates the relative position of the joint, which lies in the left or right rail or in the middle, or in combination. The left rail is to the left as facing in the direction of increasing stationing values, and the right rail is to the right.

RWR_IFC_RAIL_P2_WP3_A
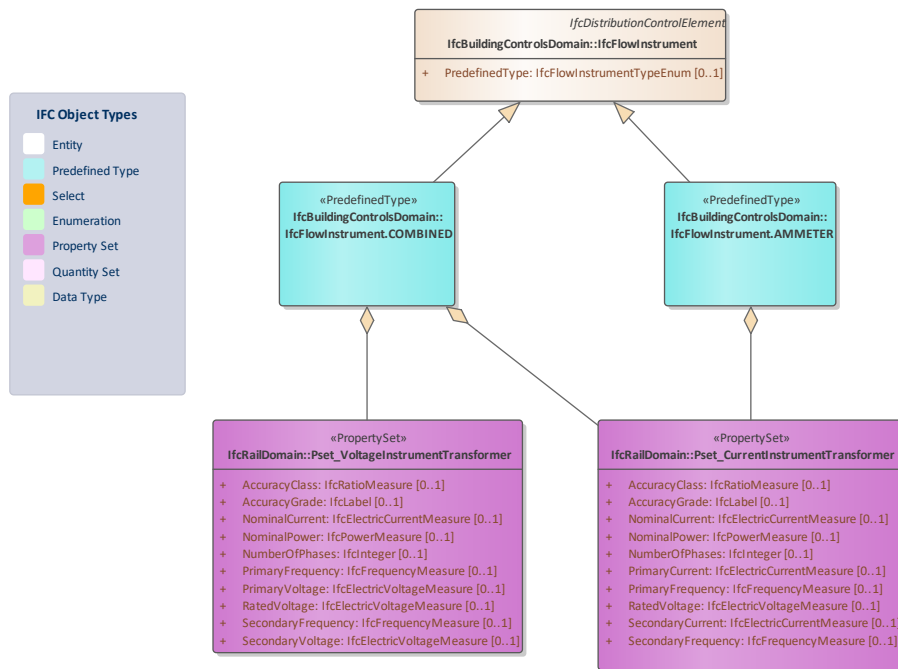
Figure 27: Psets_IfcFlowInstrument -

3.110 Property Set: Pset_CurrentInstrumentTransformer

Instrument transformers are high accuracy class electrical devices used to isolate or transform voltage or current levels. The main function of instrument transformers is to operate instruments or metering from high voltage or high current circuits, safely isolating secondary control circuitry from the high voltages or currents. Combination instrument transformers are metering current.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AccuracyClass	IfcRatioMeasure	[0..1]	A designation assigned to an instrument transformer the current (or voltage) error and phase displacement of which remain within specified limits under prescribed conditions of use (IEC 321-01-24).
AccuracyGrade	IfcLabel	[0..1]	The grade of accuracy.

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NominalCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current that is designed to be measured.
NominalPower	IfcPowerMeasure	[0..1]	A conventional value of apparent power determining a value of the rated current that may be carried with rated voltage applied, under specified conditions. (IEV ref 421-04-04)
NumberOfPhases	IfcInteger	[0..1]	Number of phases that the equipment operates on.
PrimaryCurrent	IfcElectricCurrentMeasure	[0..1]	The current that is going to be transformed and that runs into the transformer on the primary side.
PrimaryFrequency	IfcFrequencyMeasure	[0..1]	The frequency that is going to be transformed and that runs into the transformer on the primary side.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The voltage that a device is designed to handle.
SecondaryCurrent	IfcElectricCurrentMeasure	[0..1]	The current that has been transformed and is running out of the transformer on the secondary side.
SecondaryFrequency	IfcFrequencyMeasure	[0..1]	The frequency that has been transformed and is running out of the transformer on the secondary side.

3.111 Property Set: Pset_VoltageInstrumentTransformer

Instrument transformers are high accuracy class electrical devices used to isolate or transform voltage or current levels. The main function of instrument transformers is to operate instruments or metering from high voltage or high current circuits, safely isolating secondary control circuitry from the high voltages or currents. Combination instrument transformers are metering voltage.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AccuracyClass	IfcRatioMeasure	[0..1]	A designation assigned to an instrument transformer the current (or voltage) error and phase displacement of which remain within specified limits under prescribed conditions of use (IEC 321-01-24).

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AccuracyGrade	IfcLabel	[0..1]	The grade of accuracy.
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current that is designed to be measured.
NominalPower	IfcPowerMeasure	[0..1]	A conventional value of apparent power determining a value of the rated current that may be carried with rated voltage applied, under specified conditions. (IEV ref 421-04-04)
NumberOfPhases	IfcInteger	[0..1]	Number of phases that the equipment operates on.
PrimaryFrequency	IfcFrequencyMeasure	[0..1]	The frequency that is going to be transformed and that runs into the transformer on the primary side.
PrimaryVoltage	IfcElectricVoltageMeasure	[0..1]	The voltage that is going to be transformed and that runs into the transformer on the primary side.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The voltage that a device is designed to handle.
SecondaryFrequency	IfcFrequencyMeasure	[0..1]	The frequency that has been transformed and is running out of the transformer on the secondary side.
SecondaryVoltage	IfcElectricVoltageMeasure	[0..1]	The voltage that has been transformed and is running out of the transformer on the secondary side.
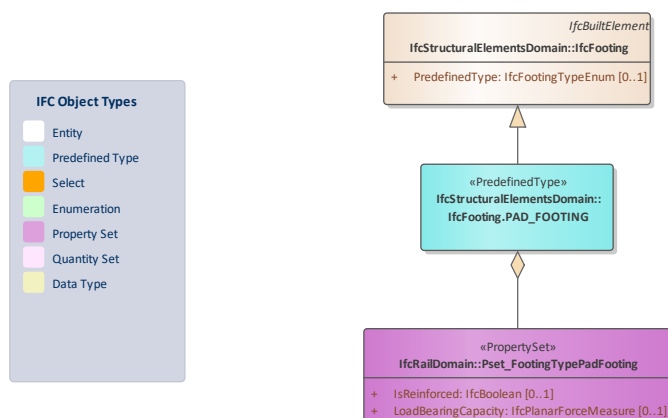
Figure 28: Psets_IfcFooting -

3.112 Property Set: Pset_FootingTypePadFooting

Properties of footing. The property set can be used by the predefined type PAD_FOOTING of IfcFooting.bSI Documentation

RWR_IFC_RAIL_P2_WP3_A

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
IsReinforced	IfcBoolean	[0..1]	Indicates whether the foundation is reinforced (TRUE) or not (FALSE).
LoadBearingCapacity	IfcPlanarForceMeasure	[0..1]	Maximum load bearing capacity of a supporting structure (e.g. as applied to the floor structure of a storey, or the supporting capacity of a frame assembly).
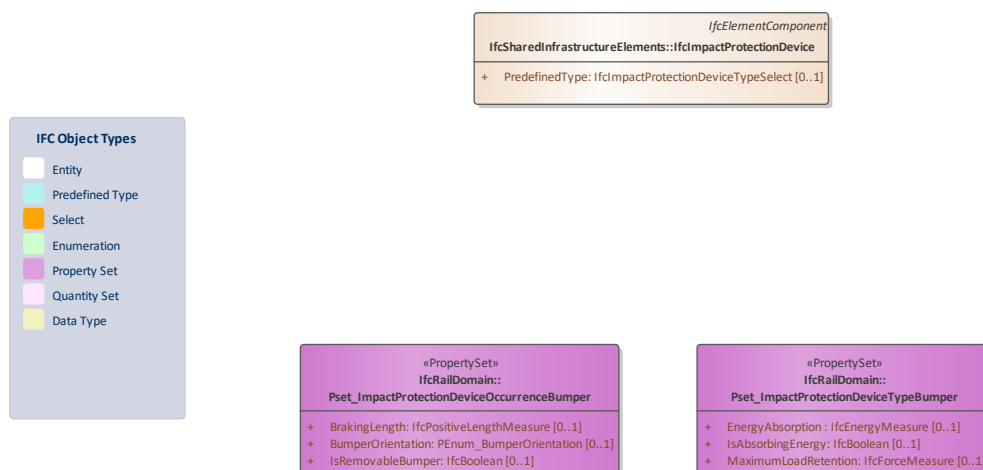
Figure 29: Psets_IfcImpactProtectionDevice -

3.113 Property Set: Pset_ImpactProtectionDeviceOccurrenceBumper

Properties common to all occurrences of _IfcImpactProtectionDevice_ with PredefinedType set to _BUMPER_.

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
BrakingLength	IfcPositiveLengthMeasure	[0..1]	Length of the braking distance as a design parameter of the bumper occurrence.
BumperOrientation	PEnum_BumperOrientation	[0..1]	Direction in which the bumper is aligned, e.g. same direction as increasing stationing values or opposite.
IsRemovableBumper	IfcBoolean	[0..1]	Indicates if the bumper is removable or not.

3.114 Property Set: Pset_ImpactProtectionDeviceTypeBumper

Properties common to all occurrences and types of _IfcImpactProtectionDevice_ with PredefinedType set to _BUMPER_.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
EnergyAbsorption	IfcEnergyMeasure	[0..1]	Energy absorption capacity of the element.
IsAbsorbingEnergy	IfcBoolean	[0..1]	Indicates whether the bumper absorbs energy or not.
MaximumLoadRetention	IfcForceMeasure	[0..1]	Maximum possible impact load retention.

RWR_IFC_RAIL_P2_WP3_A
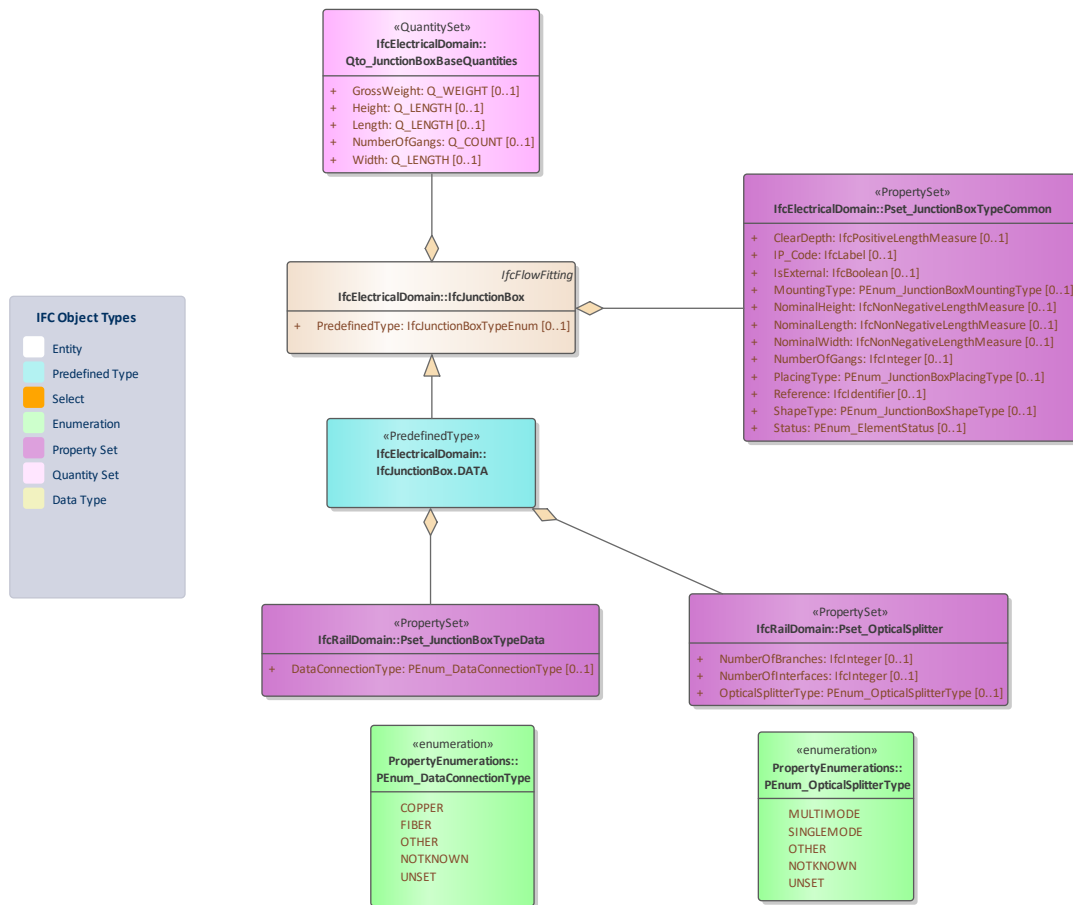
Figure 30: Psets_IfcJunctionBox -

3.115 Property Set: Pset_JunctionBoxTypeCommon

A junction box is an enclosure within which cables are connected.

History: New in IFC4

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

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ClearDepth	IfcPositiveLengthMeasure	[0..1]	Clear unobstructed depth available for cable inclusion within the junction box.
IP_Code	IfcLabel	[0..1]	IEC 60529 (1989) Classification of degrees of protection provided by enclosures (IP Code).
IsExternal	IfcBoolean	[0..1]	Indication of whether the junction box type is allowed for exposure to outdoor elements (set TRUE where external exposure is allowed).
MountingType	PEnum_JunctionBoxMountingType	[0..1]	Method of mounting to be adopted for the type of junction box.
NominalHeight	IfcNonNegativeLengthMeasure	[0..1]	Nominal height of the object.
NominalLength	IfcNonNegativeLengthMeasure	[0..1]	Nominal length of the object.
NominalWidth	IfcNonNegativeLengthMeasure	[0..1]	The nominal width of the object.
NumberOfGangs	IfcInteger	[0..1]	Number of slots available for switches/outlets (most commonly 1, 2, 3, or 4).
PlacingType	PEnum_JunctionBoxPlacingType	[0..1]	Location at which the type of junction box can be located.
Reference	IfcIdentifier	[0..1]	Reference ID for this specified type in this project (e.g. type ''A-1''), provided, if there is no classification reference to a recognized classification system used.
ShapeType	PEnum_JunctionBoxShapeType	[0..1]	Shape of the junction box.
Status	PEnum_ElementStatus	[0..1]	Status of the element, predominately used in renovation or retrofitting projects. The status can be assigned to as "New" - element designed as new addition, "Existing" - element exists and remains, "Demolish" - element existed but is to be demolished, "Temporary" - element will exists only temporary (like a temporary support structure).

3.116 Quantity Set: Qto_JunctionBoxBaseQuantities

Base quantities that are common to the definition of all occurrences of junction box.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«QuantitySet»

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Quantities

Name	Type	Multiplicity	Definition
GrossWeight	Q_WEIGHT	[0..1]	Weight of the element.
Height	Q_LENGTH	[0..1]	Characteristic height
Length	Q_LENGTH	[0..1]	Characteristic length
NumberOfGangs	Q_COUNT	[0..1]	Number of gangs in the junction box.
Width	Q_LENGTH	[0..1]	Characteristic width

3.117 Property Set: Pset_JunctionBoxTypeData

The property set can be used by the predefined type DATA of IfcJunctionBox.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DataConnectionType	PEnum_DataConnectionType	[0..1]	Indicates the data connection type of the junction box e.g. copper pair, fiber or others.

3.118 Property Set: Pset_OpticalSplitter

Properties of optical splitter used in the telecommunication domain. This property set can be used by the predefined type DATA of IfcJunctionBox.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfBranches	IfcInteger	[0..1]	Indicates the number of branches that can be supported by the optical splitter.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
OpticalSplitterType	PEnum_OpticalSplitterType	[0..1]	Indicates the type of optical splitter, single mode or multi-mode.

RWR_IFC_RAIL_P2_WP3_A
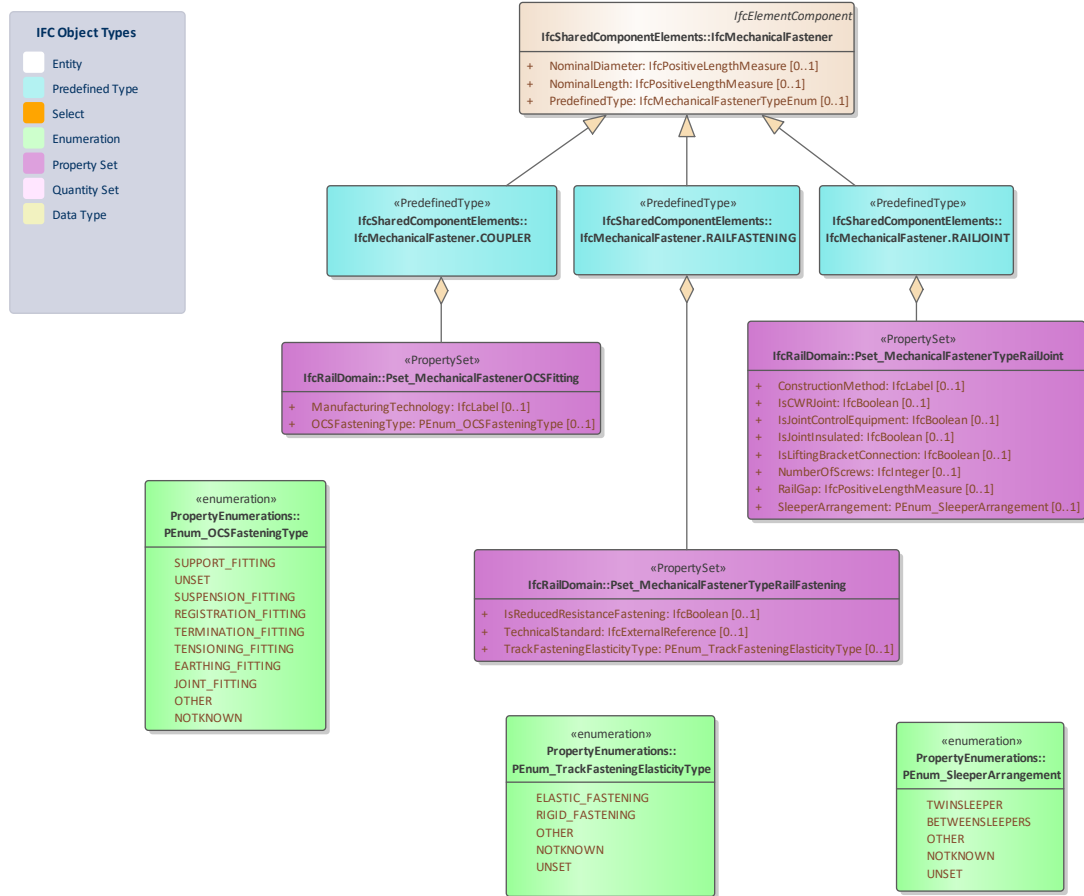
Figure 31: Psets_IfcMechanicalFastner -

3.119 Property Set: Pset_MechanicalFastenerOCSFitting

Common properties of clamps and fittings used in railway overhead contact system (OCS).bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ManufacturingTechnology	IfcLabel	[0..1]	The method / technology used to produce the equipment.

RWR_IFC_RAIL_P2_WP3_A

OCSFasteningType	PEnum_OCSFasteningType e	[0..1]	Indicates the type of the overhead contact system (OCS) mechanical fastener.

3.120 Property Set: Pset_MechanicalFastenerTypeRailFastening

Properties of rail fastening used in railway track system. The property set can be used by the predefined type RAILFASTENING of IfcMechanicalFastener.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
IsReducedResistanceFastening	IfcBoolean	[0..1]	Indicates wether the rail fastening is a reduced resistance fastening (YES) or not (NO).
TechnicalStandard	IfcExternalReference	[0..1]	The technical standard which the element should comply with.
TrackFasteningElasticityType	PEnum_TrackFasteningElasticityType	[0..1]	Track fastening elasticity type.

3.121 Property Set: Pset_MechanicalFastenerTypeRailJoint

Properties common to a rail joint of a railway track system. The property set can be used by the predefined type RAILJOINT of IfcMechanicalFastener.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ConstructionMethod	IfcLabel	[0..1]	Designator for whether the element is constructed/welded on site or prefabricated. Example of allowed values : ''On-site'' vs ''Prefabricated''.
IsCWRJoint	IfcBoolean	[0..1]	Indicates if the rail joint is associated to a continuous welded rail.

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IsJointControlEquipment	IfcBoolean	[0..1]	Indicates whether security equipment is checking the mechanical functionality of the rail joint.
IsJointInsulated	IfcBoolean	[0..1]	Indicates if the rail joint is insulated.
IsLiftingBracketConnection	IfcBoolean	[0..1]	Indicates if the connection is between two different heights (TRUE) or not (FALSE).
NumberOfScrews	IfcInteger	[0..1]	Number of screws/bolts/connections.
RailGap	IfcPositiveLengthMeasure	[0..1]	The gap between the rail profiles.
SleeperArrangement	PEnum_SleeperArrangement	[0..1]	Define the rail joint sleeper method of assembly ("twin sleeper" type or "between sleepers" type).
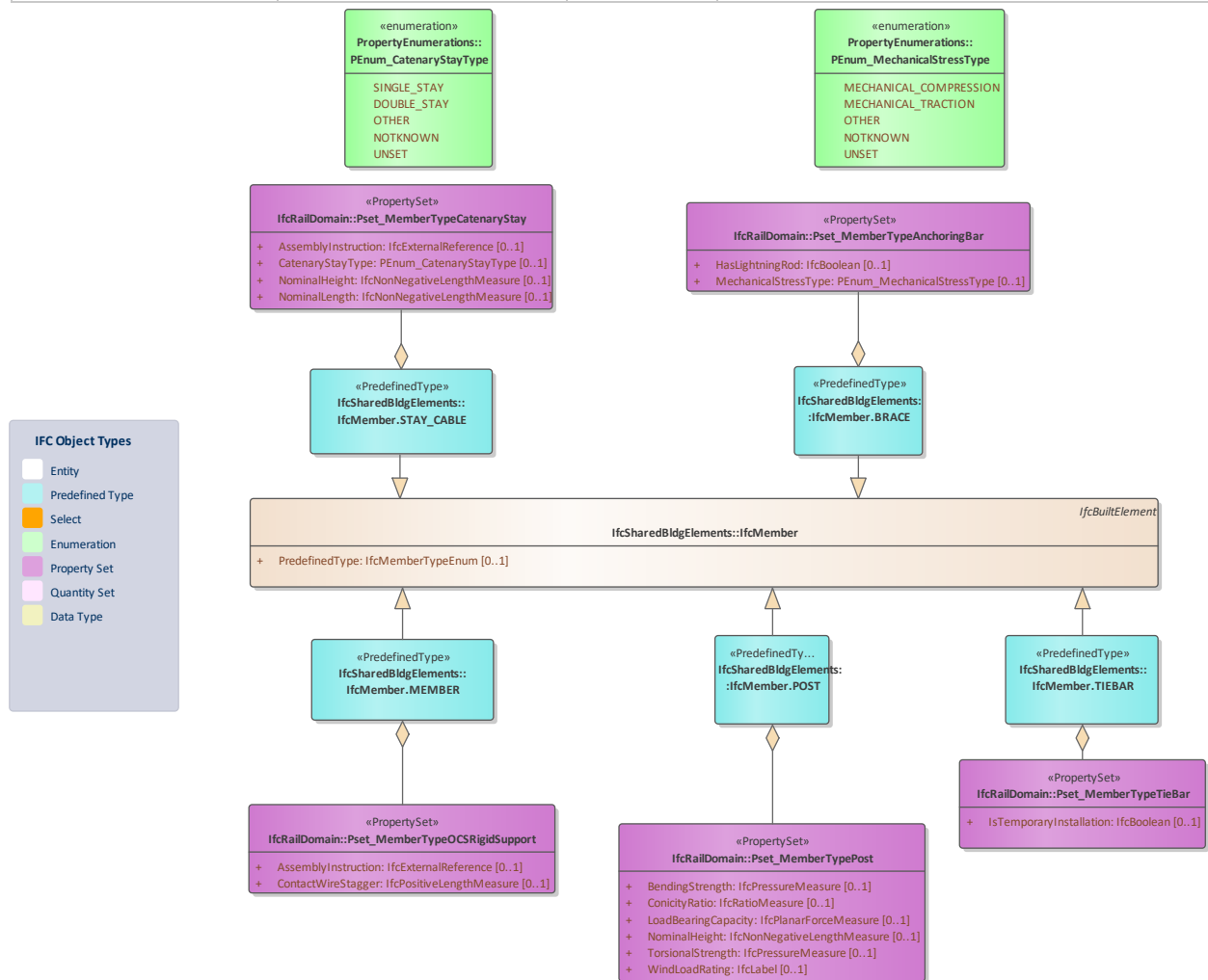
Figure 32: Psets_IfcMember -

RWR_IFC_RAIL_P2_WP3_A

3.122 Property Set: Pset_MemberTypeAnchoringBar

Properties of anchoring bar. The anchoring bar is used to connect stay from pole to the foundation.<u>bSI Documentation</u>

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
HasLightningRod	IfcBoolean	[0..1]	Indicates whether the element is equipped with a lightning rod (TRUE) or not (FALSE).
MechanicalStressType	PEnum_MechanicalStress Type	[0..1]	Indicates which type of stress is applied to the element.

3.123 Property Set: Pset_MemberTypeCatenaryStay

Properties of catenary stay used in railway. The property set can be used by the predefined type STAY_CABLE of IfcMember.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
CatenaryStayType	PEnum_CatenaryStayTyp e	[0..1]	Indicates the type of catenary stay used.
NominalHeight	IfcNonNegativeLengthMe asure	[0..1]	Nominal height of the object.
NominalLength	IfcNonNegativeLengthMe asure	[0..1]	Nominal length of the object.

3.124 Property Set: Pset_MemberTypeOCSRigidSupport

Properties of rigid catenary support used in railway overhead contact system.

Status: Implemented

RWR_IFC_RAIL_P2_WP3_A

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AssemblyInstruction	IfcExternalReference	[0..1]	Instructions to describe how the system / equipment / facility is assembled.
ContactWireStagger	IfcPositiveLengthMeasure	[0..1]	Lateral displacement of the contact wire to opposite sides of the track centre at successive supports.

3.125 Property Set: Pset_MemberTypePost

Properties of a post. A post is a linear (usually vertical) member used to support something or to mark a point.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
BendingStrength	IfcPressureMeasure	[0..1]	Bending strength.
ConicityRatio	IfcRatioMeasure	[0..1]	The ratio of the diameter of the cone bottom surface to the height of the pole.
LoadBearingCapacity	IfcPlanarForceMeasure	[0..1]	Maximum load bearing capacity of a supporting structure (e.g. as applied to the floor structure of a storey, or the supporting capacity of a frame assembly).
NominalHeight	IfcNonNegativeLengthMeasure	[0..1]	Nominal height of the object.
TorsionalStrength	IfcPressureMeasure	[0..1]	Shear strength in torsion.
WindLoadRating	IfcLabel	[0..1]	Wind load resistance rating for this object.\X\0D It is provided according to the national building code.

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3.126 Property Set: Pset_MemberTypeTieBar

Properties of tie bar. A tie bar is a linear bar element used to secure or stabilise a structure by resisting lateral and longitudinal loading through tension and or compression. usually formed by a solid bar.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
IsTemporaryInstallation	IfcBoolean	[0..1]	Indicates whether the installation (in the construction stage) is permanent (TRUE) or temporary (FALSE)

RWR_IFC_RAIL_P2_WP3_A
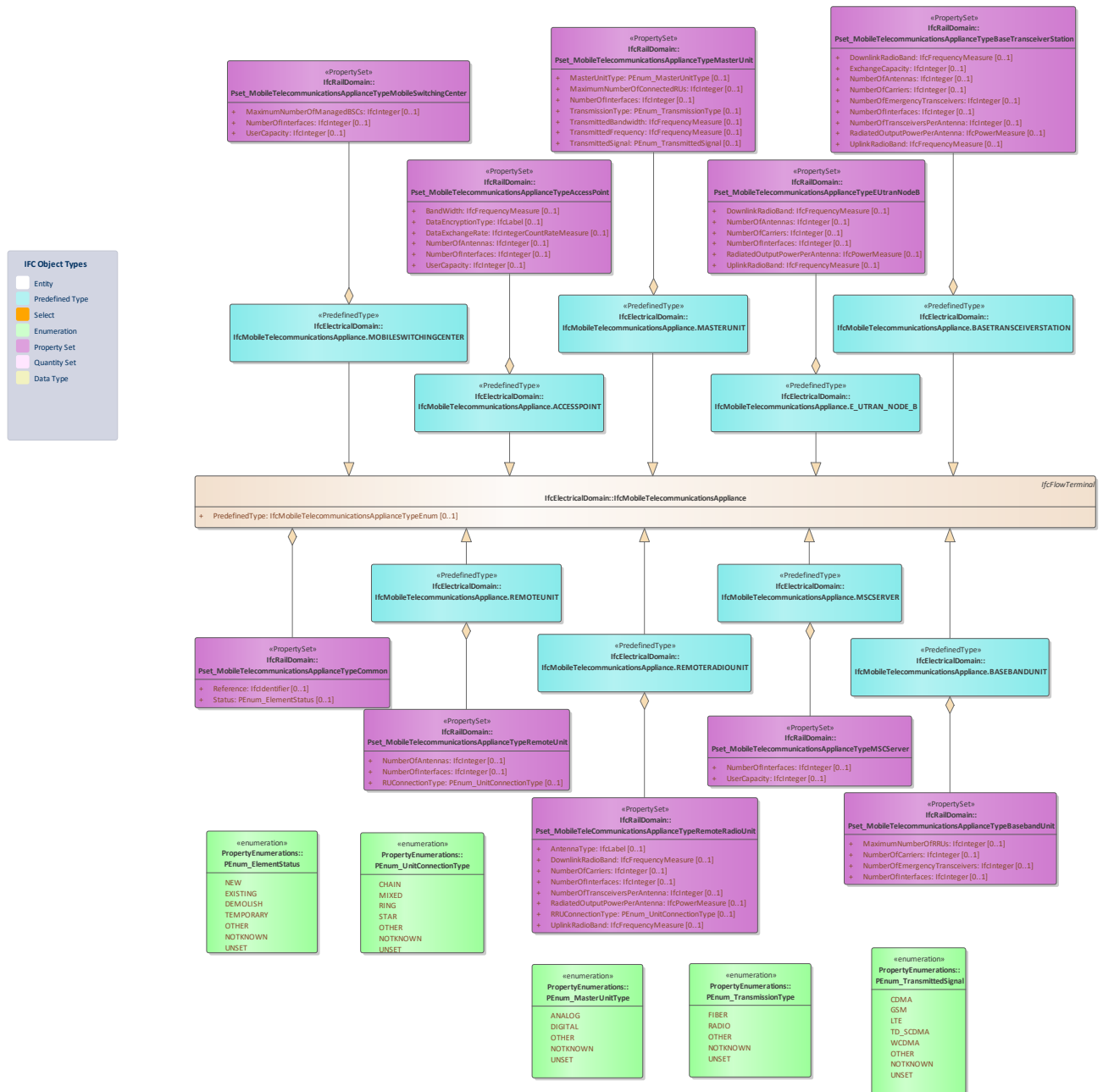
Figure 33: Psets_IfcMobileTelecommunicationsAppliance -

3.127 Property Set: Pset_MobileTelecommunicationsApplianceTypeAccessPoint

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to ACCESSPOINT.bSI Documentation

RWR_IFC_RAIL_P2_WP3_A

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
BandWidth	IfcFrequencyMeasure	[0..1]	Indicates the bandwidth for telecommunication of the device.
DataEncryptionType	IfcLabel	[0..1]	Indicates the type of security protocols that can be used in the access point to protect the wireless network.
DataExchangeRate	IfcIntegerCountRateMeasure	[0..1]	Indicates the data transfer rate of the access point in bit per second (bps).
NumberOfAntennas	IfcInteger	[0..1]	Indicates the number of antennas integrated in the device.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
UserCapacity	IfcInteger	[0..1]	Indicates the user capacity of the device, defined as the maximum number of users that can be active at the same time.

3.128 Property Set: Pset_MobileTelecommunicationsApplianceTypeBasebandUnit

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to BASEBANDUNIT.bSI Documentation

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
MaximumNumberOfRRUs	IfcInteger	[0..1]	Indicates the maximum number of remote radio units (RRU) which can be connected to the baseband unit.
NumberOfCarriers	IfcInteger	[0..1]	Indicates how many carrier frequencies can be managed by the device.

RWR_IFC_RAIL_P2_WP3_A

NumberOfEmergencyTransceivers	IfcInteger	[0..1]	Indicates the number of emergency transceivers in the base band unit.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.

3.129 Property Set: Pset_MobileTelecommunicationsApplianceTypeBaseTransceiverStation

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to BASETRANSCEIVERSTATION.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DownlinkRadioBand	IfcFrequencyMeasure	[0..1]	Indicates the frequency range, delimited by a lower frequency and an upper frequency, allocated for downlink transmission.
ExchangeCapacity	IfcInteger	[0..1]	Indicates how many simultaneous calls the base transceiver station can handle.
NumberOfAntennas	IfcInteger	[0..1]	Indicates the number of antennas integrated in the device.
NumberOfCarriers	IfcInteger	[0..1]	Indicates how many carrier frequencies can be managed by the device.
NumberOfEmergencyTransceivers	IfcInteger	[0..1]	Indicates the number of emergency transceivers in the base band unit.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
NumberOfTransceiversPerAntenna	IfcInteger	[0..1]	Indicates the number of transceivers per antenna.
RadiatedOutputPowerPerAntenna	IfcPowerMeasure	[0..1]	Indicates the power of radio waves emitted by each antenna of the base transceiver station.

RWR_IFC_RAIL_P2_WP3_A

UplinkRadioBand	IfcFrequencyMeasure	[0..1]	Indicates the frequency range, delimited by a lower frequency and an upper frequency, allocated for uplink transmission.

3.130 Property Set: Pset_MobileTelecommunicationsApplianceTypeCommon

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
Reference	IfcIdentifier	[0..1]	Reference ID for this specified type in this project (e.g. type ''A-1''), provided, if there is no classification reference to a recognized classification system used.
Status	PEnum_ElementStatus	[0..1]	Status of the element, predominately used in renovation or retrofitting projects. The status can be assigned to as "New" - element designed as new addition, "Existing" - element exists and remains, "Demolish" - element existed but is to be demolished, "Temporary" - element will exists only temporary (like a temporary support structure).

3.131 Property Set: Pset_MobileTelecommunicationsApplianceTypeEUtranNodeB

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to E_UTRAN_NODE_B.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

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DownlinkRadioBand	IfcFrequencyMeasure	[0..1]	Indicates the frequency range, delimited by a lower frequency and an upper frequency, allocated for downlink transmission.
NumberOfAntennas	IfcInteger	[0..1]	Indicates the number of antennas integrated in the device.
NumberOfCarriers	IfcInteger	[0..1]	Indicates how many carrier frequencies can be managed by the device.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
RadiatedOutputPowerPerAntenna	IfcPowerMeasure	[0..1]	Indicates the power of radio waves emitted by each antenna of the base transceiver station.
UplinkRadioBand	IfcFrequencyMeasure	[0..1]	Indicates the frequency range, delimited by a lower frequency and an upper frequency, allocated for uplink transmission.

3.132 Property Set: Pset_MobileTelecommunicationsApplianceTypeMasterUnit

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to MASTERUNIT.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
MasterUnitType	PEnum_MasterUnitType	[0..1]	Indicates the master unit type.
MaximumNumberOfConnectedRUs	IfcInteger	[0..1]	Indicates the maximum number of remote units (RUs) which can be connected to the master unit.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
TransmissionType	PEnum_TransmissionType	[0..1]	Indicates the data transmission type of the master unit.
TransmittedBandwidth	IfcFrequencyMeasure	[0..1]	Indicates the transmitted bandwidth of the master unit.
TransmittedFrequency	IfcFrequencyMeasure	[0..1]	Indicates the transmitted frequency used by the master unit.

RWR_IFC_RAIL_P2_WP3_A

TransmittedSignal	PEnum_TransmittedSignal	[0..1]	Indicates the type or standard of signal transmitted by the master unit.

3.133 Property Set: Pset_MobileTelecommunicationsApplianceTypeMobileSwitchingCenter

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to MOBILESWITCHINGCENTER.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
MaximumNumberOfManagedBSCs	IfcInteger	[0..1]	Indicates the maximum number of base station controller (BSC) that can be managed simultaneously by the mobile switching center (MSC).
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
UserCapacity	IfcInteger	[0..1]	Indicates the user capacity of the device, defined as the maximum number of users that can be active at the same time.

3.134 Property Set: Pset_MobileTelecommunicationsApplianceTypeMSCServer

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to MSCSERVER.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.

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UserCapacity	IfcInteger	[0..1]	Indicates the user capacity of the device, defined as the maximum number of users that can be active at the same time.

3.135 Property Set: Pset_MobileTeleCommunicationsApplianceTypeRemoteRadioUnit

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to REMOTERADIOUNIT.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AntennaType	IfcLabel	[0..1]	Indicates the type of antenna integrated in the device.
DownlinkRadioBand	IfcFrequencyMeasure	[0..1]	Indicates the frequency range, delimited by a lower frequency and an upper frequency, allocated for downlink transmission.
NumberOfCarriers	IfcInteger	[0..1]	Indicates how many carrier frequencies can be managed by the device.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
NumberOfTransceivers PerAntenna	IfcInteger	[0..1]	Indicates the number of transceivers per antenna.
RadiatedOutputPowerP erAntenna	IfcPowerMeasure	[0..1]	Indicates the power of radio waves emitted by each antenna of the base transceiver station.
RRUConnectionType	PEnum_UnitConnectionT ype	[0..1]	Indicates the connection type between the remote radio unit and baseband unit.
UplinkRadioBand	IfcFrequencyMeasure	[0..1]	Indicates the frequency range, delimited by a lower frequency and an upper frequency, allocated for uplink transmission.

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3.136 Property Set: Pset_MobileTelecommunicationsApplianceTypeRemoteUnit

Properties common to the definition of all occurrences of _IfcMobileTelecommunicationsAppliance_ and types of _IfcMobileTelecommunicationsApplianceType_ with the predefined type set to REMOTEUNIT.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfAntennas	IfcInteger	[0..1]	Indicates the number of antennas integrated in the device.
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
RUConnectionType	PEnum_UnitConnectionType	[0..1]	Indicate the connection type between the remote unit and the master unit.

RWR_IFC_RAIL_P2_WP3_A
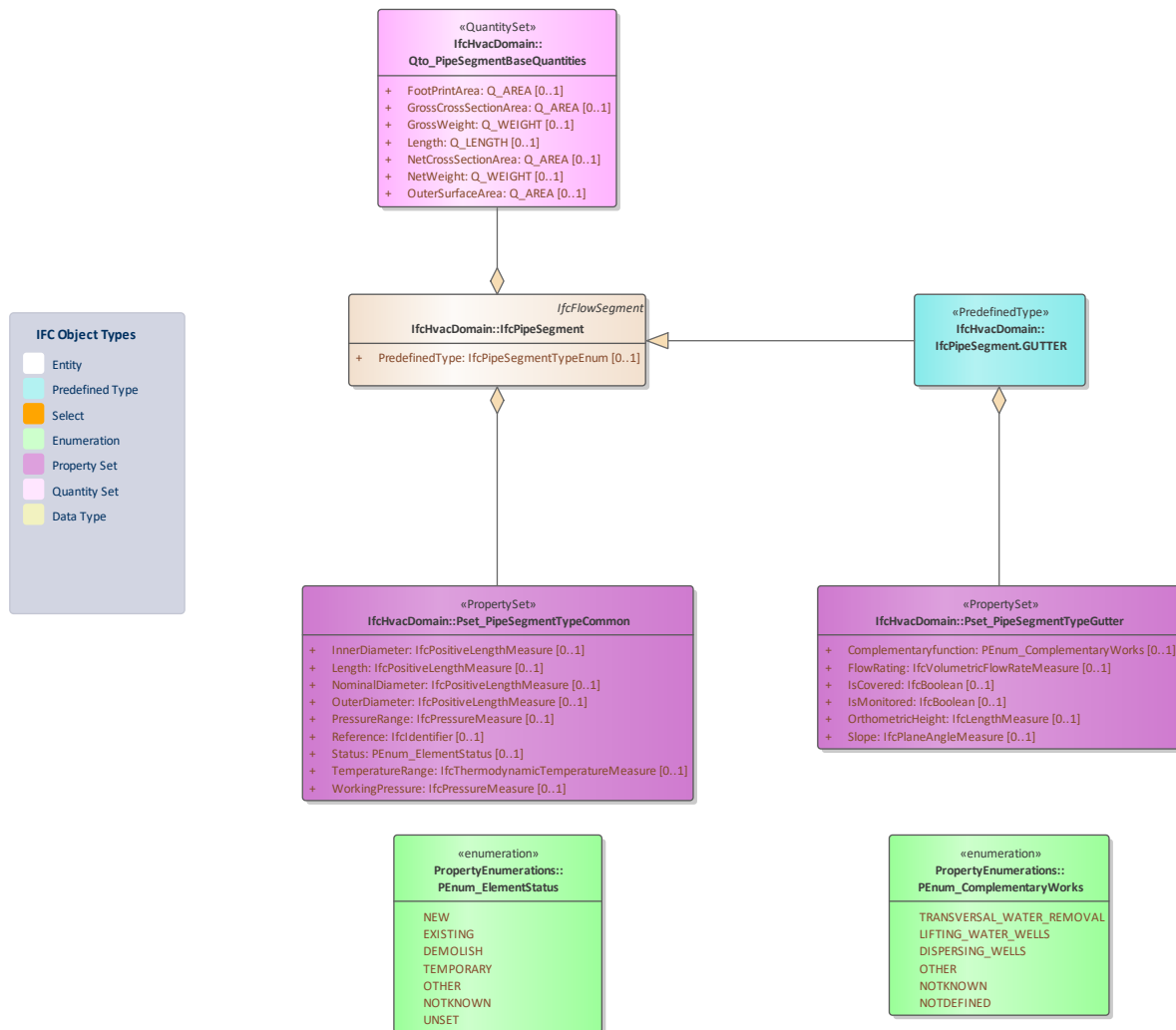
Figure 34: Psets_IfcPipeSegment -

3.137 Property Set: Pset_PipeSegmentTypeCommon

Pipe segment type common attributes.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
InnerDiameter	IfcPositiveLengthMeasure	[0..1]	The actual inner diameter of the pipe or tube.

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Length	IfcPositiveLengthMeasure	[0..1]	The length of the object. The size information is provided in addition to the shape representation and the geometric parameters used within. In cases of inconsistency between the geometric parameters and the size properties, provided in the attached property set, the geometric parameters take precedence.
NominalDiameter	IfcPositiveLengthMeasure	[0..1]	The nominal diameter of the pipe segment.
OuterDiameter	IfcPositiveLengthMeasure	[0..1]	The actual outer diameter of the pipe.
PressureRange	IfcPressureMeasure	[0..1]	Allowable maximum and minimum working pressure (relative to ambient pressure).
Reference	IfcIdentifier	[0..1]	Reference ID for this specified type in this project (e.g. type ''A-1'').
Status	PEnum_ElementStatus	[0..1]	Status of the element, predominately used in renovation or retrofitting projects. The status can be assigned to as "New" - element designed as new addition, "Existing" - element exists and remains, "Demolish" - element existed but is to be demolished, "Temporary" - element will exists only temporary (like a temporary support structure).
TemperatureRange	IfcThermodynamicTemperatureMeasure	[0..1]	Allowable maximum and minimum temperature.
WorkingPressure	IfcPressureMeasure	[0..1]	Working pressure.

3.138 Property Set: Pset_PipeSegmentTypeGutter

Gutter segment type common attributes.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
Complementaryfunction	PEnum_ComplementaryWorks	[0..1]	Indicates the complementary function of the drain channel.
FlowRating	IfcVolumetricFlowRateMeasure	[0..1]	Actual flow capacity for the gutter. Value of 0.00 means this value has not been set.

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IsCovered	IfcBoolean	[0..1]	This property defines if the drain channel has a cover (TRUE) or not (FALSE).
IsMonitored	IfcBoolean	[0..1]	This property defines if the Drain Chanel is monitored (TRUE) or not (FALSE).
OrthometricHeight	IfcLengthMeasure	[0..1]	The orthometric height is the vertical distance H along the plumb line from a point of interest to a reference surface known as the geoid, the vertical datum that approximates mean sea level.
Slope	IfcPlaneAngleMeasure	[0..1]	Angle of the gutter to allow for drainage.

3.139 Quantity Set: Qto_PipeSegmentBaseQuantities

Base quantities that are common to the definition of all types and occurrences of pipe segments.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«QuantitySet»

Quantities

Name	Type	Multiplicity	Definition
FootPrintArea	Q_AREA	[0..1]	Gross area of the site covered by the element.
GrossCrossSectionArea	Q_AREA	[0..1]	Area of the cross section, including the pipe itself and the interior flow space.
GrossWeight	Q_WEIGHT	[0..1]	Weight of the pipe segment itself, not including contained fluid.
Length	Q_LENGTH	[0..1]	Length of the segment, calculated at midpoint of cross-section, equal to the distance between inlet and outlet ports.
NetCrossSectionArea	Q_AREA	[0..1]	Area of the cross section of the pipe, excluding the interior flow space.
NetWeight	Q_WEIGHT	[0..1]	Weight of the pipe segment, including contained fluid as designed.
OuterSurfaceArea	Q_AREA	[0..1]	Total area of the extruded surfaces of the pipe (not taking into account the end cap areas), normally generated as perimeter * length.

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«PropertySet»
IfcElectricalDomain::Pset_ProtectiveDeviceTypeFuseDisconnector

+ ArcExtinctionType: IfcLabel [0..1]
+ BreakingCapacity: IfcElectricCurrentMeasure [0..1]
+ FuseDisconnectorType: PEnum_FuseDisconnectorType [0..1]
+ IC60269: IfcElectricCurrentMeasure [0..1]
+ NominalCurrent: IfcElectricCurrentMeasure [0..1]
+ NominalFrequency: IfcFrequencyMeasure [0..1]
+ NumberOfPhases: IfcInteger [0..1]
+ NumberOfPoles: IfcInteger [0..1]
+ PowerLoss: IfcPowerMeasure [0..1]
+ RatedVoltage: IfcElectricVoltageMeasure [0..1]
+ ReferenceEnvironmentTemperature: IfcThermodynamicTemperatureMeasure [0..1]
+ TransformationRatio: IfcRatioMeasure [0..1]
+ VoltageLevel: PEnum_VoltageLevels [0..1]

«enumeration»
PropertyEnumerations::PEnum_VaristorType

METALOXIDE
ZINCOXIDE
OTHER
NOTKNOWN
UNSET

«PropertySet»
IfcElectricalDomain::Pset_ProtectiveDeviceTypeVaristor

+ CharacteristicFunction: IfcText [0..1]
+ VaristorType: PEnum_VaristorType [0..1]

IFC Object Types

Entity
Predefined Type
Select
Enumeration
Property Set
Quantity Set
Data Type

«PredefinedType»
IfcElectricalDomain::IfcProtectiveDevice.FUSEDISCONNECTOR

«PredefinedType»
IfcElectricalDomain::IfcProtectiveDevice.VARISTOR

IfcFlowController
IfcElectricalDomain::IfcProtectiveDevice

+ PredefinedType: IfcProtectiveDeviceTypeEnum [0..1]

«enumeration»
PropertyEnumerations::PEnum_FuseDisconnectorType

ENGINEPROTECTIONDEVICE
FUSEDSWITCH
HRC
OVERLOADPROTECTIONDEVICE
SWITCHDISCONNECTORFUSE
OTHER
NOTKNOWN
UNSET

«enumeration»
PropertyEnumerations::PEnum_VoltageLevels

U230
U400
U440
U525
U690
U1000
OTHER
NOTKNOWN
UNSET

«PredefinedType»
IfcElectricalDomain::IfcProtectiveDevice.ANTI_ARCING_DEVICE

«PredefinedType»
IfcElectricalDomain::IfcProtectiveDevice.SPARKGAP

«PredefinedType»
IfcElectricalDomain::IfcProtectiveDevice.VOLTAGELIMITER

«PropertySet»
IfcRailDomain::Pset_ProtectiveDeviceTypeAntiArcingDevice

+ GroundingType: IfcLabel [0..1]
+ RatedVoltage: IfcElectricVoltageMeasure [0..1]

«PropertySet»
IfcRailDomain::Pset_ProtectiveDeviceTypeSparkGap

+ BreakdownVoltageTolerance: IfcElectricVoltageMeasure [0..1]
+ Capacitance: IfcElectricCapacitanceMeasure [0..1]
+ CurrentRMS: IfcElectricCurrentMeasure [0..1]
+ PowerDissipation: IfcPowerMeasure [0..1]
+ Resistivity: IfcElectricResistanceMeasure [0..1]
+ SparkGapType: PEnum_SparkGapType [0..1]

«enumeration»
PropertyEnumerations::PEnum_SparkGapType

AIRSPARKGAP
GASFILLEDSPARKGAP
OTHER
NOTKNOWN
UNSET

Figure 35: Psets_IfcProtectiveDevice -
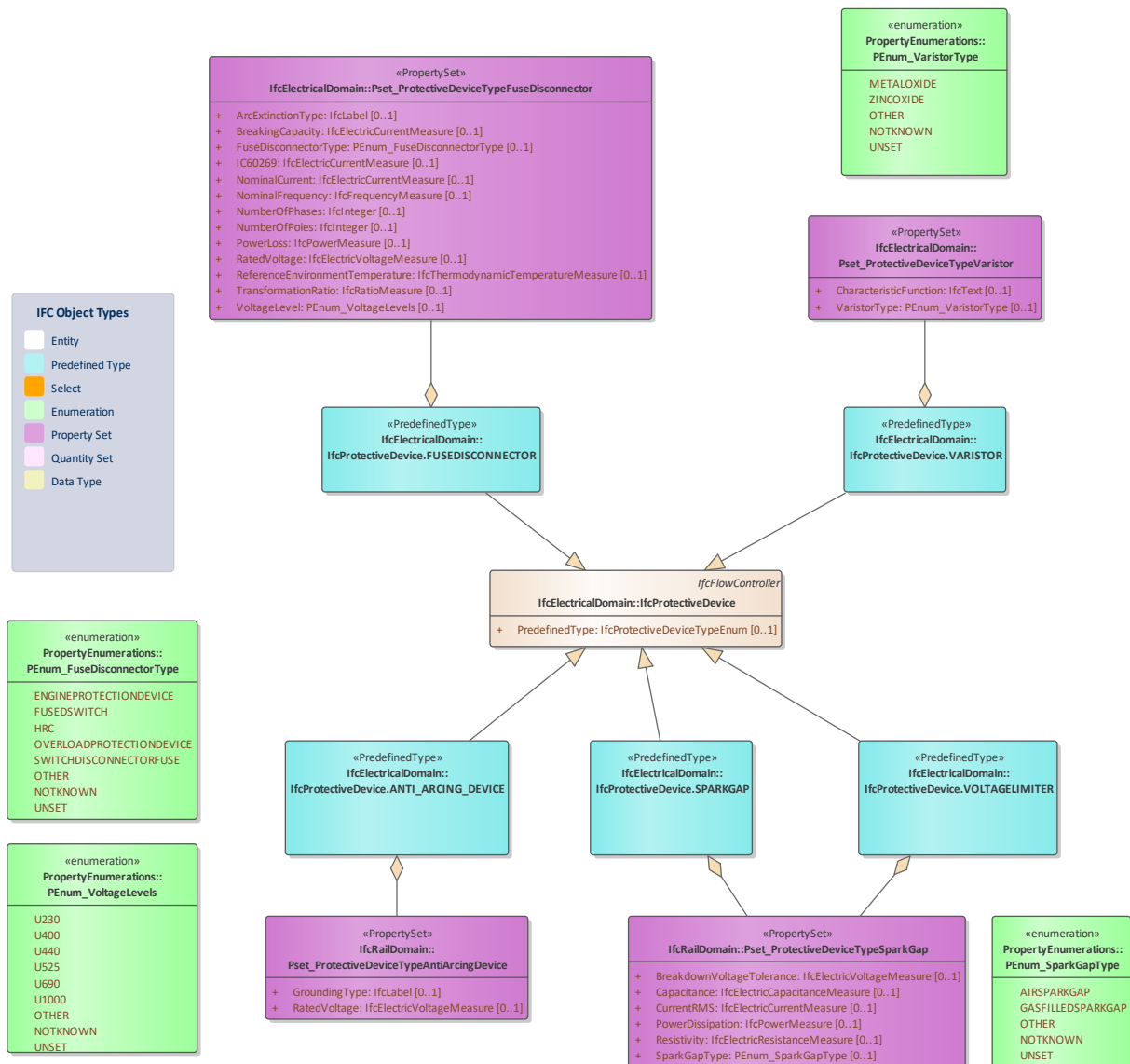
3.140 Property Set: Pset_ProtectiveDeviceTypeFuseDisconnector

A coherent set of attributes representing the breaking capacity of a fuse, defined in accordance with IEC 60269. Note - A protective device may be associated with different instances of this pSet providing information related to different basic characteristics.

Status: Implemented

Set Properties

RWR_IFC_RAIL_P2_WP3_A

Applicable Entities		stereotype	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ArcExtinctionType	IfcLabel	[0..1]	Type of arc extinction used.
BreakingCapacity	IfcElectricCurrentMeasure	[0..1]	The current that a fuse, circuit breaker, or other electrical apparatus is able to interrupt without being destroyed or causing an electric arc with unacceptable duration.
FuseDisconnectorType	PEnum_FuseDisconnectorType	[0..1]	A list of the available types of fuse disconnector from which that required may be selected where:\X\0D \X\0D EngineProtectionDevice: A fuse whose characteristic is specifically designed for the protection of a motor or generator.\X\0D FuseSwitchDisconnector: A switch disconnector in which a fuse link or a fuse carrier with fuse link forms the moving contact,\X\0D HRC: A standard fuse (High Rupturing Capacity)\X\0D OverloadProtectionDevice: A device that disconnects the supply when the operating conditions in an electrically undamaged circuit causes an overcurrent,\X\0D SemiconductorFuse: A fuse whose characteristic is specifically designed for the protection of sem-conductor devices.\X\0D SwitchDisconnectorFuse: A switch disconnector in which one or more poles have a fuse in series in a composite unit.
IC60269	IfcElectricCurrentMeasure	[0..1]	The breaking capacity in [A] for fuses in accordance with the IEC 60269 series.
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current that is designed to be measured.
NominalFrequency	IfcFrequencyMeasure	[0..1]	The nominal frequency of the supply.
NumberOfPhases	IfcInteger	[0..1]	Number of phases that the equipment operates on.
NumberOfPoles	IfcInteger	[0..1]	Number of poles that the equipment would affect.

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PowerLoss	IfcPowerMeasure	[0..1]	The power loss in [W] of the fuse when the nominal current is flowing through the fuse.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.
ReferenceEnvironment Temperature	IfcThermodynamicTemperatureMeasure	[0..1]	Ideal temperature range.
TransformationRatio	IfcRatioMeasure	[0..1]	The ratio of the actual primary current or voltage to the actual secondary current or voltage.
VoltageLevel	PEnum_VoltageLevels	[0..1]	The voltage levels for which the data of the instance is valid. More than one value may be selected in the enumeration.

3.141 Property Set: Pset_ProtectiveDeviceTypeVaristor

A high voltage surge protection device.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CharacteristicFunction	IfcText	[0..1]	The characteristic function to show the relationship between varistor current and voltage.
VaristorType	PEnum_VaristorType	[0..1]	A list of the available types of varistor from which that required may be selected.

3.142 Property Set: Pset_ProtectiveDeviceTypeAntiArcingDevice

Anti arcing device properties used in energy domain. The property set can be used by the predefined type ANTI_ARCING_DEVICE of IfcProtectiveDevice.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

GroundingType	IfcLabel	[0..1]	The type of grounding connection.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.

3.143 Property Set: Pset_ProtectiveDeviceTypeSparkGap

Spark gap properties used in energy domain. The property set can be used by the predefined type SPARKGAP and VOLTAGELIMITER of IfcProtectiveDevice.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
BreakdownVoltageTolerance	IfcElectricVoltageMeasure	[0..1]	Nominal value of the spark gap breakdown voltage tolerance.
Capacitance	IfcElectricCapacitanceMeasure	[0..1]	Maximum value of the capacitance between the electrodes at specified frequency and temperature.
CurrentRMS	IfcElectricCurrentMeasure	[0..1]	Maximum rms (root mean square) current of an electric-electronic or electromechanical component at specified ambient temperature.
PowerDissipation	IfcPowerMeasure	[0..1]	Permissible power which may be dissipated continuously, at specified conditions.
Resistivity	IfcElectricResistanceMeasure	[0..1]	Electrical resistivity of a rock or soil (Ohm-m).
SparkGapType	PEnum_SparkGapType	[0..1]	Type of Spark gap.

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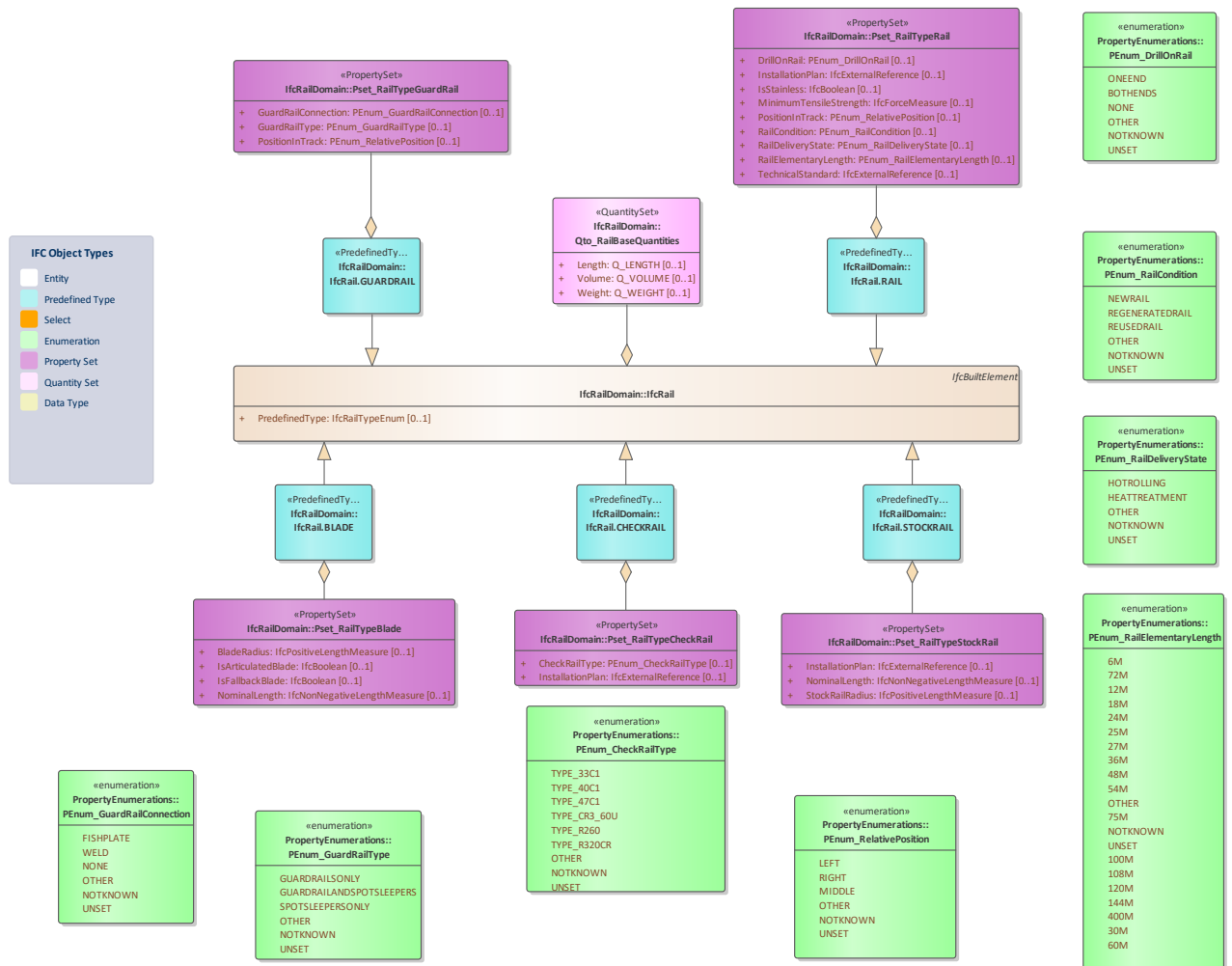
Figure 36: Psets_IfcRail -

3.144 Property Set: Pset_RailTypeBlade

Properties common to IfcRail types and occurrences with PredefinedType set to BLADE.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

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BladeRadius	IfcPositiveLengthMeasure	[0..1]	The radius of the blade bend defined as design parameter.
IsArticulatedBlade	IfcBoolean	[0..1]	Indicates whether the blade is articulated or not.
IsFallbackBlade	IfcBoolean	[0..1]	Indicates whether the blade always returns to the same position as a trailable turnout or not.
NominalLength	IfcNonNegativeLengthMeasure	[0..1]	Nominal length of the object.

3.145 Property Set: Pset_RailTypeCheckRail

Properties common to IfcRail types and occurrences with PredefinedType set to CHECKRAIL.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CheckRailType	PEnum_CheckRailType	[0..1]	Type of the check rail. Check rail types enumerated in this property are defined based on EN 13674.
InstallationPlan	IfcExternalReference	[0..1]	Reference to external information source about installation or construction plan of the element.

3.146 Property Set: Pset_RailTypeGuardRail

Properties common to IfcRail types and occurrences with PredefinedType set to GUARDRAIL.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
GuardRailConnection	PEnum_GuardRailConnection	[0..1]	Indicates how the guard rail is connected along its length, when the fasteners are not explicitly modelled.
GuardRailType	PEnum_GuardRailType	[0..1]	Type of the guard rail.

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PositionInTrack	PEnum_RelativePosition	[0..1]	Indicates the relative position of the element in track, which lies to the left or right as facing in the direction of increasing stationing values.

3.147 Property Set: Pset_RailTypeRail

Properties common to IfcRail types and occurrences with PredefinedType set to RAIL.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DrillOnRail	PEnum_DrillOnRail	[0..1]	Indicates if the manufactured rail is drilled at its extremities or not. It can have holes on one, both or none of its extremities.
InstallationPlan	IfcExternalReference	[0..1]	Reference to external information source about installation or construction plan of the element.
IsStainless	IfcBoolean	[0..1]	Indicates whether the rail is stainless or not.
MinimumTensileStrength	IfcForceMeasure	[0..1]	Indicates the minimum tensile strength.
PositionInTrack	PEnum_RelativePosition	[0..1]	Indicates the relative position of the element in track, which lies to the left or right as facing in the direction of increasing stationing values.
RailCondition	PEnum_RailCondition	[0..1]	Assessment of the condition of the rail at point of installation.
RailDeliveryState	PEnum_RailDeliveryState	[0..1]	The delivery state of rail, which indicates the final treatment at the end in manufacturing.
RailElementaryLength	PEnum_RailElementaryLength	[0..1]	The standardised length of rail supplied from the manufacturer.
TechnicalStandard	IfcExternalReference	[0..1]	The technical standard which the element should comply with.

3.148 Property Set: Pset_RailTypeStockRail

Properties common to IfcRail types and occurrences with PredefinedType set to STOCKRAIL.bSI Documentation

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
InstallationPlan	IfcExternalReference	[0..1]	Reference to external information source about installation or construction plan of the element.
NominalLength	IfcNonNegativeLengthMeasure	[0..1]	Nominal length of the object.
StockRailRadius	IfcPositiveLengthMeasure	[0..1]	The radius of the stock rail bend defined as design parameter.

3.149 Quantity Set: Qto_RailBaseQuantities

Base quantities that are common to the definition of all occurrences of rail.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«QuantitySet»

Quantities

Name	Type	Multiplicity	Definition
Length	Q_LENGTH	[0..1]	Characteristic length
Volume	Q_VOLUME	[0..1]	Measured volume
Weight	Q_WEIGHT	[0..1]	Total weight of object

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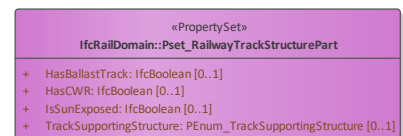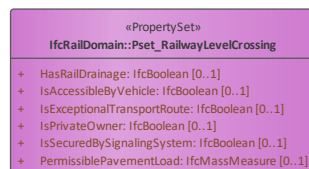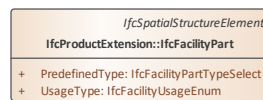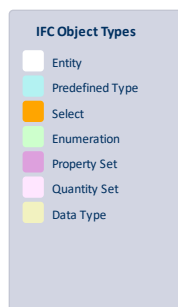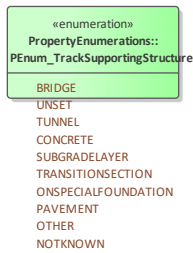
Figure 37: Psets_IfcRailwayPart -

3.150 Property Set: Pset_RailwayLevelCrossing

Properties appliable to _IfcFacilityPart_ with PredefinedType set to LEVELCROSSING.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
HasRailDrainage	IfcBoolean	[0..1]	Indicates whether there is rail drainage or not.
IsAccessibleByVehicle	IfcBoolean	[0..1]	Indicates whether the element is accessible by a vehicle or not.
IsExceptionalTransport Route	IfcBoolean	[0..1]	Indicates whether the route is suitable for exceptional transport (load, structure gauge, road),
IsPrivateOwner	IfcBoolean	[0..1]	Indicates if the owner of the crossed road is private or not.

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| IsSecuredBySignalingSystem | IfcBoolean | [0..1] | Indicates whether the level crossing is secured by a signalling system or not. |
| PermissiblePavementLoad | IfcMassMeasure | [0..1] | Permissible traffic load on the pavement. |

3.151 Property Set: Pset_RailwayTrackStructurePart

Properties applicable to _IfcFacilityPart_ with PredefinedType set to TRACKSTRUCTURE, or more specialized types including PLAINTRACKSUPERSTRUCTURE, TURNOUTSUPERSTRUCTURE or DILATATIONSUPERSTRUCTURE.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
HasBallastTrack	IfcBoolean	[0..1]	Indicates whether the track has ballast or not.
HasCWR	IfcBoolean	[0..1]	Indicates if the track has continuous welded rails.
IsSunExposed	IfcBoolean	[0..1]	Indicates if the object is in exposed position to sunshine.
TrackSupportingStructure	PEnum_TrackSupportingStructure	[0..1]	Indicates the supporting structure for track part.
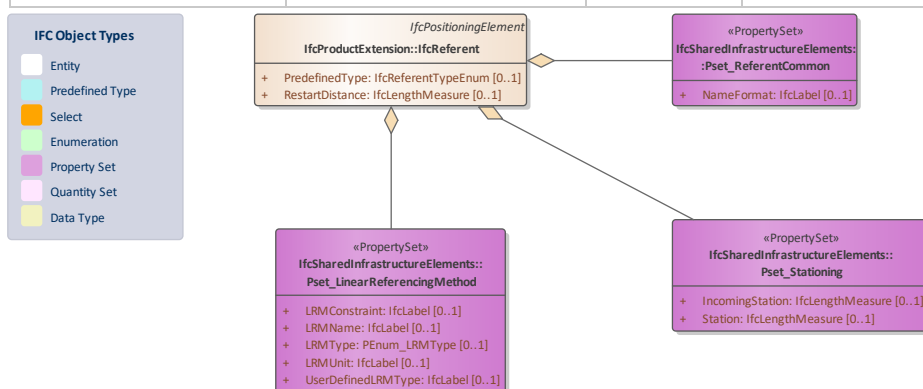
Figure 38: Psets_IfcReferent -

3.152 Property Set: Pset_ReferentCommon

Specifies common properties for _IfcReferent_ bSI Documentation

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NameFormat	IfcLabel	[0..1]	Specifies a reference to or description of the formatting or encoding of the Name attribute of the _IfcReferent_ occurence.

3.153 Property Set: Pset_Stationing

Specifies stationing parameters for _IfcReferent_.bSI Documentation

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
IncomingStation	IfcLengthMeasure	[0..1]	The optional station value of the incoming segment that ends at this location. This value needs to be set if the intention is to specify a station equation, i.e. a location where stationing changes.
Station	IfcLengthMeasure	[0..1]	The station value at this location.

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Figure 39: Psets_IfcSensor -

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3.154 Property Set: Pset_SensorTypeWindSensor

A device that senses or detects wind speed and direction. HISTORY: Added in IFC4.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

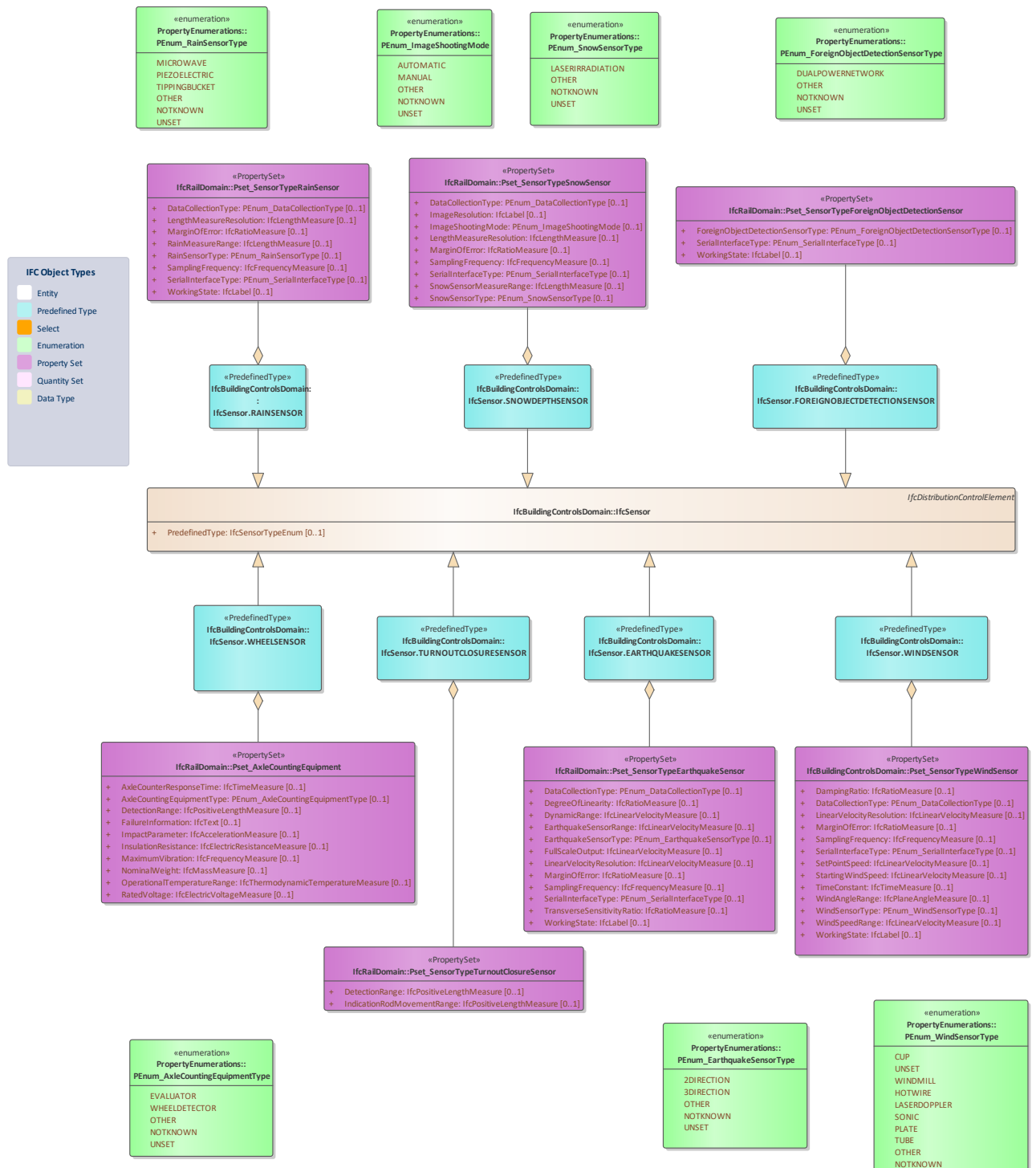| Name	Type	Multiplicity	Definition
DampingRatio	IfcRatioMeasure	[0..1]	Indicates the damping ratio of the device.
DataCollectionType	PEnum_DataCollectionType	[0..1]	Indicates the type or manner of data collection.
LinearVelocityResolution	IfcLinearVelocityMeasure	[0..1]	Indicates the resolution of the detected linear velocity.
MarginOfError	IfcRatioMeasure	[0..1]	Indicates the margin of error of the measurement.
SamplingFrequency	IfcFrequencyMeasure	[0..1]	Indicates the sampling frequency of the device.
SerialInterfaceType	PEnum_SerialInterfaceType	[0..1]	Indicates the type of serial interface used by the device.
SetPointSpeed	IfcLinearVelocityMeasure	[0..1]	The wind speed value to be sensed. Use IfcPropertyBoundedValue.SetPointValue to set the set point value.
StartingWindSpeed	IfcLinearVelocityMeasure	[0..1]	Indicates the starting wind speed of the wind sensor.
TimeConstant	IfcTimeMeasure	[0..1]	The time constant of the sensor.
WindAngleRange	IfcPlaneAngleMeasure	[0..1]	Indicates the wind angle range the sensor can monitor.
WindSensorType	PEnum_WindSensorType	[0..1]	Enumeration that Identifies the types of wind sensors that can be specified.
WindSpeedRange	IfcLinearVelocityMeasure	[0..1]	Indicates the range of wind speed the sensor can monitor.
WorkingState	IfcLabel	[0..1]	Indicates the working state of device or system.

3.155 Property Set: Pset_AxleCountingEquipment

Properties that are applicable for IfcSensor with predefined type WHEELSENSOR, indicated that the wheel sensor is a axle counting equipment.

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AxleCounterResponseTime	IfcTimeMeasure	[0..1]	The time that axle counter can detect the axles of locomotive and vehicle.
AxleCountingEquipmentType	PEnum_AxleCountingEquipmentType	[0..1]	The type of axle counting equipment.
DetectionRange	IfcPositiveLengthMeasure	[0..1]	The detection range of the equipment.
FailureInformation	IfcText	[0..1]	The information for failure description.
ImpactParameter	IfcAccelerationMeasure	[0..1]	Impact parameter of the equipment.
InsulationResistance	IfcElectricResistanceMeasure	[0..1]	Minimum resistance between one terminal or several terminals connected together and the case or enclosure of a component at specified voltage.
MaximumVibration	IfcFrequencyMeasure	[0..1]	Maximum tolerable vibration level of the device.
NominalWeight	IfcMassMeasure	[0..1]	Nominal weight of the object.
OperationalTemperatureRange	IfcThermodynamicTemperatureMeasure	[0..1]	The temperature range in which the device operates normally.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.

3.156 Property Set: Pset_SensorTypeEarthquakeSensor

Properties that are applicable for IfcSensor with predefined type EARTHQUAKESENSOR.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DataCollectionType	PEnum_DataCollectionType	[0..1]	Indicates the type or manner of data collection.

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DegreeOfLinearity	IfcRatioMeasure	[0..1]	Indicates the degree of linearity of the earthquake sensor or accelerometer.
DynamicRange	IfcLinearVelocityMeasure	[0..1]	Indicates the dynamic range of the sensor.
EarthquakeSensorRange	IfcLinearVelocityMeasure	[0..1]	Indicates the measuring range of the earthquake sensor or accelerometer.
EarthquakeSensorType	PEnum_EarthquakeSensorType	[0..1]	Indicates the type of earthquake sensor or accelerometer.
FullScaleOutput	IfcLinearVelocityMeasure	[0..1]	Indicates the full scale output of the earthquake sensor or accelerometer.
LinearVelocityResolution	IfcLinearVelocityMeasure	[0..1]	Indicates the resolution of the detected linear velocity.
MarginOfError	IfcRatioMeasure	[0..1]	Indicates the margin of error of the measurement.
SamplingFrequency	IfcFrequencyMeasure	[0..1]	Indicates the sampling frequency of the device.
SerialInterfaceType	PEnum_SerialInterfaceType	[0..1]	Indicates the type of serial interface used by the device.
TransverseSensitivityRatio	IfcRatioMeasure	[0..1]	Indicates the transverse sensitivity ratio of the sensor.
WorkingState	IfcLabel	[0..1]	Indicates the working state of device or system.

3.157 Property Set: Pset_SensorTypeForeignObjectDetectionSensor

Properties that are applicable for IfcSensor with predefined type FOREIGNOBJECTDETECTIONSENSOR.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ForeignObjectDetectionSensorType	PEnum_ForeignObjectDetectionSensorType	[0..1]	Indicates the type of foreign object detection sensor.
SerialInterfaceType	PEnum_SerialInterfaceType	[0..1]	Indicates the type of serial interface used by the device.
WorkingState	IfcLabel	[0..1]	Indicates the working state of device or system.

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3.158 Property Set: Pset_SensorTypeRainSensor

Properties that are applicable for IfcSensor with predefined type RAINSENSOR.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DataCollectionType	PEnum_DataCollectionType	[0..1]	Indicates the type or manner of data collection.
LengthMeasureResolution	IfcLengthMeasure	[0..1]	Indicates the resolution for length measure of the device.
MarginOfError	IfcRatioMeasure	[0..1]	Indicates the margin of error of the measurement.
RainMeasureRange	IfcLengthMeasure	[0..1]	Indicates the measuring range of rain gauge.
RainSensorType	PEnum_RainSensorType	[0..1]	Indicates the type of rain sensor or gauge.
SamplingFrequency	IfcFrequencyMeasure	[0..1]	Indicates the sampling frequency of the device.
SerialInterfaceType	PEnum_SerialInterfaceType	[0..1]	Indicates the type of serial interface used by the device.
WorkingState	IfcLabel	[0..1]	Indicates the working state of device or system.

3.159 Property Set: Pset_SensorTypeSnowSensor

Properties that are applicable for IfcSensor with predefined type SNOWDEPTHSENSOR.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DataCollectionType	PEnum_DataCollectionType	[0..1]	Indicates the type or manner of data collection.
ImageResolution	IfcLabel	[0..1]	Indicates the image resolution of snow depth meter.
ImageShootingMode	PEnum_ImageShootingMode	[0..1]	Indicates the type or manner of snow depth meter image shooting.

LengthMeasureResoluti on	IfcLengthMeasure	[0..1]	Indicates the resolution for length measure of the device.
MarginOfError	IfcRatioMeasure	[0..1]	Indicates the margin of error of the measurement.
SamplingFrequency	IfcFrequencyMeasure	[0..1]	Indicates the sampling frequency of the device.
SerialInterfaceType	PEnum_SerialInterfaceTy pe	[0..1]	Indicates the type of serial interface used by the device.
SnowSensorMeasureRa nge	IfcLengthMeasure	[0..1]	Indicates the measuring range of snow depth meter.
SnowSensorType	PEnum_SnowSensorType	[0..1]	Indicates the type of snow depth meter.

3.160 Property Set: Pset_SensorTypeTurnoutClosureSensor

Properties that are applicable for IfcSensor with predefined type TURNOUTCLOSURESENSOR.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
DetectionRange	IfcPositiveLengthMeasure	[0..1]	The detection range of the equipment.
IndicationRodMoveme ntRange	IfcPositiveLengthMeasure	[0..1]	Indicates the range of indication rod movement.

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Figure 40: Psets_IfcSignal -

3.161 Property Set: Pset_RailwaySignalAspect

Properties in this property set are applicable for _IfcSignal_ and _IfcSign_ applied in railways. These properties describe the signal aspect, which is the information on the signal or sign shown to the train driver.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AppliesToTrainCategory	PEnum_TrainCategory	[0..1]	Sign information relative to train category, e.g. freight, passenger.
SignalAspectSymbol	IfcExternalReference	[0..1]	Content which is shown on the signal or sign, e.g. text, number, arrow or icon.

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SignalAspectType	IfcLabel	[0..1]	The type of aspect, e.g. 2-display aspect for distant signal, 3-display aspect for block signal.
SignLegend	IfcText	[0..1]	Text information written on the signal or sign.

3.162 Property Set: Pset_RailwaySignalOccurrence

Properties common to the definition of occurrences of _IfcSignal_ applied in railways.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
ApproachSpeed	IfcLinearVelocityMeasure	[0..1]	The design speed of trains approaching the signal if different from the line speed.
DistanceToStopMark	IfcPositiveLengthMeasure	[0..1]	Distance from the signal to the nearest stop mark at a platform.
HandSignallingProhibited	IfcBoolean	[0..1]	Indicates if hand signalling is prohibited in case of any failure.
HinderingObstaclesDescription	IfcText	[0..1]	Description of obstacles that hinder the visibility for the staff in the station.
LimitedClearances	IfcText	[0..1]	Special conditions for placing the signal post telephone: tunnels, bridges, viaducts.
NumberOfLampsNotUsed	IfcInteger	[0..1]	Number of lamps which are not needed and blanked out (sealed).
RequiresBannerSignal	IfcBoolean	[0..1]	Indicates whether a banner repeater signal is required.
RequiresOLEMesh	IfcBoolean	[0..1]	Indicates whether an OLE mesh is required to protect the signal or maintainer.
RequiresSafetyHandrail	IfcBoolean	[0..1]	Indicates whether a safety handrail is required.
SignalPostTelephoneID	IfcIdentifier	[0..1]	The identifier of the signal post telephone attached to the signal.
SignalPostTelephoneType	IfcLabel	[0..1]	Indicates the type of the signal post telephone, e.g. locked, direct line, dial phone.

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SignalWalkwayLength	IfcPositiveLengthMeasure	[0..1]	Indicates the length of the walkway from signal to signal post telephone.
SpecialPositionArrangement	IfcLabel	[0..1]	Type of special position at which the signal is placed.

3.163 Property Set: Pset_RailwaySignalSighting

Properties that define information about signal sighting or visibility in railways. These properties are applicable to occurrences of _IfcSignal_ and _IfcSign_.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
SignalSightingAchievableDistance	IfcPositiveLengthMeasure	[0..1]	Reading distance of the signal, which is achievable with the help of mitigation works.
SignalSightingAvailableDistance	IfcPositiveLengthMeasure	[0..1]	Reading distance of the signal without having any mitigation works.
SignalSightingCombinedWithRepeater	IfcPositiveLengthMeasure	[0..1]	Combined reading distance for the signal and any associated repeaters.
SignalSightingMinimum	IfcPositiveLengthMeasure	[0..1]	Minimal distance in which the signal has to be readable.
SignalSightingPreferred	IfcPositiveLengthMeasure	[0..1]	Preferred distance in which the signal shall be readable.
SignalSightingRouteIndicator	IfcPositiveLengthMeasure	[0..1]	Required reading distance for the route indicator.
SignalViewingMinimumInFront	IfcPositiveLengthMeasure	[0..1]	Smallest distance where the signal has to be readable (for train very close to the signal).

3.164 Property Set: Pset_RailwaySignalType

Properties common to the definition of occurrences and types of _IfcSignal_ applied in railways.bSI Documentation

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
HasConductorRailGuardBoard	IfcBoolean	[0..1]	Indicates if a guard board is provided.
HotStripOrientation	IfcLabel	[0..1]	Position of the hot strip, which indicates the direction of the focus of the light beam and is given in terms like "left upper quadrant (LUQ)" or "5 o''clock".
IsHighType	IfcBoolean	[0..1]	Indicates if the signal is high (TRUE) or dwarf (ground mounted) (FALSE).
LensDiffuserOrientation	IfcLabel	[0..1]	Orientation the lens diffuser has to have, which indicates the direction of the lens diffuser and is given in terms like "left upper quadrant (LUQ)" or "5 o''clock".
LensDiffuserType	IfcLabel	[0..1]	Type of the lens diffuser the signal is equipped with.
MaximumDisplayDistance	IfcPositiveLengthMeasure	[0..1]	The maximum distance that can be displayed. The value relates only to the signal type, not to the circumstances at a special position.
NumberOfLamps	IfcInteger	[0..1]	Number of lamps the signal is composed of.
RailwaySignalType	PEnum_RailwaySignalType	[0..1]	The type of railway signal, e.g. home signal, starting signal, shunting signal, level crossing signal.
RequiredDisplayDistance	IfcPositiveLengthMeasure	[0..1]	The required distance that has to be displayed. The value relates only to the signal type, not to the circumstances at a special position.
SignalHoodLength	IfcPositiveLengthMeasure	[0..1]	Nominal length of the signal hood, which is the signal lamp cover against glaring sun.
SignalIndicatorType	PEnum_SignalIndicatorType	[0..1]	Type of the indicators on a signal, e.g. route indicator, speed restriction indicator etc.
SignalMessage	IfcText	[0..1]	All possible message available at this signal, e.g. "3/4- display automatic blocking".

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3.165 Property Set: Pset_SignalFrame

Properties that define signal frame parameters for occurrences and types of _IfcSignal_ applied in railways.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

| Name	Type	Multiplicity	Definition
BackboardType	IfcLabel	[0..1]	The type of the backboard of the signal frame.
NominalWidth	IfcNonNegativeLengthMeasure	[0..1]	The nominal width of the object.
SignalFrameBackboard Diameter	IfcPositiveLengthMeasure	[0..1]	The nominal diameter of the signal frame backboard.
SignalFrameBackboard Height	IfcPositiveLengthMeasure	[0..1]	The nominal height of the signal frame backboard.
SignalFrameType	IfcLabel	[0..1]	Type of frame, e.g. main frame, route indicator, speed indicator, direction indicator, etc.
SignalIndicatorType	PEnum_SignalIndicatorType	[0..1]	Type of the indicators on a signal, e.g. route indicator, speed restriction indicator etc.

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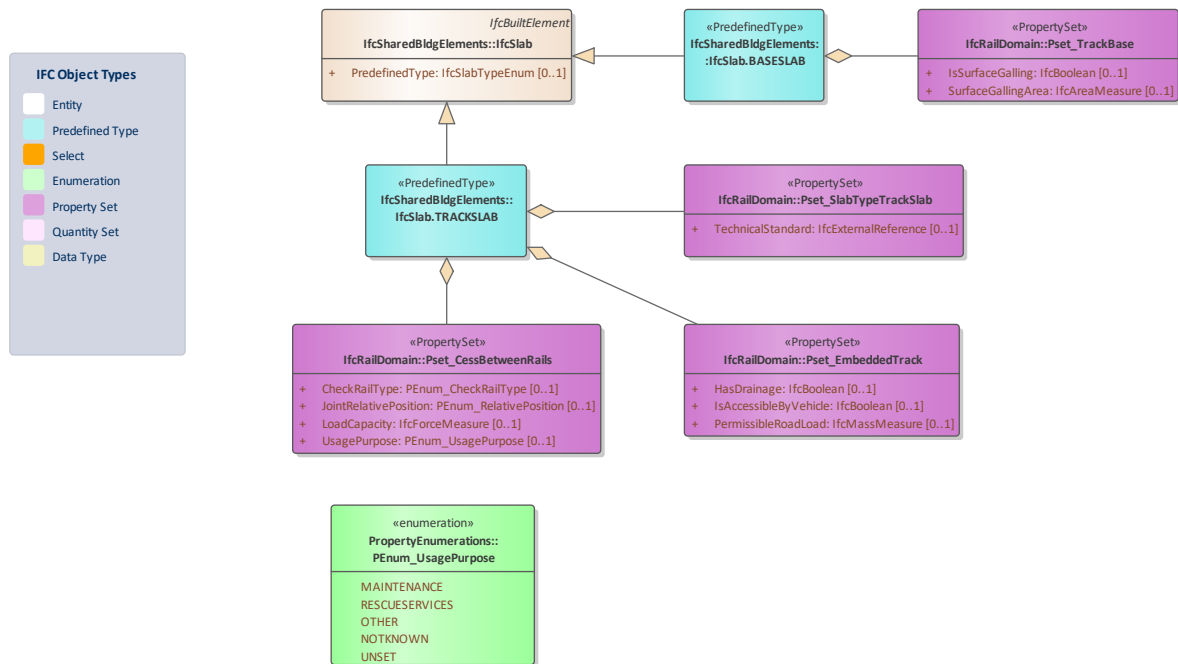
Figure 41: Psets_IfcSlab -

3.166 Property Set: Pset_CessBetweenRails

Properties in this property set are applicable for IfcSlab with PredefinedType TRACKSLAB, indicated that the slab is a cess or covering between rails.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
CheckRailType	PEnum_CheckRailType	[0..1]	Type of the check rail. Check rail types enumerated in this property are defined based on EN 13674.
JointRelativePosition	PEnum_RelativePosition	[0..1]	Indicates the relative position of the joint, which lies in the left or right rail or in the middle, or in combination. The left rail is to the left as facing in the direction of increasing stationing values, and the right rail is to the right.
LoadCapacity	IfcForceMeasure	[0..1]	Indicates the highest permissible load capacity.

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UsagePurpose	PEnum_UsagePurpose	[0..1]	The purpose of usage of the cess between rails, e.g. maintenance, rescue services.

3.167 Property Set: Pset_EmbeddedTrack

Properties for track slab that have embedded tracks recessed into road surface.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
HasDrainage	IfcBoolean	[0..1]	Indicates whether the infrastructure element has drainage embedded or not.
IsAccessibleByVehicle	IfcBoolean	[0..1]	Indicates whether the element is accessible by a vehicle or not.
PermissibleRoadLoad	IfcMassMeasure	[0..1]	Permissible traffic load for the road design.

3.168 Property Set: Pset_SlabTypeTrackSlab

Properties in this property set are generally applicable slabs used in railway tracks, modelled as IfcSlab with PredefinedType TRACKSLAB.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
TechnicalStandard	IfcExternalReference	[0..1]	The technical standard which the element should comply with.

3.169 Property Set: Pset_TrackBase

Properties in this property set are applicable for IfcSlab with PredefinedType BASESLAB, indicated that the base slab is a track base slab.

Status: Implemented

Set Properties

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Applicable Entities		stereotype	«PropertySet»

Properties

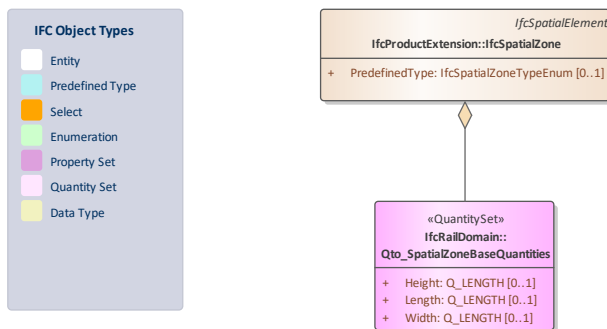| Name	Type	Multiplicity	Definition
IsSurfaceGalling	IfcBoolean	[0..1]	Indicates whether the surface is galling or not.
SurfaceGallingArea	IfcAreaMeasure	[0..1]	The galling area of the object surface.

Figure 42: Psets_IfcSpatialZone -

3.170 Quantity Set: Qto_SpatialZoneBaseQuantities

Status: Implemented

Set Properties			
Applicable Entities		stereotype	«QuantitySet»

Quantities

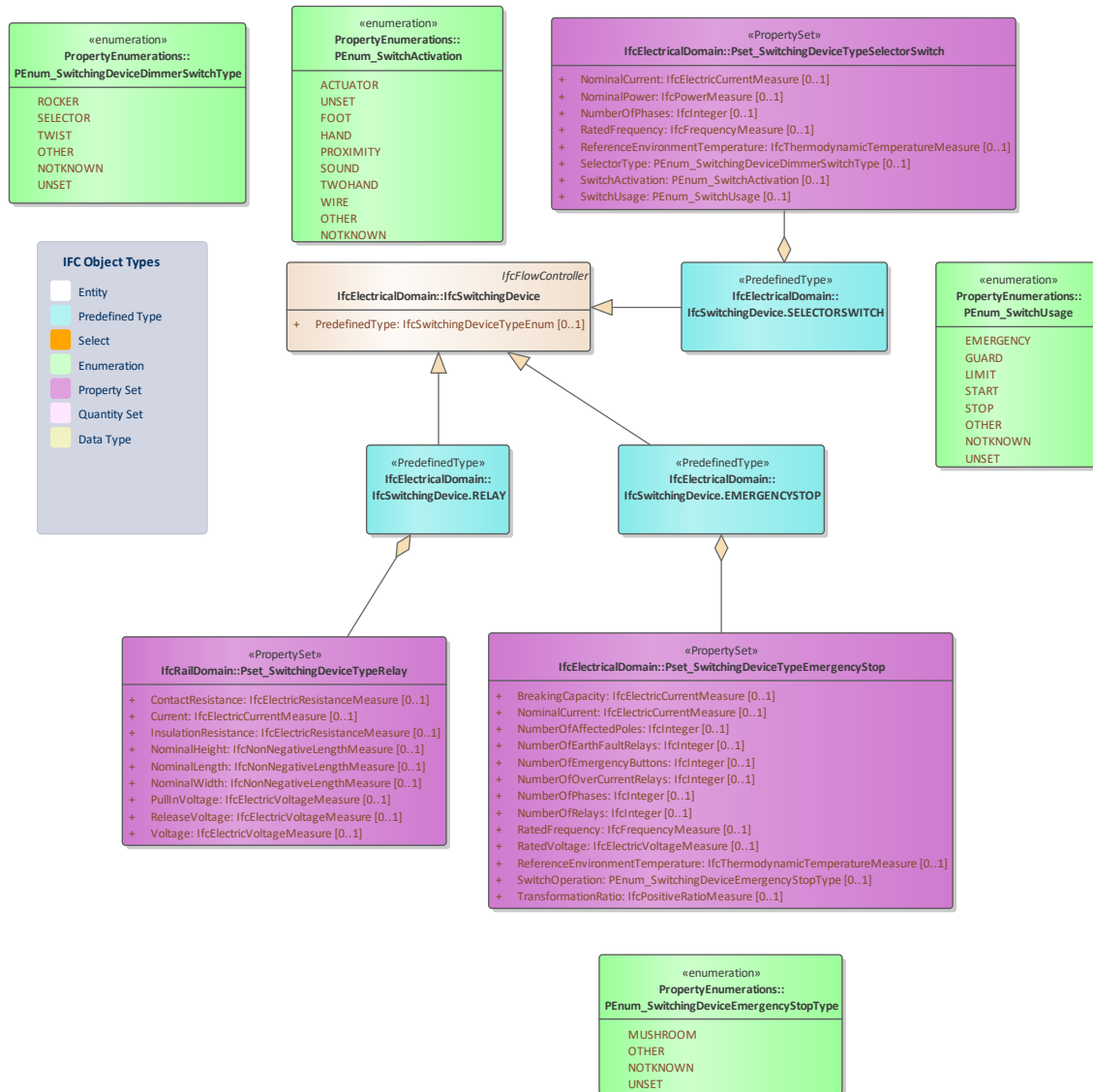| Name	Type	Multiplicity	Definition
Height	Q_LENGTH	[0..1]	Characteristic height
Length	Q_LENGTH	[0..1]	Characteristic length
Width	Q_LENGTH	[0..1]	Characteristic width

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Figure 43: Psets_IfcSwitchingDevice -

3.171 Property Set: Pset_SwitchingDeviceTypeEmergencyStop

An emergency stop device acts to remove as quickly as possible any danger that may have arisen unexpectedly.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
BreakingCapacity	IfcElectricCurrentMeasure	[0..1]	The current that a fuse, circuit breaker, or other electrical apparatus is able to interrupt without being destroyed or causing an electric arc with unacceptable duration.
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current that is designed to be measured.
NumberOfAffectedPoles	IfcInteger	[0..1]	Number of poles that the equipment affects.
NumberOfEarthFaultRelays	IfcInteger	[0..1]	Indicates the number of relays used for preventing earth fault.
NumberOfEmergencyButtons	IfcInteger	[0..1]	The number of emergency buttons built in the device.
NumberOfOverCurrentRelays	IfcInteger	[0..1]	Indicates number of relays used for preventing over current.
NumberOfPhases	IfcInteger	[0..1]	Number of phases that the equipment operates on.
NumberOfRelays	IfcInteger	[0..1]	Indicates number of relays built in the device.
RatedFrequency	IfcFrequencyMeasure	[0..1]	Frequency of the AC electric power supply when the device or system reaches its optimum operating condition.
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The range of allowed voltage that a device is certified to handle. The upper bound of this value is the maximum.
ReferenceEnvironmentTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	Ideal temperature range.
SwitchOperation	PEnum_SwitchingDeviceEmergencyStopType	[0..1]	Indicates operation of emergency stop switch.
TransformationRatio	IfcPositiveRatioMeasure	[0..1]	The ratio of the actual primary current or voltage to the actual secondary current or voltage.

3.172 Property Set: Pset_SwitchingDeviceTypeSelectorSwitch

A selector switch is a switch that adjusts electrical power through a multi-position action. HISTORY: Added in IFC4.

Status: Implemented

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Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	The nominal current that is designed to be measured.
NominalPower	IfcPowerMeasure	[0..1]	A conventional value of apparent power determining a value of the rated current that may be carried with rated voltage applied, under specified conditions. (IEV ref 421-04-04)
NumberOfPhases	IfcInteger	[0..1]	Number of phases that the equipment operates on.
RatedFrequency	IfcFrequencyMeasure	[0..1]	Frequency of the AC electric power supply when the device or system reaches its optimum operating condition.
ReferenceEnvironmentTemperature	IfcThermodynamicTemperatureMeasure	[0..1]	Ideal temperature range.
SelectorType	PEnum_SwitchingDeviceDimmerSwitchType	[0..1]	A list of the available types of selector switch from which that required may be selected.
SwitchActivation	PEnum_SwitchActivation	[0..1]	A list of the available activations for selector switches from which that required may be selected.
SwitchUsage	PEnum_SwitchUsage	[0..1]	A list of the available usages for selector switches from which that required may be selected.

3.173 Property Set: Pset_SwitchingDeviceTypeRelay

Properties in this property set are applicable for _IfcSwitchingDevice_ with PredefinedType _RELAY_.bSI Documentation

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition

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|			
ContactResistance	IfcElectricResistanceMeasure	[0..1]	Resistance when electrical node is closed.
Current	IfcElectricCurrentMeasure	[0..1]	The actual current and operable range.
InsulationResistance	IfcElectricResistanceMeasure	[0..1]	Minimum resistance between one terminal or several terminals connected together and the case or enclosure of a component at specified voltage.
NominalHeight	IfcNonNegativeLengthMeasure	[0..1]	Nominal height of the object.
NominalLength	IfcNonNegativeLengthMeasure	[0..1]	Nominal length of the object.
NominalWidth	IfcNonNegativeLengthMeasure	[0..1]	The nominal width of the object.
PullInVoltage	IfcElectricVoltageMeasure	[0..1]	Working voltage of relay in excitation state.
ReleaseVoltage	IfcElectricVoltageMeasure	[0..1]	The maximum voltage to guarantee the drop of the relay node.
Voltage	IfcElectricVoltageMeasure	[0..1]	The actual voltage and operable range.
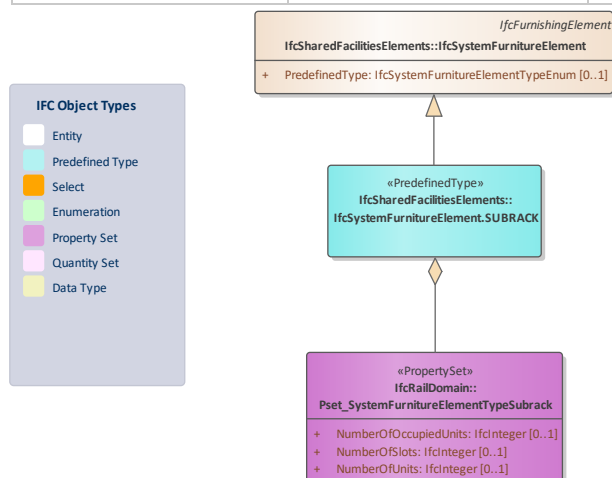
Figure 44: Psets_IfcSystemFurnitureElement -

3.174 Property Set: Pset_SystemFurnitureElementTypeSubrack

Properties of subrack used in railway telecom. The property set can be used by the predefined type SUBRACK of IfcSystemFurnitureElement

Status: Implemented

Set Properties

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Applicable Entities		stereotype	«PropertySet»

Properties

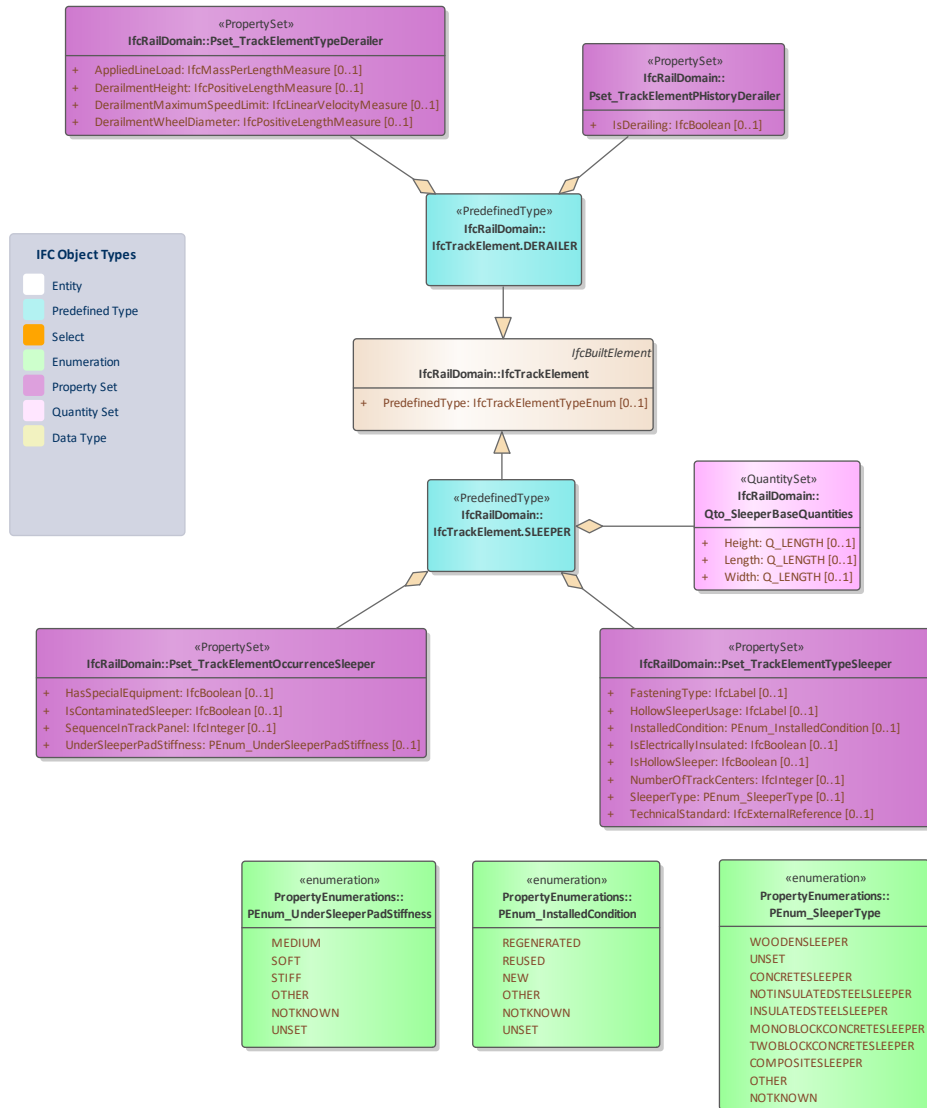| Name	Type	Multiplicity	Definition
NumberOfOccupiedUnits	IfcInteger	[0..1]	Indicates the number of vertical units occupied by the equipment.
NumberOfSlots	IfcInteger	[0..1]	Indicates the number of device slots.
NumberOfUnits	IfcInteger	[0..1]	Indicates the number of vertical units.

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Figure 45: Psets_IfcTrackElement -

3.175 Property Set: Pset_TrackElementOccurrenceSleeper

Properties common to the definition to all occurrences of IfcTrackElement with PredefinedType set to SLEEPER.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

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Properties

Name	Type	Multiplicity	Definition
HasSpecialEquipment	IfcBoolean	[0..1]	Indicates whether the sleeper has any special equipment for fastening components (e.g. Balise, signum magnet) or not.
IsContaminatedSleeper	IfcBoolean	[0..1]	Indicates whether the sleeper is contaminated and requires special disposal or not.
SequenceInTrackPanel	IfcInteger	[0..1]	Sequence of the sleeper within the track panel.
UnderSleeperPadStiffness	PEnum_UnderSleeperPadStiffness	[0..1]	Indicates the stiffness of the under-sleeper pad as design reference for the sleeper.

3.176 Property Set: Pset_TrackElementPHistoryDerailer

Indicates derailer information over time for operation management.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
IsDerailing	IfcBoolean	[0..1]	Indicates whether the derailer is on or not.

3.177 Property Set: Pset_TrackElementTypeDerailer

Properties common to the definition to all occurrences and types of IfcTrackElement with PredefinedType set to DERAILER.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
AppliedLineLoad	IfcMassPerLengthMeasure	[0..1]	The load of line where the derailer is installed. It is a design parameter and is defined by mass per length.

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DerailmentHeight	IfcPositiveLengthMeasure	[0..1]	Height of derailment block when derailer in protection state.
DerailmentMaximumSpeedLimit	IfcLinearVelocityMeasure	[0..1]	Indicates the maximum allowable train speed for the derailer.
DerailmentWheelDiameter	IfcPositiveLengthMeasure	[0..1]	Indicates the wheel diameter requirement for the derailer.

3.178 Property Set: Pset_TrackElementTypeSleeper

Properties common to the definition to all occurrences and types of IfcTrackElement with PredefinedType set to SLEEPER.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
FasteningType	IfcLabel	[0..1]	Indicates the type of fastening used to generate traction between the foot of the rail and the sleeper. It depends on but is not uniquely identified by the type of sleeper. This property shall only be used when sleeper fastening is not modelled as an element.
HollowSleeperUsage	IfcLabel	[0..1]	Indicates the purpose of using hollow sleeper. The possible value can be eg. cable trenching, protection of turnout mechanism, etc.
InstalledCondition	PEnum_InstalledCondition	[0..1]	Assessment of the condition of the element at point of installation.
IsElectricallyInsulated	IfcBoolean	[0..1]	Indicates whether the sleeper is electrically insulated due to its design or the running rails or not.
IsHollowSleeper	IfcBoolean	[0..1]	Indicates whether the sleeper is hollowed or not.
NumberOfTrackCenters	IfcInteger	[0..1]	Indicates the number of track centers running over the sleepers.
SleeperType	PEnum_SleeperType	[0..1]	Indicates the sleeper type.
TechnicalStandard	IfcExternalReference	[0..1]	The technical standard which the element should comply with.

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3.179 Quantity Set: Qto_SleeperBaseQuantities

Base quantities common to the definition to all occurrences of IfcTrackElement with PredefinedType set to SLEEPER.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«QuantitySet»

Quantities

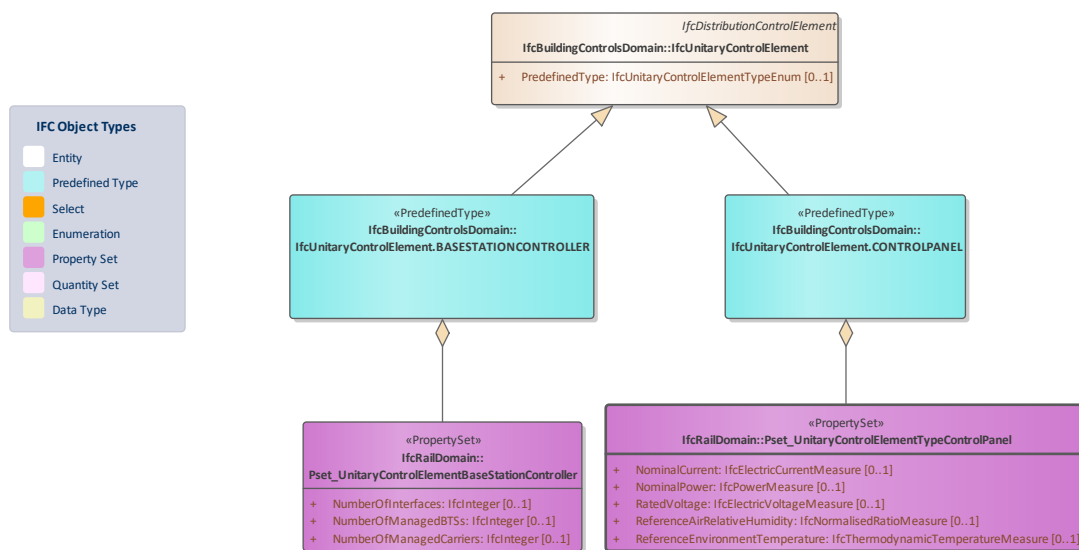| Name	Type	Multiplicity	Definition
Height	Q_LENGTH	[0..1]	Characteristic height
Length	Q_LENGTH	[0..1]	Characteristic length
Width	Q_LENGTH	[0..1]	Characteristic width

Figure 46: Psets_IfcUnitaryControlElement -

3.180 Property Set: Pset_UnitaryControlElementBaseStationController

Properties that are applicable to _IfcUnitaryControlElement_ with the predefined type set to BASESTATIONCONTROLLER.

Status: Implemented

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Set Properties

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NumberOfInterfaces	IfcInteger	[0..1]	Indicates the types of interfaces and their number in the device.
NumberOfManagedBTSs	IfcInteger	[0..1]	Indicates the maximum number of base transceiver stations (BTSs) that can be handled by the device.
NumberOfManagedCarriers	IfcInteger	[0..1]	Indicates how many carrier frequencies can be managed by the device.

3.181 Property Set: Pset_UnitaryControlElementTypeControlPanel

Properties that are applicable to _IfcUnitaryControlElement_ with the predefined type set to CONTROLPANEL.

Status: Implemented

Set Properties			
Applicable Entities		**stereotype**	«PropertySet»

Properties

Name	Type	Multiplicity	Definition
NominalCurrent	IfcElectricCurrentMeasure	[0..1]	A set of nominal currents in [A] for which the data of this instance is valid. At least one value shall be provided. Any value in the set shall not exceed the value of the \X\0D UltimateRatedCurrent associated with the same breaker unit.
NominalPower	IfcPowerMeasure	[0..1]	A conventional value of apparent power determining a value of the rated current that may be carried with rated voltage applied, under specified conditions. (IEV ref 421-04-04)
RatedVoltage	IfcElectricVoltageMeasure	[0..1]	The voltage that a device is designed to handle.
ReferenceAirRelativeHumidity	IfcNormalisedRatioMeasure	[0..1]	Measurement of the ratio of water vapor in the air.

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ReferenceEnvironment Temperature	IfcThermodynamicTempe ratureMeasure	[0..1]	Ideal temperature range.

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Appendix A: Link to Property Sets as input for bSDD

The property sets defined or enriched by IFC Rail project are together with all IFC property sets available on: https://github.com/buildingSMART/IFC4.3.x-output/tree/master/psd. BuildingSMART International takes these IFC properties as input for buildingSMART Data Dictionary (bSDD).