OntoDiff: rsm12e vs rsm12beta

==== === === [ OntoRail Diff ] === === ====
 • target: rsm12e (http://ontorail.org/src/RSM/rsm12e/)
 • versus: rsm12beta (http://ontorail.org/src/RSM/rsm12beta/)
 • entity types considered: ['Package', 'Object', 'Property', 'Enumeration']
 • performed: 2023-02-17 13:51:45 +0000
 • duration: 10.4 sec
 • OntoDiff version date: 2023-02-17 12:04:28
 • Ignored predicates: xmi:ea\_localid, xmi:lowerValue\_\_id, xmi:upperValue\_\_id, xmi:source\_\_isNavigable, xmi:coords\_\_ordered, xmi:coords\_\_scale, xmi:containment\_\_position, xmi:virtualInheritance, xmi:target\_\_isNavigable, xmi:source\_\_idref, xmi:target\_\_idref, xmi:type\_\_idref, xmi:labels\_\_rb, xmi:type, xmi:visibility, xmi:isUnique, xmi:upperValue\_\_type, xmi:isDerived, xmi:isDerivedUnion, xmi:isOrdered, xmi:isReadOnly, xmi:isStatic
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# Summary

## Package entities

### 37 Package in rsm12e:

Base, Calendar, CapacityAllocation, CommercialOperations, Common, EA\_C#\_Types\_Package, EA\_Java\_Types\_Package, EA\_PrimitiveTypes\_Package, EA\_Python\_Types\_Package, Energy, Energy\_SCADA, Energy\_distribution, Environment, "General documentation", Geometry, Infrastructure, LegalEntities, Location, NetEntity, NetProperty, Network, ObservationAndMeasure, Operations, OperationsEntity, Positioning, RSM, RailwayStakeholders, RollingStock, RootPackage, Signalling, TimeAxis, Topology, Track, Train, TrainOperations, TrainRouting, Weather

### 10 Package NEW from rsm12beta:

Calendar, CapacityAllocation, CommercialOperations, Operations, OperationsEntity, RailwayStakeholders, RollingStock, Train, TrainOperations, TrainRouting

### 0 Package REMOVED from rsm12beta:

### 20 Package MODIFIED from rsm12beta:

Base, Common, Energy, Energy\_distribution, Environment, "General documentation", Geometry, Infrastructure, LegalEntities, Location, NetEntity, Network, ObservationAndMeasure, Positioning, RSM, Signalling, TimeAxis, Topology, Track, Weather

## Object entities

### 254 Object in rsm12e:

$inet://https://www.w3.org/TR/vocab-ssn/#Observations, Air, AirTemperature, AlignmentCantSegment, AlignmentCurve, AnchorPoint, Angle, Anywhere, ApplicationRange, AreaLocation, AssociatedNetElement, AssociatedPositioning, BaseLocation, BaseObject, BaseProperty, Calendar, CalendarDay, Cant, Canvas, CartesianCoordinate, CircularTurnout, Circulation, Circumstance, CompanyCode, CompositeSource, CompositeTimeInterval, CompositionNetElement, Connection, Context, ControlAssignment, Country, Crossing, DailyTrain, Date, DateTimeDescription, DilatationPanel, Dimensionless, DiscretisedPoint, DiscretisedPointSet, DistributionFunctionalEntity, DoubleSlipCrossing, Duration, DurationOfSunshine, ETCSoperationalTrainCategory, ElementLength, ElementPartCollection, ElementarySection, ElementarySource, Elevation, ElevationAndInclination, EmptyPeriod, EnergyEntity, Entity, Fleet, Formation, FormationType, FreightEntity, GeneralDateTimeDescription, GeodeticReferenceSystem, GeographicCoordinate, GeographicCoordinateSystem, GeometricCoordinate, GeopoliticalEntity, Gradient, GridReferenceSystem, Ground, Halt, HorizontalAlignment, HorizontalAlignmentSegment, HorizontalSegmentArc, HorizontalSegmentLine, HorizontalSegmentTransition, HumidityMixingRatio, Inertia, InformationSource, InfrastructureManagerActivity, Instant, Interval, IntrinsicCoordinate, "Issue: TAF XSD does not seem to follow TAF TSI definitions regarding responsible applicant", JunctionEntity, LateralDistance, LateralInclination, LateralPosition, LateralSide, LegalPerson, Length, LineString, LinearCoordinate, LinearElement, LinearElementWithLength, LinearLocation, LinearPositioningSystem, LinearTrainJourneyLocation, "List of Elements in Package Train", LocatedNetEntity, LocatedOperationsEntity, LocationCodes, LocationPoint, LocationsSet, MarkerPoint, Mass, MeasurementAuthor, MeasurementEquipment, MeasurementMethod, Medium, NamedLine, NamedResource, NamedTrack, NetElement, NetEntity, NetProperty, Network, NetworkAccessPoint, NetworkFrontierPoint, NetworkLevel, NetworkResource, NeutralSection, NonLinearElement, NonlinearTrainJourneyLocation, Nowhere, NumericQuantity, ObservableProperty, Observation, OfftrackEntity, OnTrackSignallingDevice, OntrackEntity, OperationalPoint, OperationsEntity, OrderedCollection, OrganizationCode, OrientedRollingStock, PassengerEntity, Path, PathRequest, PhenomenonTime, PhysicalAddress, PlannedCalendar, PlannedJourneyLocation, PlannedTrain, Point, Polygon, PositionedRelation, PositioningNetElement, PositioningSystem, PositioningSystemCoordinate, PowerSupplyFacilitySpatialStructure, Precipitation, Prediction, ProjectedLength, PropertySet, Quantity, QuantityKind, RailwayActivity, RailwayAlignmentCant, RailwayDiscretisedPoint, RailwayStakeholder, Rainfall, ReferenceCalendar, Relation, RelativeHumidity, RemoteInstant, RequestedCalendar, Requirement, Requirement, RollingStock, RollingStockEntity, RollingStockModel, RollingStockType, RootObject, RouteBody, RoutePoint, RouteSection, RunningTrain, SCADA\_center, SCADA\_configuration, Scale, ScaleValueDefinition, SecantTurnout, SectioningPost, Sector, SegmentCantLine, SegmentCantTransition, Sensor, ShuntingMovement, Signal, SimpleCrossing, SimpleTimeInterval, SingleSlipCrossing, Snowfall, SpecialTurnout, Speed, SpotLocation, StateBorder, Station, StoppingPattern, SubCalendar, SubSector, Substation, SubstationOutput, Surface, SwitchingPost, TangentTurnout, Temperature, TemporalEntity, TemporalPosition, ThicknessOfRainfallAmount, ThicknessOfSnowfallAmount, ThreeDAlignmentCurve, ThreeDLength, TimePosition, TimeReferenceSystem, TimedLocation, Timetable, TimingAtLocation, TownOffice, TpsDevice, TrackPanel, TractionPost, Train, TrainActivity, TrainCategory, TrainComposition, TrainLine, TrainRoute, TrainRouteElement, TrainSchedule, TrapPoint, Trip, Turnout, UndefinedInstant, Unit, UnitIdentification, UnorderedCollection, ValidityPeriod, Vehicle, VehiclePassageDetector, VehicleStop, VehicleType, VerticalAlignment, VerticalAlignmentSegment, VerticalSegmentArc, VerticalSegmentLine, VerticalSegmentTransition, Warehouse, WeatherFeature, WeatherProperty, Wind, WindFromDirection, WindSpeed, https://en.wikipedia.org/wiki/Line\_graph, https://gssc.esa.int/navipedia/index.php/Time\_References\_in\_GNSS, sysml\_qudv:annex\_c.5\_2009-08-26.pdf, tID

### 78 Object NEW from rsm12beta:

Calendar, CalendarDay, Circulation, CompanyCode, DailyTrain, Date, ETCSoperationalTrainCategory, Elevation, ElevationAndInclination, Fleet, Formation, FormationType, FreightEntity, Halt, InfrastructureManagerActivity, "Issue: TAF XSD does not seem to follow TAF TSI definitions regarding responsible applicant", LateralDistance, LateralPosition, LateralSide, LinearTrainJourneyLocation, "List of Elements in Package Train", LocatedOperationsEntity, LocationCodes, LocationPoint, MarkerPoint, NamedLine, NamedTrack, NetworkAccessPoint, NetworkFrontierPoint, NonlinearTrainJourneyLocation, OfftrackEntity, OntrackEntity, OperationalPoint, OperationsEntity, OrganizationCode, OrientedRollingStock, PassengerEntity, Path, PathRequest, PlannedCalendar, PlannedJourneyLocation, PlannedTrain, Point, ProjectedLength, RailwayActivity, RailwayStakeholder, ReferenceCalendar, RequestedCalendar, Requirement, RollingStock, RollingStockEntity, RollingStockModel, RollingStockType, RoutePoint, RouteSection, RunningTrain, ShuntingMovement, StateBorder, Station, StoppingPattern, SubCalendar, ThreeDLength, Timetable, TimingAtLocation, TownOffice, Train, TrainActivity, TrainCategory, TrainComposition, TrainLine, TrainRoute, TrainRouteElement, TrainSchedule, Trip, UnitIdentification, Vehicle, VehicleType, Warehouse

### 2 Object REMOVED from rsm12beta:

"List of Elements in Package ObservationAndMeasure", TransitionShape

### 4 Object with a changed IRI from rsm12beta:

Label:"Date" : IRI changed from rsm12beta:EAID\_F46B60E1\_60B5\_4e7d\_BEC0\_ABA810DC44A9 to rsm12e:EAID\_9F289EDE\_E096\_43f4\_B045\_02BA74467111, Label:"Infrastructure" : IRI changed from rsm12beta:EAID\_8B1A8F8B\_B0AF\_4bff\_968A\_C25F21A610CD to rsm12e:EAPK\_D8F1DD20\_EC06\_4e08\_888C\_0D8A471C8E4A, Label:"ObservationAndMeasure" : IRI changed from rsm12beta:EAID\_52896599\_2872\_4ba1\_B116\_EF543596D48E to rsm12e:EAPK\_B2A724A9\_ABD7\_42d7\_94E9\_AFB9BDC703D4, Label:"ObservationAndMeasure" : IRI changed from rsm12beta:EAID\_3895E270\_D044\_4e26\_A14B\_902015D05DEF to rsm12e:EAPK\_B2A724A9\_ABD7\_42d7\_94E9\_AFB9BDC703D4

### 22 Object MODIFIED from rsm12beta:

AnchorPoint, AssociatedNetElement, BaseLocation, Cant, Canvas, CartesianCoordinate, DateTimeDescription, DistributionFunctionalEntity, Gradient, HorizontalSegmentTransition, IntrinsicCoordinate, LineString, LinearCoordinate, LinearLocation, LinearPositioningSystem, NetProperty, Network, NumericQuantity, Polygon, SpotLocation, TimePosition, TimedLocation

## Property entities

### 303 Property in rsm12e:

Alpha2code, "Anonymous Aggreg.", "Anonymous Aggreg.", EVN, FixedFormation, activityTimeInterval, activityType, actualRoute, appliesInDirection, appliesTo, appliesTo, appliesTo, appliesTo, appliesTo, appliesTo, appliesTo, appliesTo, appliesTo, appliesTo, appliesTo, arrivalTrack, assignments, associatedNetElements, associatedNetElements, associatedNetElements, associatedPositioning, atTime, belongsToSector, bounds, calendarDay, calendarDay, calendarDays, carriesLiveStockOrPeople, code\_value, code\_value, companyCode, composition, connects, considers, containsTypes, controlCenter, controlsPosts, controlsSubstations, coordinates, coordinates, coordinates, coordinates, coordinates, coordinatingIM, country, crossingArea, crossingCentre, dailyTrain, dailyTrainId, datumSource, definition, definitionURI, definitionURI, departureTrack, description, description, designation, distance, dwellTime, elementA, elementB, elementCollections, elementLength, elementParts, elementParts, elevation, end, endAzimuth, endIncluded, endMeasure, epsgCode, etcsCategory, featureOfInterest, finalElevation, finalRadius, finalRadius, foreseenRoute, freightFunction, fromObservation, fulfillsRequirements, fullAssembledPath, handles, hasAddress, hasCircumstances, hasCoordinateReferenceSystem, hasCountry, hasDescriptionLevel, hasDuration, hasFinalCant, hasForecasts, hasHorizontalAlignment, hasInitialCant, hasLateralInclination, hasLateralPosition, hasLinearLocation, hasLinearLocation, hasLinearLocation, hasLinearLocation, hasOutputs, hasSections, hasSource, hasSources, hasSpotLocation, hasTRS, hasTimedLocations, hasTransitionCurve, hasValues, hasVerticalAlignment, has\_name, height, id, id, inclination, inclination, includesTurnouts, includesTurnouts, initialAzimuth, initialElevation, initialRadius, initialRadius, intermediatePoints, intervalComponents, intrinsicCoordinates, isCurved, isDeadRun, isDescribedWithPoints, isEntry, isExit, isHandlingPoint, isLocatedAt, isLocatedAt, isLocatedAt, isLocatedAt, isLocatedAt, isPartOf, isReportingPoint, isSmoothed, isStoppingPoint, isStructuredIn, isStructuredIn, isStructuredIn, isSubsetOf, isTimingPoint, journeyLocationType, journeyLocations, lateralOffset, latitude, leadRU, leadsTowards, length, length, length, levels, linearReferencingMethodType, linestrings, locatedAt, location, locationCodes, locations, locations, longitude, madeBySensor, mainCategory, manages, managesNetworks, manufacturedBy, measure, measureFromPrevious, name, navigability, netElement, networkResources, networkResources, observedProperty, ofModel, ofTypes, offsetToReference, operatedBy, operationalTrainNumber, organizationCode, orientation, orientation, orients, origin, overInterval, ownedBy, partOfFleet, partitionsCalendar, path, permittedSpeed, plannedCalendar, plannedRoute, plannedTrain, plannedTrainId, points, points, pointsAt, polygons, positionOnA, positionOnB, positioningSystem, positioningSystem, primaryLocationCode, primaryLocationName, quantifies, quantity, quantity, quantity, quantity, quantity, quantity, quantity, quantityKind, radius, radius, radius, railwayActivity, reference, referenceCalendar, referenceDatabase, referenceTrainId, refersToPrevious, requestedCalendar, requiresConsist, responsibleApplicant, responsibleIM, responsibleRU, responsibleRU, restartValue, routeSection, routeSectionDestination, routeSectionOrigin, routeSections, satisfiesRequirements, scale, secantAngle, sequence, serviceTrack, setsQuantity, side, simpleResult, start, startIncluded, startMeasure, stoppingPattern, stops, subCategory, subModelOf, subsidiaryLocationCode, superelevation, symbol, symbol, temporalPosition, time, timingAtLocation, timingQualifier, train, trainActivities, trainActivityType, trainCategory, trainDestination, trainOrigin, trainRoute, trainStatus, transitionType, transitionType, transitionType, turningAngle, turnoutArea, type, type, type, typeDesignations, typeDesignations, unit, unit, unitIdentification, units, usesAnchorPoint, validIn, validityPeriod, validityPeriod, validityPeriod, validityPeriod, validityPeriod, value, value, value, value, value, value, value, valueDefinition, verticalOffset, width, x, y, z

### 138 Property NEW from rsm12beta:

"Anonymous Aggreg.", "Anonymous Aggreg.", EVN, FixedFormation, activityTimeInterval, activityType, actualRoute, appliesTo, arrivalTrack, bounds, calendarDay, calendarDay, calendarDays, carriesLiveStockOrPeople, code\_value, code\_value, companyCode, composition, containsTypes, coordinates, coordinates, coordinatingIM, country, dailyTrain, dailyTrainId, datumSource, departureTrack, designation, distance, dwellTime, etcsCategory, finalElevation, foreseenRoute, freightFunction, fulfillsRequirements, fullAssembledPath, hasTimedLocations, hasValues, inclination, initialElevation, intermediatePoints, intrinsicCoordinates, isDeadRun, isEntry, isExit, isHandlingPoint, isLocatedAt, isLocatedAt, isLocatedAt, isLocatedAt, isPartOf, isReportingPoint, isStoppingPoint, isTimingPoint, journeyLocationType, journeyLocations, leadRU, leadsTowards, length, linestrings, locatedAt, location, locationCodes, mainCategory, managesNetworks, manufacturedBy, measure, measureFromPrevious, name, ofModel, ofTypes, offsetToReference, operatedBy, operationalTrainNumber, organizationCode, orientation, orients, ownedBy, partOfFleet, partitionsCalendar, path, plannedCalendar, plannedRoute, plannedTrain, plannedTrainId, points, points, polygons, primaryLocationCode, primaryLocationName, quantity, railwayActivity, referenceCalendar, referenceDatabase, referenceTrainId, refersToPrevious, requestedCalendar, requiresConsist, responsibleApplicant, responsibleIM, responsibleRU, responsibleRU, restartValue, routeSection, routeSectionDestination, routeSectionOrigin, routeSections, satisfiesRequirements, serviceTrack, side, stoppingPattern, stops, subCategory, subModelOf, subsidiaryLocationCode, time, timingAtLocation, timingQualifier, train, trainActivities, trainActivityType, trainCategory, trainDestination, trainOrigin, trainRoute, trainStatus, transitionType, transitionType, type, type, type, typeDesignations, typeDesignations, unitIdentification, units, usesAnchorPoint, validityPeriod, value

### 11 Property REMOVED from rsm12beta:

anchors, endElevation, hasConstantCant, hasProperty, isOfTransitionType, longname, measureToNext, observes, perimeters, polyLines, relation

### 12 Property with a changed IRI from rsm12beta:

Label:"appliesTo" : IRI changed from rsm12beta:EAID\_A20EEA06\_D815\_4a60\_9F1D\_4846B3CB29EC to rsm12e:EAID\_AAA9EBA8\_366D\_48d1\_9519\_F8227113B761, Label:"bounds" : IRI changed from rsm12beta:EAID\_D651DCEB\_9EEC\_45b6\_B4B0\_530C0E5CCF6C to rsm12e:EAID\_31CCF7FE\_27EE\_49c5\_BBD7\_CECF7C43E03A, Label:"isPartOf" : IRI changed from rsm12beta:EAID\_0E63DE25\_ADA5\_4a66\_809F\_4CBE750AB8BB to rsm12e:EAID\_DFF0B1C9\_6412\_400e\_8AD1\_6E4D22123C4B, Label:"hasValues" : IRI changed from rsm12beta:EAID\_71066653\_115B\_4b01\_9550\_7CD209901477 to rsm12e:EAID\_D7D22140\_3C10\_4df5\_9598\_334DFDA8336C, Label:"initialElevation" : IRI changed from rsm12beta:EAID\_F38BFC03\_1766\_4776\_A875\_A531AD3EB701 to rsm12e:EAID\_891B991C\_268F\_4612\_94B9\_E4293BBDC094, Label:"intrinsicCoordinates" : IRI changed from rsm12beta:EAID\_6F099F3F\_5949\_4d00\_8CA6\_E3A8879D437B to rsm12e:EAID\_4BDCEEBD\_87FB\_4e01\_A42B\_4F6E4CF83259, Label:"measure" : IRI changed from rsm12beta:EAID\_35BCF85D\_32B4\_48d0\_AE55\_3237FF53B161 to rsm12e:EAID\_9006CC92\_63FA\_4e72\_B27D\_82B7C4F1E8DD, Label:"measure" : IRI changed from rsm12beta:EAID\_67B3BA39\_4C78\_465f\_A7D1\_2DE0AEF068FD to rsm12e:EAID\_9006CC92\_63FA\_4e72\_B27D\_82B7C4F1E8DD, Label:"name" : IRI changed from rsm12beta:EAID\_F0228825\_C595\_4cd2\_8CFC\_85687EBC01F4 to rsm12e:EAID\_EE1E40BA\_91F2\_49a5\_83DC\_603CB6D62B8D, Label:"quantity" : IRI changed from rsm12beta:EAID\_EAA61E83\_8F00\_4aa1\_B914\_109439C21346 to rsm12e:EAID\_4D4F7EBB\_7B34\_422b\_8C69\_E54BDF1ABEA0, Label:"type" : IRI changed from rsm12beta:EAID\_1BA7CCE7\_A6A6\_42f9\_9ACD\_1222442810C9 to rsm12e:EAID\_0A8B2785\_CBB6\_4f45\_A13B\_DDB6773D56EC, Label:"type" : IRI changed from rsm12beta:EAID\_A66530DB\_CE98\_41b7\_B273\_C4B5B114CAB5 to rsm12e:EAID\_0A8B2785\_CBB6\_4f45\_A13B\_DDB6773D56EC

### 57 Property MODIFIED from rsm12beta:

Alpha2code, appliesTo, associatedNetElements, coordinates, definition, definitionURI, definitionURI, description, description, elevation, endIncluded, endMeasure, epsgCode, handles, hasFinalCant, hasForecasts, hasHorizontalAlignment, hasInitialCant, hasLateralPosition, hasLinearLocation, hasLinearLocation, hasTransitionCurve, has\_name, intervalComponents, isCurved, isDescribedWithPoints, isLocatedAt, isStructuredIn, isStructuredIn, isStructuredIn, latitude, linearReferencingMethodType, longitude, positioningSystem, quantity, quantity, quantity, quantity, quantity, quantity, reference, sequence, setsQuantity, simpleResult, startIncluded, startMeasure, superelevation, symbol, symbol, transitionType, value, value, value, value, x, y, z

## Enumeration entities

### 20 Enumeration in rsm12e:

ApplicationDirection, DescriptionLevel, FormationTypeDesignation, FreightFunction, HorizontalTransitionType, JourneyLocationTypeCode, LRMType, LeftRight, Navigability, RailwayActivityType, ReferenceDatabase, RollingStockOrientation, Side, TimingQualifierCode, TrainStatus, TransitionTypes, TurnoutOrientation, Usage, VehicleTypeDesignation, VerticalTransitionType

### 12 Enumeration NEW from rsm12beta:

FormationTypeDesignation, FreightFunction, HorizontalTransitionType, JourneyLocationTypeCode, LeftRight, RailwayActivityType, ReferenceDatabase, RollingStockOrientation, TimingQualifierCode, TrainStatus, VehicleTypeDesignation, VerticalTransitionType

### 1 Enumeration REMOVED from rsm12beta:

Orientation

### 5 Enumeration MODIFIED from rsm12beta:

ApplicationDirection, DescriptionLevel, LRMType, Side, TransitionTypes

# Modified Entities

## Package entities

### ontorail:Package rsm12e:Base modifications from rsm12beta:

 == ontorail:hasAssociation => ++ :"datumSource", ++ :"distance", ++ :"dwellTime", :"elementLength", :"endAzimuth", :"endMeasure", :"featureOfInterest", :"finalRadius", ++ :"fromObservation", :"hasDuration", :"hasForecasts", :"hasValues", :"height", :"id", :"inclination", :"initialAzimuth", :"initialRadius", :"isPartOf", :"lateralOffset", :"length", :"measure", ++ :"measureFromPrevious", :"observedProperty", :"permittedSpeed", :"quantifies", :"quantity", :"quantityKind", :"radius", ++ :"restartValue", :"scale", :"secantAngle", :"setsQuantity", :"startMeasure", :"superelevation", :"turningAngle", :"unit", ++ :"units", :"valueDefinition", :"verticalOffset", :"width", -- :"Anonymous Aggreg.", -- :"Anonymous Asso.", -- :"endElevation", -- :"hasProperty", -- :"hasResults", -- :"initialElevation", -- :"measureToNext", -- :"observes"

### ontorail:Package rsm12e:Common modifications from rsm12beta:

 == ontorail:subPackageOf => ++ :"RSM", -- :"RSM\_1.2\_beta"

 ++ xmi:tag\_\_namespacePrefix => "rsmCommon"

 == xmi:tag\_\_targetnamespaceURL => ++ "http://www.railsystemmodel.org/schemas/Common", -- "http://www.railsystemmodel.org/schemas/RSM1.2beta/Common"

 ++ xmi:tag\_\_xsdFileName => "RsmCommon"

 -- xmi:tag\_\_targetnamespace => "rsmCommon"

### ontorail:Package rsm12e:Energy modifications from rsm12beta:

 ++ rdfs:comment => "Packages for HV energy distribution and SCADA"

### ontorail:Package rsm12e:Energy\_distribution modifications from rsm12beta:

 == ontorail:hasAssociation => :"belongsToSector", ++ :"connects", :"controlsPosts", :"controlsSubstations", :"hasOutputs", :"hasSections", :"manages", -- :"ends"

### ontorail:Package rsm12e:Environment modifications from rsm12beta:

 == ontorail:subPackageOf => ++ :"RSM", -- :"RSM\_1.2\_beta"

 ++ rdfs:comment => "Non-railway specific domains"

 == xmi:tpos => ++ "3", -- "4"

### ontorail:Package rsm12e:"General documentation" modifications from rsm12beta:

 == ontorail:subPackageOf => ++ :"RSM", -- :"RSM\_1.2\_beta"

### ontorail:Package rsm12e:Geometry modifications from rsm12beta:

 == ontorail:hasAssociation => ++ :"finalElevation", :"hasFinalCant", :"hasHorizontalAlignment", :"hasInitialCant", :"hasLateralInclination", :"hasVerticalAlignment", ++ :"initialElevation", :"isDescribedWithPoints", :"isSmoothed", :"isStructuredIn", :"isSubsetOf", ++ :"transitionType", -- :"hasConstantCant", -- :"isOfTransitionType", -- :"transitionShape"

 == ontorail:hasEnumeration => ++ :"HorizontalTransitionType", :"TransitionTypes", ++ :"VerticalTransitionType"

### ontorail:Package rsm12e:Infrastructure modifications from rsm12beta:

 == ontorail:subPackageOf => ++ :"RSM", -- :"RSM\_1.2\_beta"

 == xmi:tpos => ++ "4", -- "3"

### ontorail:Package rsm12e:LegalEntities modifications from rsm12beta:

 == ontorail:hasAssociation => ++ :"country", :"hasAddress", :"hasCountry"

### ontorail:Package rsm12e:Location modifications from rsm12beta:

 == ontorail:hasAssociation => :"appliesInDirection", :"associatedNetElements", :"atTime", :"crossingArea", :"crossingCentre", ++ :"hasLateralPosition", :"hasLinearLocation", :"hasSpotLocation", ++ :"hasTimedLocations", :"isLocatedAt", ++ :"locatedAt", :"locations", :"origin", :"pointsAt", ++ :"side", :"turnoutArea", -- :"Anonymous Aggreg.", -- :"appliesTo", -- :"isLocatedToSide"

 == ontorail:hasEnumeration => :"ApplicationDirection", ++ :"Side", -- :"LateralSide"

### ontorail:Package rsm12e:NetEntity modifications from rsm12beta:

 ++ xmi:tag\_\_namespacePrefix => "rsmNE"

 == xmi:tag\_\_targetnamespaceURL => ++ "http://www.railsystemmodel.org/schemas/NetEntity", -- "http://www.railsystemmodel.org/schemas/RSM1.2beta/NetEntity"

 ++ xmi:tag\_\_xsdFileName => "RsmNetEntity"

 -- ontorail:hasAssociation => :"Anonymous Asso."

 -- xmi:tag\_\_targetnamespace => "rsmNE"

### ontorail:Package rsm12e:Network modifications from rsm12beta:

 == ontorail:hasAssociation => :"considers", :"hasDescriptionLevel", :"levels", ++ :"managesNetworks", :"networkResources", :"validityPeriod", -- :"Anonymous Asso."

### ontorail:Package rsm12e:ObservationAndMeasure modifications from rsm12beta:

 == ontorail:hasAssociation => :"Anonymous Asso.", :"featureOfInterest", ++ :"fulfillsRequirements", :"hasCircumstances", :"hasRequirements", :"hasSource", :"hasSources", :"madeBySensor", :"observableProperty", ++ :"satisfiesRequirements", :"validIn"

### ontorail:Package rsm12e:Positioning modifications from rsm12beta:

 == ontorail:hasAssociation => ++ :"appliesTo", :"bounds", :"coordinates", :"hasCoordinateReferenceSystem", :"intrinsicCoordinates", ++ :"isLocatedAt", ++ :"linearReferencingMethodType", ++ :"linestrings", ++ :"points", ++ :"polygons", :"positioningSystem", ++ :"refersToPrevious", ++ :"usesAnchorPoint", :"validityPeriod", -- :"anchors", -- :"hasLinearReferencingMethod", -- :"perimeters", -- :"polyLines"

 == ontorail:hasEnumeration => ++ :"LRMType", -- :"LrMethod"

### ontorail:Package rsm12e:RSM modifications from rsm12beta:

 ++ rdfs:comment => "RSM 2022-06, continuation of RSM 1.2.\n\nThis is a beta version."

 == rdfs:label => ++ "RSM", -- "RSM\_1.2\_beta"

 == xmi:tpos => ++ "3", -- "1"

### ontorail:Package rsm12e:Signalling modifications from rsm12beta:

 ++ xmi:tag\_\_namespacePrefix => "rsmSig"

 == xmi:tag\_\_targetnamespaceURL => ++ "http://www.railsystemmodel.org/schemas/Signalling", -- "http://www.railsystemmodel.org/schemas/RSM1.2beta/Signalling"

 ++ xmi:tag\_\_xsdFileName => "RsmSignalling"

 -- xmi:tag\_\_targetnamespace => "rsmSig"

### ontorail:Package rsm12e:TimeAxis modifications from rsm12beta:

 == ontorail:hasAssociation => ++ :"activityTimeInterval", :"end", :"hasTRS", :"intervalComponents", :"overInterval", :"start", :"temporalPosition", ++ :"time", :"validityPeriod", -- :"Anonymous Asso."

### ontorail:Package rsm12e:Topology modifications from rsm12beta:

 == ontorail:hasAssociation => :"associatedPositioning", :"elementA", :"elementB", :"elementCollections", :"elementParts", :"handles", ++ :"leadsTowards", :"navigability", :"netElement", :"positionOnA", :"positionOnB", -- :"Anonymous Asso.", -- :"relation"

 == ontorail:hasEnumeration => ++ :"LeftRight", :"Navigability", :"Usage", -- :"Orientation"

### ontorail:Package rsm12e:Track modifications from rsm12beta:

 ++ xmi:tag\_\_namespacePrefix => "rsmTrack"

 == xmi:tag\_\_targetnamespaceURL => ++ "http://www.railsystemmodel.org/schemas/Track", -- "http://www.railsystemmodel.org/schemas/RSM1.2beta/Track"

 ++ xmi:tag\_\_xsdFileName => "RsmTrack"

 -- xmi:tag\_\_targetnamespace => "rsmTrack"

### ontorail:Package rsm12e:Weather modifications from rsm12beta:

 == ontorail:hasAssociation => :"appliesTo", -- :"plliesTo"

## Object entities

### ontorail:Object rsm12e:AnchorPoint modifications from rsm12beta:

 == rdfs:comment => ++ """ ISO19148:2012 : LR\_AlongReferent ; ISO19148:2021: Referent, of type "referenceMarker" that is implicit in RSM. """, -- "Reference point for linear referencing, corresponding to a kilometric post or milepost. Typically associated with a chainage discontinuity."

### ontorail:Object rsm12e:AssociatedNetElement modifications from rsm12beta:

 == rdfs:comment => ++ "Associates a location to an element of the topology, via (at most) two extremities located on this element. ", ++ "Associates a location to an element of the topology, via (at most) two extremities located on this element.", -- "Associates a location to an element of the topology. ", -- "Associates a location to an element of the topology."

### ontorail:Object rsm12e:BaseLocation modifications from rsm12beta:

 == xmi:tpos => ++ "3", -- "5"

### ontorail:Object rsm12e:Cant modifications from rsm12beta:

 ++ xmi:tag\_\_Source => "RSM"

### ontorail:Object rsm12e:Canvas modifications from rsm12beta:

 == rdfs:comment => ++ "A 2-D or 3-D physical or virtual bounded space, such as a screen or a sheet of paper on which the positioning takes place.\nThe name can imply size and unit information, e.g. A3 landscape for 420 mm wide x 297 mm high.", "description\nInformation about the canvas that is not implied by the name. Typically describing the place of the origin and orientation of the axes.", -- "A 2-D or 3-D physical or virtual bounded space, such as a screen or a sheet of paper on which the positioning takes place.\nThe name can imply size and unit information, e.g. A3 landscape for 420 mm wide x 297 mm heigh."

### ontorail:Object rsm12e:CartesianCoordinate modifications from rsm12beta:

 == rdfs:comment => ++ "Cartesian coordinates. The x,y, z units are defined by the associated positioning system. The user may retain only elevation (z) if needed, e.g. in conjunction with linear coordinates (distance along).", -- "Cartesian coordinates. The x,y, z units are defined by the associated positioning system. ", -- "Cartesian coordinates. The x,y, z units are defined by the associated positioning system."

### ontorail:Object rsm12e:DateTimeDescription modifications from rsm12beta:

 == rdfs:comment => ++ "From W3C: Description of date and time structured with separate values for the various elements of a calendar-clock system. The temporal reference system is fixed to Gregorian Calendar.\nThe reference to TRS may be left out if obvious from the context.", -- """ From W3C: Description of date and time structured with separate values for the various elements of a calendar-clock system. The temporal reference system is fixed to Gregorian Calendar.\nThe reference to TRS may be left out if obvious from the context. E.g. "Document released 2021-06-28". """

### ontorail:Object rsm12e:DistributionFunctionalEntity modifications from rsm12beta:

 == rdfs:comment => ++ """ A superclass for all electrically (conductively) continuous parts of the railway traction energy network. We do not consider here:\n<ul>\n <li>the input (HV) side of substations</li>\n <li>all parts "downstream" of the overhead contact line, e.g. traction current return circuits.</li>\n</ul> """, """ New classes, providing an "electrical topology" for the traction power distribution """, -- """ A superclass for all electrically (conductively) continuous parts of the railway traction energy network. We do not consider here:\n<ul>\n <li>the input (HV) side of substations</li>\n <li>all parts "downstream" of the overhead contact line, e.g. traction current return circuits.</li>\n</ul> """

### ontorail:Object rsm12e:Gradient modifications from rsm12beta:

 == rdfs:comment => ++ "Quantity of type gradient, slope, ramp, inclination expressed as the tangent of rise/fall over distance. \nUphill is positive, downhill is negative.\nValue in decimal form, not % or &#176;/&#176;&#176;", -- "Quantity of type gradient, slope, ramp, etc. \nUphill is positive, downhill is negative."

### ontorail:Object rsm12e:HorizontalSegmentTransition modifications from rsm12beta:

 == rdfs:comment => ++ "Geometric primitive for a horizontal transition curve. May be specialised to represent various types of transition curves and their associated parameters. ", ++ "Geometric primitive for a horizontal transition curve. May be specialised to represent various types of transition curves and their associated parameters.", -- "Geometric primitive for a transition curves. May be specialised to represent various types of transition curves and their associated parameters. ", -- "Geometric primitive for a transition curves. May be specialised to represent various types of transition curves and their associated parameters."

### ontorail:Object rsm12e:IntrinsicCoordinate modifications from rsm12beta:

 ++ rdfs:subClassOf => :"BaseObject"

### ontorail:Object rsm12e:LineString modifications from rsm12beta:

 == rdfs:comment => ++ """ Set of consecutive straight segments (no branches) defined by successive vertices. Can be specialized to e.g. prisms, for instance to define 3D "areas". """, -- """ Set of consecutive straight segments (no branches) defined by successive coordinates. Can be specialized to e.g. prisms, for instance to define 3D "areas". """

 == rdfs:label => ++ "LineString", -- "PolyLine"

 ++ rdfs:subClassOf => :"NamedResource"

 ++ xmi:tag\_\_hasPublicDefinition => "http://data.ign.fr/def/geometrie/20190212.htm#LineString"

### ontorail:Object rsm12e:LinearCoordinate modifications from rsm12beta:

 == rdfs:comment => ++ """ A curvilinear abscissa ("distance along"), optionally with vertical and lateral offset. The units are defined by the associated positioning system.\nSee also ISO19148:2012: LR\_PositionExpression.\nPlease note that the concepts match: in ISO19148, LR\_PositionExpression refers to exactly 1 distance expression (here: instance of Length), one linear element (here: one reference line, via the reference to positioning system), and one linear referencing method (here: referred to, via the linear positioning system). """, -- """ A curvilinear abscissa ("distance along"), optionally with vertical and lateral offset.\nThe units are defined by the associated positioning system. """

### ontorail:Object rsm12e:LinearLocation modifications from rsm12beta:

 == xmi:tpos => ++ "5", -- "6"

### ontorail:Object rsm12e:LinearPositioningSystem modifications from rsm12beta:

 == rdfs:comment => ++ """ A referencing system for locations relative to a one-dimensional object (reference line) as measurement along (and optionally offset from) that object.\nA linear positioning system combines a line of reference (here: a collection of PositioningNetElements) with a single number (linear abscissa, i.e. an instance of class LinearCoordinate) allowing positioning within a railway network, at the chosen level (MACRO, MICRO...).\nOften called chainage (when yielding the actual "distance along"), or mileage system (when reflecting a conventional kilometric post or mile post system).\nThe start- and end-measures (optional) provide the valid range of linear coordinates within the chosen linear positioning system. The difference between two coordinates is not necessarily the "true distance along" because of possible deviations (jumps or systematic errors), that are taken care of by anchor points and linear referencing methods. \nThe units of linear abscissa are the same as the start and end-measure. \nFor reference, see EN 19148:2021. ISO parameter DistanceAlongDirection is "same", implicitly. """, -- "A line of reference combined with a single number (linear abscissa) allows positioning within a railway network.\nOften called chainage.\nThe start- and end-measures represent the length of this line. The units of linear abscissa are the same as the start and end-measure. ", -- "A line of reference combined with a single number (linear abscissa) allows positioning within a railway network.\nOften called chainage.\nThe start- and end-measures represent the length of this line. The units of linear abscissa are the same as the start and end-measure."

### ontorail:Object rsm12e:NetProperty modifications from rsm12beta:

 == rdfs:subClassOf => ++ :"BaseProperty", -- :"BaseObject"

### ontorail:Object rsm12e:Network modifications from rsm12beta:

 == rdfs:subClassOf => :"NamedResource", -- :EAID\_DD3BCA2D\_477D\_4994\_9DFF\_A2933267AF1F

### ontorail:Object rsm12e:NumericQuantity modifications from rsm12beta:

 == rdfs:comment => ++ """ Any quantity that can be expressed with a number (cardinal or ordinal). For a more exhaustive list of subclasses, see "Common quantities" diagram. """, -- "Any quantity that can be expressed with a number (cardinal or ordinal)"

### ontorail:Object rsm12e:Polygon modifications from rsm12beta:

 == rdfs:comment => ++ """ A closed polyline without any intersections. The first and last vertex define the "closing" segment. """, -- """ A closed polyline without any intersections. The first and last coordinate define the "closing" segment. """

 == rdfs:subClassOf => ++ :"NamedResource", -- :"PolyLine"

### ontorail:Object rsm12e:SpotLocation modifications from rsm12beta:

 == xmi:tpos => ++ "6", -- "8"

### ontorail:Object rsm12e:TimePosition modifications from rsm12beta:

 == ontorail:ofPackage => ++ :"TimeAxis", -- :"EmptyPeriod"

 -- xmi:owner => :"EmptyPeriod"

### ontorail:Object rsm12e:TimedLocation modifications from rsm12beta:

 == xmi:tpos => ++ "7", -- "11"

## Property entities

### ontorail:Property rsm12e:Alpha2code modifications from rsm12beta:

 ++ xmi:tag\_\_attribute => "false"

### ontorail:Property rsm12e:appliesTo modifications from rsm12beta:

 == rdfs:label => ++ "appliesTo", -- "plliesTo"

 == xmi:labels\_\_rt => ++ "+appliesTo", -- "+plliesTo"

### ontorail:Property rsm12e:associatedNetElements modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:coordinates modifications from rsm12beta:

 == owl:minCardinality => ++ "0", -- "2"

 == rdfs:domain => ++ :"LineString", -- :"PolyLine"

 == xmi:lowerValue\_\_value => ++ "0", -- "2"

 == xmi:target\_\_type\_\_multiplicity => ++ "0..\*", -- "2..\*"

### ontorail:Property rsm12e:definition modifications from rsm12beta:

 ++ xmi:tag\_\_attribute => "false"

### ontorail:Property rsm12e:definitionURI modifications from rsm12beta:

 == rdfs:range => ++ :"string", -- :"String"

### ontorail:Property rsm12e:definitionURI modifications from rsm12beta:

 == rdfs:range => ++ :"string", -- :"String"

### ontorail:Property rsm12e:description modifications from rsm12beta:

 == rdfs:range => ++ :"string", -- :"String"

### ontorail:Property rsm12e:description modifications from rsm12beta:

 ++ xmi:tag\_\_attribute => "false"

### ontorail:Property rsm12e:elevation modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:endIncluded modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:endMeasure modifications from rsm12beta:

 == owl:minCardinality => ++ "0", -- "1"

 == xmi:labels\_\_lb => ++ "0..1", -- "1"

 == xmi:lowerValue\_\_value => ++ "0", -- "1"

 == xmi:source\_\_type\_\_multiplicity => ++ "0..1", -- "1"

### ontorail:Property rsm12e:epsgCode modifications from rsm12beta:

 ++ xmi:tag\_\_attribute => "false"

### ontorail:Property rsm12e:handles modifications from rsm12beta:

 == owl:minCardinality => ++ "0", -- "1"

 == xmi:lowerValue\_\_value => ++ "0", -- "1"

 == xmi:target\_\_type\_\_multiplicity => ++ "0..\*", -- "1..\*"

### ontorail:Property rsm12e:hasFinalCant modifications from rsm12beta:

 == rdf:type => :Association, :Property, ++ uml:EA\_Association, xmi:OwnedAttribute, -- uml:EA\_Aggregation

 == xmi:direction => ++ "Source -> Destination", -- "Destination -> Source"

 == xmi:id => ++ "EAID\_dstE3D36A\_3525\_4dca\_87E2\_94F9418D0A62", -- "EAID\_srcE3D36A\_3525\_4dca\_87E2\_94F9418D0A62"

 ++ xmi:labels\_\_rt => "+hasFinalCant"

 == xmi:ownedEnd\_\_id => ++ :EAID\_srcE3D36A\_3525\_4dca\_87E2\_94F9418D0A62, -- :EAID\_dstE3D36A\_3525\_4dca\_87E2\_94F9418D0A62

 == xmi:source\_\_style\_\_value => ++ "Union=0;Derived=0;AllowDuplicates=0;Owned=0;Navigable=Non-Navigable;", -- "Union=0;Derived=0;AllowDuplicates=0;Owned=0;Navigable=Navigable;"

 == xmi:target\_\_style\_\_value => ++ "Union=0;Derived=0;AllowDuplicates=0;Owned=0;Navigable=Navigable;", -- "Union=0;Derived=0;AllowDuplicates=0;Owned=0;Navigable=Unspecified;"

 == xmi:target\_\_type\_\_aggregation => ++ "none", -- "composite"

 ++ xmi:target\_\_type\_\_multiplicity => "0..1"

 -- xmi:aggregation => "composite"

 -- xmi:labels\_\_lb => "0..1"

 -- xmi:labels\_\_lt => "+hasFinalCant"

 -- xmi:source\_\_type\_\_multiplicity => "0..1"

 -- xmi:subtype => "Strong"

### ontorail:Property rsm12e:hasForecasts modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:hasHorizontalAlignment modifications from rsm12beta:

 == owl:minCardinality => ++ "0", -- "1"

 == xmi:labels\_\_lb => ++ "0..1", -- "1"

 == xmi:lowerValue\_\_value => ++ "0", -- "1"

 == xmi:source\_\_type\_\_multiplicity => ++ "0..1", -- "1"

### ontorail:Property rsm12e:hasInitialCant modifications from rsm12beta:

 == rdf:type => :Association, :Property, ++ uml:EA\_Association, xmi:OwnedAttribute, -- uml:EA\_Aggregation

 == xmi:direction => ++ "Source -> Destination", -- "Destination -> Source"

 == xmi:id => ++ "EAID\_dstC8374C\_1557\_4b2f\_AA39\_08C66472FFE3", -- "EAID\_srcC8374C\_1557\_4b2f\_AA39\_08C66472FFE3"

 ++ xmi:labels\_\_rt => "+hasInitialCant"

 == xmi:ownedEnd\_\_id => ++ :EAID\_srcC8374C\_1557\_4b2f\_AA39\_08C66472FFE3, -- :EAID\_dstC8374C\_1557\_4b2f\_AA39\_08C66472FFE3

 == xmi:source\_\_style\_\_value => ++ "Union=0;Derived=0;AllowDuplicates=0;Owned=0;Navigable=Non-Navigable;", -- "Union=0;Derived=0;AllowDuplicates=0;Owned=0;Navigable=Navigable;"

 == xmi:subtype => ++ "Weak", -- "Strong"

 == xmi:target\_\_style\_\_value => ++ "Union=0;Derived=0;AllowDuplicates=0;Owned=0;Navigable=Navigable;", -- "Union=0;Derived=0;AllowDuplicates=0;Owned=0;Navigable=Unspecified;"

 == xmi:target\_\_type\_\_aggregation => ++ "none", -- "composite"

 ++ xmi:target\_\_type\_\_multiplicity => "0..1"

 -- xmi:aggregation => "composite"

 -- xmi:labels\_\_lb => "0..1"

 -- xmi:labels\_\_lt => "+hasInitialCant"

 -- xmi:source\_\_type\_\_multiplicity => "0..1"

### ontorail:Property rsm12e:hasLateralPosition modifications from rsm12beta:

 == owl:minCardinality => ++ "0", -- "1"

 == rdfs:label => ++ "hasLateralPosition", -- "isLocatedToSide"

 == rdfs:range => ++ :"LateralPosition", -- :"LateralSide"

 == xmi:labels\_\_lb => ++ "0..1", -- "1"

 == xmi:labels\_\_lt => ++ "+hasLateralPosition", -- "+isLocatedToSide"

 == xmi:lowerValue\_\_value => ++ "0", -- "1"

 == xmi:source\_\_type\_\_multiplicity => ++ "0..1", -- "1"

### ontorail:Property rsm12e:hasLinearLocation modifications from rsm12beta:

 == rdfs:comment => ++ "Mapping to a linear location on the topology. The linear location can be associated with position in one or more coordinate systems.", -- "Mapping to a linear location on the topology. the linear location can be associated with position in one or more coordinate systems."

### ontorail:Property rsm12e:hasLinearLocation modifications from rsm12beta:

 == owl:minCardinality => ++ "0", -- "1"

 == rdfs:comment => ++ "Mapping to a linear location on the topology. The linear location can be associated with position in one or more coordinate systems, including elevation.", -- "Mapping to a linear location on the topology. the linear location can be associated with position in one or more coordinate systems."

 == xmi:labels\_\_lb => ++ "0..1", -- "1"

 == xmi:lowerValue\_\_value => ++ "0", -- "1"

 == xmi:source\_\_type\_\_multiplicity => ++ "0..1", -- "1"

### ontorail:Property rsm12e:hasTransitionCurve modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:has\_name modifications from rsm12beta:

 ++ xmi:tag\_\_attribute => "false"

### ontorail:Property rsm12e:intervalComponents modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "1..\*\n{ordered}", -- "1..\* {ordered}"

### ontorail:Property rsm12e:isCurved modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:isDescribedWithPoints modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "1..\*\n{ordered}", -- "1..\* {ordered}"

### ontorail:Property rsm12e:isLocatedAt modifications from rsm12beta:

 == rdfs:comment => ++ "A spot location where the cant applies.", -- "The spot location where the cant applies."

### ontorail:Property rsm12e:isStructuredIn modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "1..\*\n{ordered}", -- "1..\* {ordered}"

### ontorail:Property rsm12e:isStructuredIn modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "1..\*\n{ordered}", -- "1..\* {ordered}"

### ontorail:Property rsm12e:isStructuredIn modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "1..\*\n{ordered}", -- "1..\* {ordered}"

### ontorail:Property rsm12e:latitude modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:linearReferencingMethodType modifications from rsm12beta:

 == rdfs:label => ++ "linearReferencingMethodType", -- "hasLinearReferencingMethod"

 == rdfs:range => ++ :"LRMType", -- :"LrMethod"

 == xmi:labels\_\_lt => ++ "+linearReferencingMethodType", -- "+hasLinearReferencingMethod"

 ++ xmi:source\_\_documentation\_\_value => "see ISO 19148:2021"

### ontorail:Property rsm12e:longitude modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:positioningSystem modifications from rsm12beta:

 == rdfs:comment => ++ "Linestring coordinates are expressed in <u>one </u>Positioning System. Define more linestrings if more positioning systems become relevant. May be left empty if linestring coordinates convey sufficient information about the positioning system.", -- "Polyline coordinates are expressed in <u>one </u>Positioning System. Define more polylines if more positioning systems become relevant. May be left empty if polyline coordinates convey sufficient information about the positioning system."

 == rdfs:domain => ++ :"LineString", -- :"PolyLine"

### ontorail:Property rsm12e:quantity modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:quantity modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:quantity modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:quantity modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:quantity modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:quantity modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:reference modifications from rsm12beta:

 ++ xmi:tag\_\_attribute => "false"

### ontorail:Property rsm12e:sequence modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:setsQuantity modifications from rsm12beta:

 == xmi:labels\_\_lb => ++ "0..\*\n{ordered}", -- "0..\* {ordered}"

### ontorail:Property rsm12e:simpleResult modifications from rsm12beta:

 == rdfs:range => ++ :"string", -- :"String"

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:startIncluded modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:startMeasure modifications from rsm12beta:

 == owl:minCardinality => ++ "0", -- "1"

 == xmi:labels\_\_lb => ++ "0..1", -- "1"

 == xmi:lowerValue\_\_value => ++ "0", -- "1"

 == xmi:source\_\_type\_\_multiplicity => ++ "0..1", -- "1"

### ontorail:Property rsm12e:superelevation modifications from rsm12beta:

 == rdfs:comment => ++ "The height difference between the outer and inner rails in or in approach to a curve.\nThe value is normally positive. It is negative in the exceptional case when the inner rail is higher.\nCorresponds to IFC4.3 IfcAlignmentCant attribute RailHeadDistance.", -- "The height difference between the outer and inner rails in or in approach to a curve.\nPositive when the rotation is anti-clockwise (seen from above) with respect to the orientation of the linear element that carries the segment. "

 ++ xmi:tag\_\_seeAlso => """ http://ifc43-docs.standards.buildingsmart.org/IFC/RELEASE/IFC4x3/HTML/lexical/IfcAlignmentCant.htm, "RailHeadDistance" """

### ontorail:Property rsm12e:symbol modifications from rsm12beta:

 == rdfs:range => ++ :"string", -- :"String"

### ontorail:Property rsm12e:symbol modifications from rsm12beta:

 == rdfs:range => ++ :"string", -- :"String"

### ontorail:Property rsm12e:transitionType modifications from rsm12beta:

 == owl:minCardinality => ++ "0", -- "1"

 == rdfs:domain => ++ :"SegmentCantTransition", -- :"AlignmentCantSegment"

 == rdfs:label => ++ "transitionType", -- "transitionShape"

 == rdfs:range => ++ :"TransitionTypes", -- :"TransitionShape"

 == xmi:labels\_\_lb => ++ "0..1", -- "1"

 == xmi:labels\_\_lt => ++ "+transitionType", -- "+transitionShape"

 == xmi:lowerValue\_\_value => ++ "0", -- "1"

 == xmi:source\_\_type\_\_multiplicity => ++ "0..1", -- "1"

### ontorail:Property rsm12e:value modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:value modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:value modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:value modifications from rsm12beta:

 ++ rdfs:comment => "The user is highly recommended to use a standard notation such as XML Schema xs:date, xs:dateTime or xs:dateTimeStamp"

 == xmi:styleex\_\_value => ++ "volatile=0;union=0;", -- "volatile=0;"

 ++ xmi:tag\_\_attribute => "false"

### ontorail:Property rsm12e:x modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:y modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

### ontorail:Property rsm12e:z modifications from rsm12beta:

 == xmi:tag\_\_attribute => ++ "false", -- "true"

## Enumeration entities

### ontorail:Enumeration rsm12e:ApplicationDirection modifications from rsm12beta:

 == xmi:tpos => ++ "10", -- "15"

### ontorail:Enumeration rsm12e:DescriptionLevel modifications from rsm12beta:

 == rdfs:comment => "A closed set of description levels.", "Macro\nTo describe the network at regional, national or international level. The non-linear elements are boundaries and major operational points (OPs); the linear elements are sections of lines connecting those points.", "Meso\nTo describe the tracks between the operational points (OPs, e.g. stations, yards, junctions, boundaries) of the network.\nThe non-linear elements are the OPs, and the linear elements are the tracks connecting OPs.", "Micro\nMicro level (for railways) is associated with tracks. It is the level where vehicle paths are unambiguous.\nAt micro level, the smallest details aggregate into a single item. E.g. individual point components and point blades and tips coalesce into a single turnout.", ++ "Nano\nThe nano level (for railway) is the level where track geometry and, in particular, curvilinear abscissas would be in agreement with on-board odometry. It is used for detailing crossing geometry, for instance.\nThe nano level could be described as a properly attributed surveyor's map, including topological properties of the rail network in the finest possible granularity. \nUse cases for the Nano level would include interlocking and asset management.", -- "Nano\nThe nano level (for railway) is the level where track geometry and, in particular, curvilinear abscissas would be in agreement with on-board odometry. It is used for detailing crossing geometry, for instance.\nThe nano level could be described as a properly attributed surveyorXXXXXXXXs map, including topological properties of the rail network in the finest possible granularity. \nUse cases for the Nano level would include interlocking and asset management."

### ontorail:Enumeration rsm12e:LRMType modifications from rsm12beta:

 == rdfs:comment => ++ "Linear Referencing Method Type ; values according to ISO 19148:2021 definitions.", -- "Linear Referencing Method values refer to ISO 19148 definitions."

 == rdfs:label => ++ "LRMType", -- "LrMethod"

 == rdfs:member => :"absolute", ++ :"interpolative", :"relative", -- :"interpolation"

### ontorail:Enumeration rsm12e:Side modifications from rsm12beta:

 == rdfs:label => ++ "Side", -- "LateralSide"

 == xmi:tpos => ++ "11", -- "16"

### ontorail:Enumeration rsm12e:TransitionTypes modifications from rsm12beta:

 == rdfs:comment => ++ "Initial list of cant transition types. A union of the items proposed by IFC Rail and DB AG.", ++ "linearScissors\nDE: Schere (lineare-)", ++ "s\_slope\nFR : doucines; DE: S-Rampe", -- "Initial list of cant transition types."

 == rdfs:member => ++ :"blossScissors", ++ :"blossSlope", ++ :"cosineCurve", ++ :"helmertCurve", ++ :"linearScissors", ++ :"linearTransition", ++ :"s\_scissors", ++ :"s\_slope", ++ :"sineCurve", ++ :"vienneseBend", -- :"blossrampe", -- :"constant", -- :"doucine", -- :"linear", -- :"other", -- :"undefined", -- :"unknown"