OperationalEntity — exists — name — exists → string

OperationalProcess

hasSetting

hasSubProcess

exists

StaticSection

TrainRun

forall

TrainService

forall

hasServiceType

exists

ServiceType

Maintenance

customs

brakeCheck

Train ← exists □ ◇ — ◆ hasTrainState ◆ — ◇ ■ exists → TrainState

Wagon

Wagon

exists

uicWagonNumber

exists

string

Track —— exists ——hasDesignation—— exists —— string

```
                    ┌──────────────────────────┐
                    │   TractionProvisionRole  │
                    └──────────────────────────┘
                                 ▲
                                 │
                    ┌──────────────────────────┐
                    │      LocomotiveRole      │
                    └──────────────────────────┘
                      △          △          △
                     ╱           │           ╲
              ┌──────────┐ ┌──────────┐ ┌──────────┐
              │locomotiveRol│ │leadingLocom│ │controlledLoco│
              │     e      │ │ otiveRole │ │ motiveRole │
              └──────────┘ └──────────┘ └──────────┘
```

Entity

Description

generatedAtTime

createdAt

exists

exists

dateTimeStam
p

effectiveFrom

exists

exists

dateTimeStam
p

invalidatedAtTime

effectiveUntil

exists

exists

dateTimeStam
p

VersionedDescription

wasRevisionOf

exists

previousDescriptionVersion

nextDescriptionVersion

inv

exists

revisesDescriptionVersion

List

JourneySchedule

exists — hasOrigin — exists — OperationalLocation

exists — hasDepartureTime — exists — OperationalInstant

exists — startsAtOrigin — exists — boolean

exists — hasDestination — exists — OperationalLocation

exists — hasArrivalTime — exists — OperationalInstant

exists — stopsAtDestination — exists — boolean

exists — hasRU — exists — OperationsStakeholder

exists — hasIM — exists

hasItem

exists — hasSchedulePart — exists — SchedulePart

ListItem

StaticSection

JourneySection

exists — hasOperationalLocation — exists — OperationalLocation

forall — atTime — OperationalInterval

forall — hasIM — OperationsStakeholder

nextItem

inJourneySchedule

exists

nextSection

JourneySection

exists

JourneySection

inv

hasSchedulePart

previousItem

exists

previousSection

JourneySection

exists

JourneySection

OperationalState

hasParticipant

TrainRunState

exists

TrainRun

TrainJourneyState

exists

hasJourney

exists

Journey

TrainLocationState

exists

atOperationalLocation

exists

OperationalLocation

TrainCustomsState

exists

hasCustomsStatus

exists

CustomsStatus

Pending

Inspected

Cleared

PreCleared

hasParticipant

TrainState — exists — Train

TrainMotionState — exists — isStationary — exists — boolean

TrainSpeedState — exists — hasSpeed — exists — decimal

TrainMassState — exists — hasMassInTons — exists — decimal

TrainLengthState — exists — hasLengthInMeters — exists — decimal

TrainCompositionState — exists — hasComposition — exists — RollingStock

exists — compositionValidationPassed — exists — boolean

TrainGPSPositionState — exists — asWKT — exists — string

hasSetting

TrainServicingState — forall — StaticSection

exists — hasResult — exists — TrainServicingResult

Planned   Ongoing   Success   Failure   Interrupted

```
                                           isClassifiedBy
                                          ┌─────────────┐
                               forall     │   ◇         │
┌──────────┐              ┌──┐           └─────────────┘
│          │──────────────│  │◁
│          │              └──┘    ┌─────────────┐
│          │                      │ FreightRole │
│          │                      └─────────────┘
│          │
│          │                          isSettingFor
│          │                         ┌─────────────┐
│ LoadState│              forall     │   ◇         │         ┌─────────┐
│          │──────────────│  │◁      └─────────────┘         │   ITU   │
│          │              └──┘    ┌──────┐                   └─────────┘
│          │                      │  or  │◁
│          │                      └──────┘                   ┌─────────┐
│          │                                                 │  Wagon  │
│          │                                                 └─────────┘
│          │                          hasTimeInterval
│          │                         ┌─────────────┐
│          │              forall     │   ◇         │
│          │──────────────│  │◁      └─────────────┘
│          │              └──┘    ┌─────────────┐
│          │                      │  Interval   │
└──────────┘                      └─────────────┘
```

Image ← exists — hasImageContent — exists → ContentLocation ← exists — asPNG — exists → base64Binary

ITU

Wagon

exists

hasRID_UN_Number

exists

string

exists

hasRID_class

exists

string

exists

hasKemlerCode

exists

string

TimeInterval

atTime — exists — OperationalTime — exists — issuedAt — exists — dateTimeStamp

Interval

Instant — exists — inXSDDateTimeStamp — exists — dateTimeStamp

hasBeginning

hasBeginning

OperationalInterval — forall — OperationalInstant

hasEnd

hasEnd

forall

TemporalRole

Planned   Updated   Forecast   Actual   Recommended   Contractual

PREFIX	IRI
bag	http://www.ontologydesignpatterns.org/cp/owl/bag.owl#
dul	http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#
list	http://www.ontologydesignpatterns.org/cp/owl/list.owl#
org	http://www.w3.org/ns/org#
owl	http://www.w3.org/2002/07/owl#
prov	http://www.w3.org/ns/prov#
rdf	http://www.w3.org/1999/02/22-rdf-syntax-ns#
rdfs	http://www.w3.org/2000/01/rdf-schema#
regorg	http://www.w3.org/ns/regorg#
rst-cons	https://cdm.ovh/rst/cons/cons#
rst-typo	https://cdm.ovh/rst/typo/typo#
skos	http://www.w3.org/2004/02/skos/core#
taf	http://data.europa.eu/949/
time	http://www.w3.org/2006/time#
xml	http://www.w3.org/XML/1998/namespace
xsd	http://www.w3.org/2001/XMLSchema#

ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM
http://www.ontologydesignpatterns.org/cp/owl/bag.owl#hasItem							
http://www.ontologydesignpatterns.org/cp/owl/list.owl#nextItem							
http://www.ontologydesignpatterns.org/cp/owl/list.owl#previousItem							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#hasLocation							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#hasPart							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#hasParticipant							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#hasSetting							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#hasTimeInterval							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#isClassifiedBy							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#isLocationOf							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#isSettingFor							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#playsRole							
http://www.ontologydesignpatterns.org/ont/dul/DUL.owl#realizes							
http://www.w3.org/2004/02/skos/core#inScheme							
ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM

ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM
https://cdm.ovh/taf/tafp5#asWKT	✓						
https://cdm.ovh/taf/tafp5#atOperationalLocation							
https://cdm.ovh/taf/tafp5#atTime							
https://cdm.ovh/taf/tafp5#compositionValidationPassed	✓						
https://cdm.ovh/taf/tafp5#createdAt							
https://cdm.ovh/taf/tafp5#effectiveFrom							
https://cdm.ovh/taf/tafp5#effectiveUntil							
https://cdm.ovh/taf/tafp5#hasArrivalTime							
https://cdm.ovh/taf/tafp5#hasBICCcode	✓						
https://cdm.ovh/taf/tafp5#hasBeginning	✓						
https://cdm.ovh/taf/tafp5#hasComment							
https://cdm.ovh/taf/tafp5#hasComposition	✓						
https://cdm.ovh/taf/tafp5#hasCustomsStatus							
https://cdm.ovh/taf/tafp5#hasDepartureTime							
https://cdm.ovh/taf/tafp5#hasDesignation							
https://cdm.ovh/taf/tafp5#hasDestination	✓						
https://cdm.ovh/taf/tafp5#hasEnd	✓						
https://cdm.ovh/taf/tafp5#hasFacilityFunction							
https://cdm.ovh/taf/tafp5#hasFullText	✓						
https://cdm.ovh/taf/tafp5#hasILUcode	✓						
https://cdm.ovh/taf/tafp5#hasIM							
ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM

ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM
https://cdm.ovh/taf/tafp5#hasJourneySchedule							
https://cdm.ovh/taf/tafp5#hasKemlerCode							
https://cdm.ovh/taf/tafp5#hasLengthInMeters	✓						
https://cdm.ovh/taf/tafp5#hasMassInTons	✓						
https://cdm.ovh/taf/tafp5#hasOTN							
https://cdm.ovh/taf/tafp5#hasOperationalInstant							
https://cdm.ovh/taf/tafp5#hasOperationalInterval							
https://cdm.ovh/taf/tafp5#hasOperationalLocation	✓						
https://cdm.ovh/taf/tafp5#hasOrigin	✓						
https://cdm.ovh/taf/tafp5#hasOtherCode							
https://cdm.ovh/taf/tafp5#hasParticipant							
https://cdm.ovh/taf/tafp5#hasPayload							
https://cdm.ovh/taf/tafp5#hasPlannedJourney	✓						
https://cdm.ovh/taf/tafp5#hasPrimaryCode	✓						
https://cdm.ovh/taf/tafp5#hasRFIDIdentifier	✓						
https://cdm.ovh/taf/tafp5#hasRID_UN_Number							
https://cdm.ovh/taf/tafp5#hasRID_class							
https://cdm.ovh/taf/tafp5#hasRU							
https://cdm.ovh/taf/							
ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM

ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM
https://cdm.ovh/taf/tafp5#hasSubProcess							
https://cdm.ovh/taf/tafp5#hasSubsidiaryCode	✓						
https://cdm.ovh/taf/tafp5#hasTemporalRole							
https://cdm.ovh/taf/tafp5#hasTrain	✓						
https://cdm.ovh/taf/tafp5#hasTrainRunState		✓					
https://cdm.ovh/taf/tafp5#hasTrainState		✓					
https://cdm.ovh/taf/tafp5#inJourneySchedule							
https://cdm.ovh/taf/tafp5#isOperationalLocationOf							
https://cdm.ovh/taf/tafp5#isStateOfTrainRun	✓						
https://cdm.ovh/taf/tafp5#isStationary	✓						
https://cdm.ovh/taf/tafp5#issuedAt	✓						
https://cdm.ovh/taf/tafp5#locationName							
https://cdm.ovh/taf/tafp5#messageID	✓						
https://cdm.ovh/taf/tafp5#messageVersion							
https://cdm.ovh/taf/tafp5#name	✓						
https://cdm.ovh/taf/tafp5#nextDescriptionVersion	✓	✓					
https://cdm.ovh/taf/tafp5#nextSection	✓	✓					
https://cdm.ovh/taf/tafp5#playsFacilityRole							
https://cdm.ovh/taf/tafp5#playsOperationalRole							
https://cdm.ovh/taf/tafp5#previousDescriptionVersion	✓	✓					
ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM

ENTITY	FUNCT	INVERSE FUNCT	TRANS	REFL	IRREFL	SYMM	ASYMM
https://cdm.ovh/taf/tafp5#reportedAt	✓						
https://cdm.ovh/taf/tafp5#reportedBy	✓						
https://cdm.ovh/taf/tafp5#revisesDescriptionVersion							✓
https://cdm.ovh/taf/tafp5#sizeAndTypeCode	✓						
https://cdm.ovh/taf/tafp5#startsAtOrigin	✓						
https://cdm.ovh/taf/tafp5#stopsAtDestination	✓						
https://cdm.ovh/taf/tafp5#trainDepartureDate	✓						
https://cdm.ovh/taf/tafp5#trainLeadRU	✓						
https://cdm.ovh/taf/tafp5#uicWagonNumber	✓						