

TCCS SD1 - Data Model - Operational Plan

SPT2TS-127385 - Disclaimer: The data model defined here is a DRAFT version, developed from bottom up inputs as per approaches defined in previous European projects, and from ongoing implementations in Innovation Pillar FPs. The content defined here shall not be considered as 'finalized' and is still a work in progress with the respective system pillar domains. [🔒 Content to be approved]

1 Table of Contents

1	Table of Contents	1
2	Package Operational Plan	2
2.1	Header	2
2.2	Introduction	2
2.3	Operational Plan Movement	3
2.3.1	Movement Event	9
2.4	Operational Plan Restriction	13
2.5	Operational Plan Warning Measure	16
3	Dataflow TrafficCS to TMS	19
3.1	Operational Plan Execution Response	19
3.2	Operational Plan Execution Report	20
3.2.1	Event Execution Report	20
3.3	Train Unit Report	23
3.3.1	Train Unit Report PE	23
3.3.2	Train Unit Report ATO Status	26
3.3.3	Train Unit Report ATO Capabilities	29
3.4	Track Occupation State	34
3.5	DPS Group State	36
3.6	Restriction Area State	37
3.7	Warning Area State	38

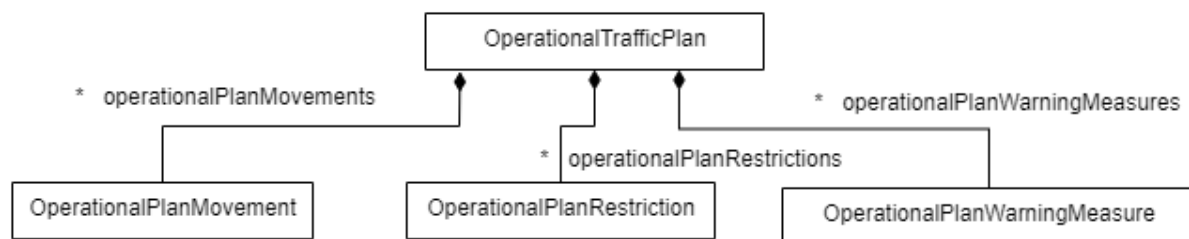
2 Package Operational Plan

2.1 Header

SPT2TS-125325 - Package specification

```
{
  "$schema": "ERJU meta-model.json",
  "isDefinedBy": "http://ERJU/datamodel/0.4/operationalPlan",
  "name": "OperationalPlan",
  "prefix": "opp",
  "intId": 6,
  "version": "1.0",
  "info": "Operational-plan-package of the SCI-OP model",
  "containerStruct": "TrafficPlan",
  "structs": [], "enums": []
} [ 🌱 Open ]
```

2.2 Introduction



[SPT2TS-126806]

Figure 1 General domain structure.

```
{
  "structs": [
    {
      "name": "OperationalTrafficPlan",
      "info": "main container for all plan-related objects",
      "attrs": [
        {"intId": 1, "name": "operationalPlanMovements", "composition": "OperationalPlanMovement",
      "multiplicity": "*", "sortedByKey": true},
        {"intId": 2, "name": "operationalPlanRestrictions", "composition": "OperationalPlanRestriction",
      "multiplicity": "*", "sortedByKey": true},
        {"intId": 3, "name": "operationalPlanWarningMeasures", "composition":
```

```
"OperationalPlanWarningMeasure", "multiplicity": "*", "sortedByKey": true}
]
}
]
} [SPT2TS-124421 ]
```

2.3 Operational Plan Movement

SPT2TS-124418 - .

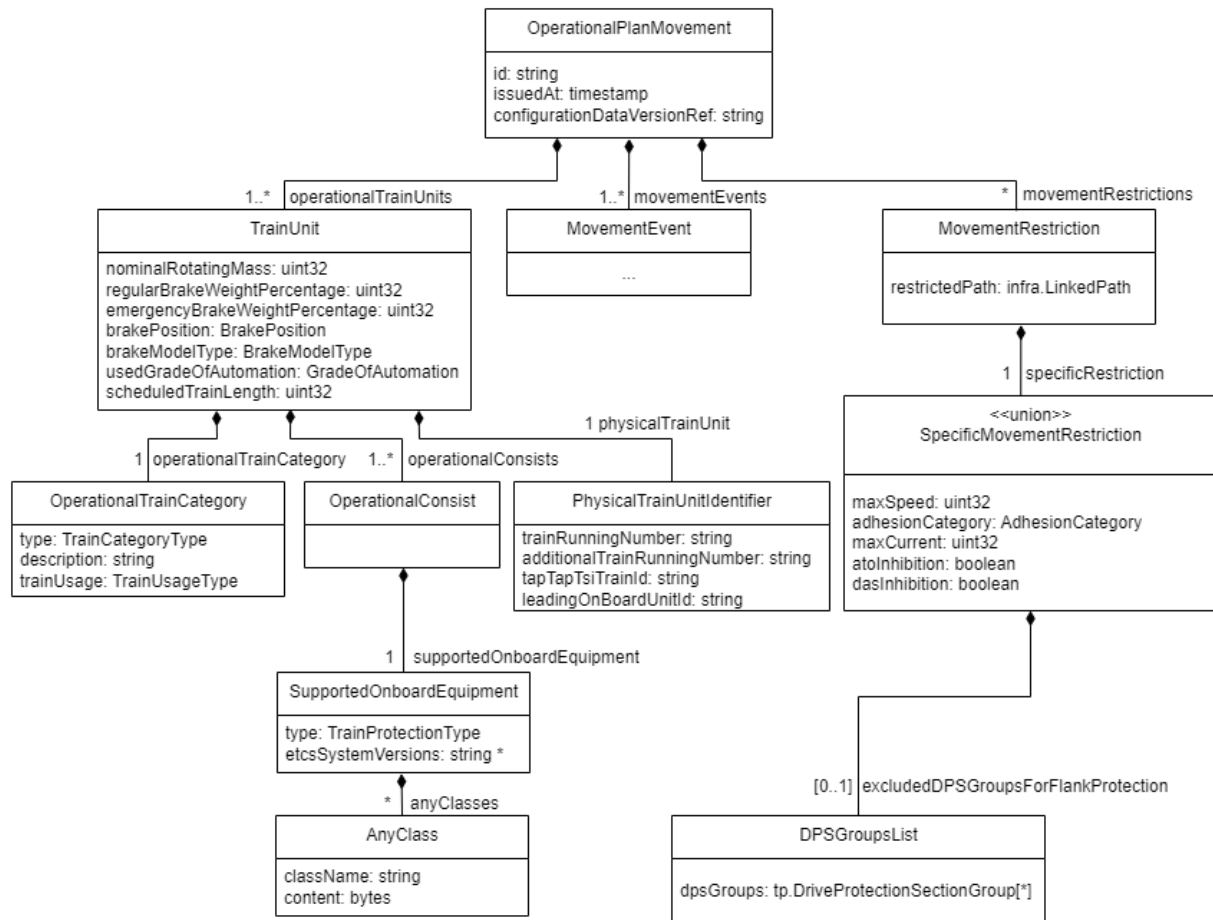


Figure 2 Class diagram for Movement

Content to be approved]

```
{
  "structs": [
    {
      "name": "OperationalPlanMovement",
      "attrs": [
        {"intId": 1, "name": "id", "dataType": "string", "key": "global"},
        {"intId": 2, "name": "issuedAt", "dataType": "timestamp", "info": "issue-point in time with microsecond-precision builds a version-id for acknowledgements and validity-estimations"},
        {"intId": 3, "name": "configurationDataVersionRef", "dataType": "string", "info": "the movement-plan is
```

```

valid only on this configuration version"},
    {"intId": 4, "name": "operationalTrainUnits", "composition": "TrainUnit", "multiplicity": "1..*", "info":
"defines train units used during the movement"},
    {"intId": 5, "name": "movementEvents", "composition": "MovementEvent", "multiplicity": "1..*", "info":
"defines operational activities along the movement"},
    {"intId": 6, "name": "movementRestrictions", "composition": "MovementRestriction", "multiplicity": "**",
"info": "defines restrictions valid for this movement along the movement"}
  ]
}
}
[SPT2TS-124419 ]

{"structs": [
  {
    "name": "TrainUnit",
    "attrs": [
      {"intId": 1, "name": "physicalTrainUnit", "composition": "PhysicalTrainUnitIdentifier",
        "info": "to be used in Plan Execution user interface of Workbench (fallback level for TMS)"},
      {"intId": 2, "name": "operationalTrainCategory", "composition": "OperationalTrainCategory",
        "info": "to be used in Plan Execution user interface of Workbench (fallback level for TMS)"},
      {"intId": 3, "name": "operationalConsists", "composition": "OperationalConsist", "multiplicity": "1..*",
"sortedByKey": false, "info": "defines the sequence of consists starting from train-head"},
      {"intId": 4, "name": "nominalRotatingMass", "dataType": "uint32", "unit": "kg", "info": "special value
160=unknown"},
      {"intId": 5, "name": "regularBrakeWeightPercentage", "dataType": "uint32", "unit": "permill", "info":
"use zero as undefined"},
      {"intId": 6, "name": "emergencyBrakeWeightPercentage", "dataType": "uint32", "unit": "permill", "info":
"use zero as undefined"},
      {"intId": 7, "name": "brakePosition", "enumType": "BrakePosition"},
      {"intId": 8, "name": "brakeModelType", "enumType": "BrakeModelType"},
      {"intId": 9, "name": "usedGradeOfAutomation", "enumType": "GradeOfAutomation"},
      {"intId": 10, "name": "scheduledTrainLength", "dataType": "uint32", "unit": "m", "info": "Train length in
meter"}
    ]
  }
]
} [SPT2TS-125299 ]

{"structs": [
  {
    "name": "OperationalTrainCategory",

```

```
"attrs": [  
  {"intId": 1, "name": "trainCategoryType", "enumType": "TrainCategoryType"},  
  {"intId": 2, "name": "description", "dataType": "string", "info": "for UI-purposes"},  
  {"intId": 3, "name": "trainUsage", "enumType": "TrainUsageType", "info": "for UI-purposes"}  
]  
}  
} [SPT2TS-125301 ]  
  
{"structs": [  
  {  
    "name": "OperationalConsist",  
    "attrs": [  
      {"intId": 1, "name": "supportedOnBoardEquipment", "composition": "SupportedOnBoardEquipment"}  
    ]  
  }  
]  
}  
} [SPT2TS-125305 ]  
  
{"structs": [  
  {  
    "name": "SupportedOnBoardEquipment",  
    "attrs": [  
      {"intId": 1, "name": "trainProtectionType", "enumType": "TrainProtectionType"},  
      {"intId": 2, "name": "etcsSystemVersions", "dataType": "string", "multiplicity": "1..*", "regex":  
"\d+\.\d+"},  
      {"intId": 3, "name": "anyClasses", "composition": "AnyClass", "multiplicity": "*"}  
    ]  
  }  
]  
}  
} [SPT2TS-125306 ]  
  
{"structs": [  
  {  
    "name": "AnyClass",  
    "attrs": [  
      {"intId": 1, "name": "className", "dataType": "string"},  
      {"intId": 2, "name": "content", "dataType": "bytes"}  
    ]  
  }  
]  
}  
} [SPT2TS-125307 ]  
  
{"structs": [  
  {  
    "name": "MovementRestriction",
```

```

    "attrs": [
      {"intId": 1, "name": "restrictedPath", "composition": "infra.LinkedPath"},
      {"intId": 2, "name": "specificRestriction", "composition": "SpecificMovementRestriction"}
    ]
  }}
} [SPT2TS-125302 ]

{"structs": [
  {
    "name": "SpecificMovementRestriction",
    "union": true,
    "attrs": [
      {"intId": 1, "name": "maxSpeed", "dataType": "uint32", "unit": "km/h"},
      {"intId": 2, "name": "adhesionCategory", "enumType": "AdhesionCategory"},
      {"intId": 3, "name": "maxCurrent", "dataType": "uint32", "unit": "A", "info": "electric current limitation, s.
item 0.33 in SS126"},
      {"intId": 4, "name": "atoInhibition", "dataType": "boolean", "info": "train section is not contantly
monitored, or stimulate driver's attention, or approaching overcrowded station"},
      {"intId": 5, "name": "dasInhibition", "dataType": "boolean", "info": "Driver advisory system not available
in this section"},
      {"intId": 6, "name": "excludedDPSGroupsForFlankProtection", "composition": "DPSGroupsList", "info":
"List of DPSGroups to be excluded from flank protection calculation."}
    ]
  },
  {
    "name": "DPSGroupsList",
    "attrs": [
      {"intId": 1, "name": "dpsGroups", "reference": "tp.DriveProtectionSectionGroup", "multiplicity": "**"}
    ]
  }
]
} [SPT2TS-125303 ]

{"enums": [
  {
    "name": "BrakePosition",
    "enumLiterals": [
      {"intId": 0, "name": "passengerTrainInP"},
      {"intId": 1, "name": "passengerTrainInR"},
      {"intId": 2, "name": "freightTrainInP"},

```

```
    {"intId": 3, "name": "freightTrainInG"},
    {"intId": 4, "name": "brakePositionUnknown"}
  ]
},
{
  "name": "BrakeModelType",
  "enumLiterals": [
    {"intId": 0, "name": "lambda"},
    {"intId": 1, "name": "gamma"},
    {"intId": 2, "name": "undefined"}
  ]
},
{
  "name": "GradeOfAutomation",
  "enumLiterals": [
    {"intId": 0, "name": "GoAUnknown"},
    {"intId": 1, "name": "GoA1"},
    {"intId": 2, "name": "GoA2"},
    {"intId": 3, "name": "GoA3"},
    {"intId": 4, "name": "GoA4"}
  ]
},
{
  "name": "TrainCategoryType",
  "enumLiterals": [
    {"intId": 0, "name": "trainCategoryUnknown"},
    {"intId": 1, "name": "interregional"},
    {"intId": 2, "name": "regional"},
    {"intId": 3, "name": "subUrban"},
    {"intId": 4, "name": "nightTrain"},
    {"intId": 5, "name": "motorRail"},
    {"intId": 6, "name": "mountainTrain"},
    {"intId": 7, "name": "historicTrain"},
    {"intId": 8, "name": "coachGroup"},
    {"intId": 9, "name": "tram"},
    {"intId": 10, "name": "underground"},
    {"intId": 11, "name": "highspeedTrain"},
    {"intId": 12, "name": "intercity"}
  ]
},
{
```

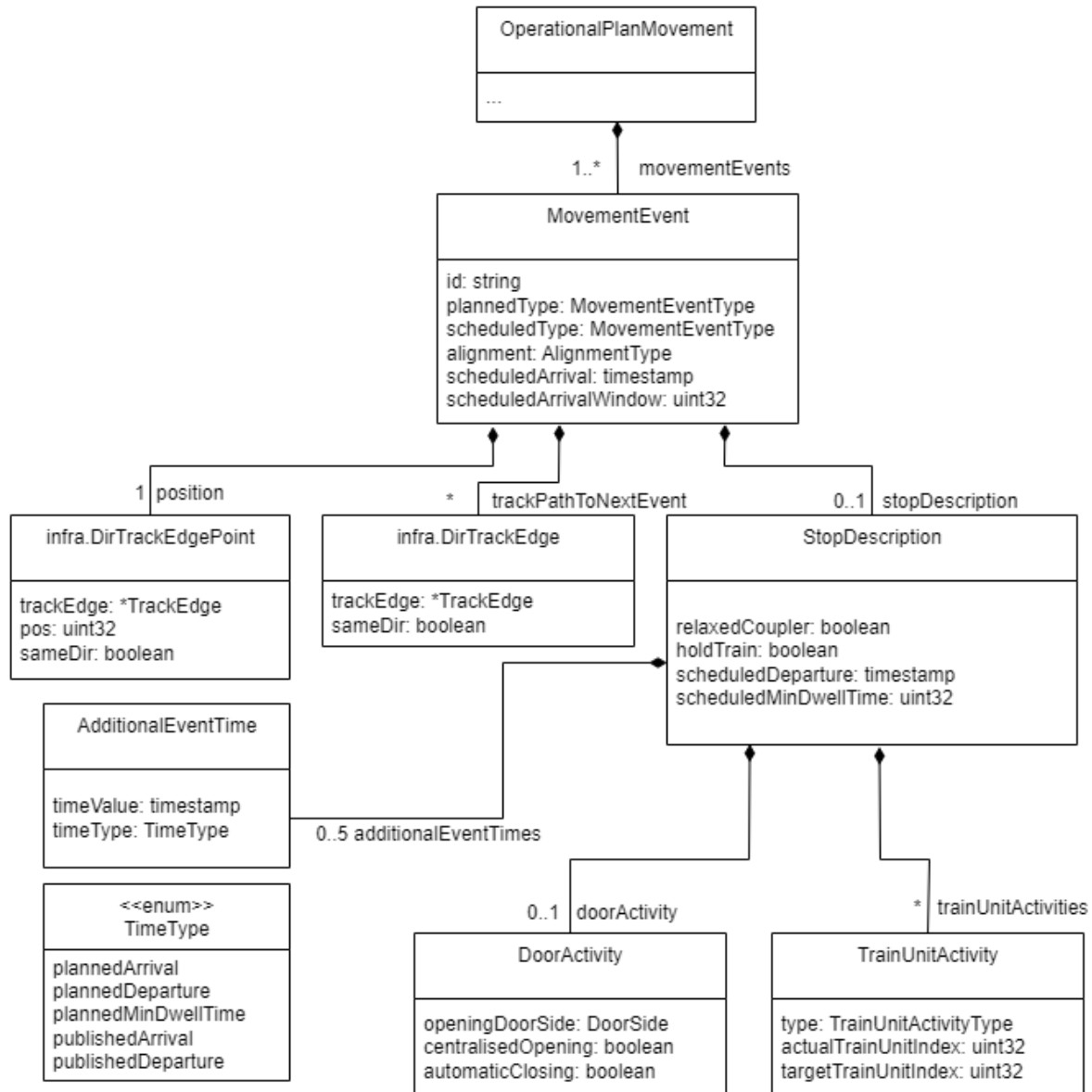
```

    "name": "TrainUsageType",
    "enumLiterals": [
      {"intId": 0, "name": "trainUsageUndefined"},
      {"intId": 1, "name": "commercialPassengerTrain"},
      {"intId": 2, "name": "commercialCargoTrain"},
      {"intId": 3, "name": "locomotiveRunningLight"},
      {"intId": 4, "name": "lightRunning"},
      {"intId": 5, "name": "notInService", "info": "betriebsfahrt"},
      {"intId": 6, "name": "engineeringTrain"},
      {"intId": 7, "name": "breakdownTrain", "info": "Hilfszug"},
      {"intId": 8, "name": "mixedTrain"},
      {"intId": 9, "name": "specialTrain"},
      {"intId": 10, "name": "otherTrain"}
    ]
  },
  {
    "name": "TrainProtectionType",
    "enumLiterals": [
      {"intId": 0, "name": "Etcs"}
    ]
  },
  {
    "name": "AdhesionCategory",
    "enumLiterals": [
      {"intId": 0, "name": "dryRailHigh", "info": "Conditions where 100% of the brake force of the vehicle can be applied with no axle sliding of more than 2% (adhesion level typically above 0.15μ)"},
      {"intId": 1, "name": "dryRailMedium", "info": "Conditions where the wheel/rail adhesion is in the range 0.15 – 0.10 (Damp rails with some contamination)"},
      {"intId": 2, "name": "dryRailLow", "info": "Conditions where the wheel/rail adhesion is in the range 0.10 – 0.08 (Typical autumn mornings due to dew/dampness often combined with light overnight rust)"},
      {"intId": 3, "name": "lowAdhesion", "info": "Conditions where the wheel/rail adhesion is in the range 0.08 – 0.05"},
      {"intId": 4, "name": "veryLowAdhesion", "info": "Conditions where the wheel/rail adhesion is in the range 0.05-0.03"},
      {"intId": 5, "name": "extremelyLowAdhesion", "info": "Conditions where the wheel/rail adhesion is below 0.03"},
      {"intId": 255, "name": "unknownAdhesion"}
    ]
  }
]
} [SPT2TS-125304 ]

```


2.3.1 Movement Event

SPT2TS-126809 -



Content to be approved]

```

{
  "structs": [
    {
      "name": "MovementEvent",
      "attrs": [
        {"intId": 1, "name": "id", "dataType": "string", "key": "global"},
        {"intId": 2, "name": "plannedType", "enumType": "MovementEventType"},
        {"intId": 3, "name": "scheduledType", "enumType": "MovementEventType"},
      ]
    }
  ]
}

```

```

    {"intId": 4, "name": "alignment", "enumType": "AlignmentType", "info": "train-alignment at position
(head, center, end)"},
    {"intId": 5, "name": "position", "composition": "infra.DirTrackEdgePoint"},
    {"intId": 6, "name": "trackPathToNextEvent", "composition": "infra.DirTrackEdge", "multiplicity": "0..*",
"info": "this event.position is on the [0]-element and nextEvent.position is on the [last]-element. Must be
provided in each MovementEvent except the last one."},
    {"intId": 7, "name": "stopDescription", "composition": "StopDescription", "multiplicity": "0..1"},
    {"intId": 8, "name": "scheduledArrival", "dataType": "timestamp", "info": "equal to scheduledDeparture
for a passing train, see latestArrival in SS126. In the first station it is time of 'start of mission'"},
    {"intId": 9, "name": "scheduledArrivalWindow", "dataType": "uint32", "unit": "s", "info":
"scheduledEarliestArrival = scheduledArrival - scheduledArrivalWindow. For passing trains
scheduledEarliestDeparture = scheduledEarliestArrival, see arrivalWindow in SS126. In the first station it
is a time window for 'start of mission'."}
  ]
}
} [SPT2TS-124423 ]

{
  "structs": [
    {
      "name": "StopDescription",
      "attrs": [
        {"intId": 1, "name": "trainUnitActivities", "composition": "TrainUnitActivity", "multiplicity": "**", "info":
"sequence of changes of TrainUnit during the stop"},
        {"intId": 2, "name": "doorActivity", "composition": "DoorActivity", "multiplicity": "0..1", "info": "if the
attribute is not provided, the doors remain closed"},
        {"intId": 3, "name": "relaxedCoupler", "dataType": "boolean", "info": "true - request for coupler
relaxation, false -not, see Q_Relaxed_Coupler in SS126"},
        {"intId": 4, "name": "holdTrain", "dataType": "boolean", "info": "see JP in SS126"},
        {"intId": 5, "name": "scheduledDeparture", "dataType": "timestamp", "info": "see departure in SS126.
In the last station it is 'end of mission'."},
        {"intId": 6, "name": "scheduledMinDwellTime", "dataType": "uint32", "unit": "s", "info": "the train has to
wait after actual arrival this number of seconds before departure. ActualEarliestDeparture =
max(departure, arrival + minDwellTime) will be calculated by ATO-OB, see minDwellTime in SS126"},
        {"intId": 7, "name": "additionalEventTimes", "composition": "AdditionalEventTime", "multiplicity": "0..4",
"info": "Additional times for C-DAS. They will be ignored by ATO (not part of SS126)."}
      ]
    },
    {
      "name": "AdditionalEventTime",

```

```
"attrs": [
  {"intId": 1, "name": "timeValue", "dataType": "timestamp"},
  {"intId": 2, "name": "timeType", "enumType": "TimeType"}
]
}},
"enums": [
{
  "name": "TimeType",
  "enumLiterals": [
    {"intId": 0, "name": "plannedArrival"},
    {"intId": 1, "name": "plannedDeparture"},
    {"intId": 2, "name": "plannedMinDwellTime"},
    {"intId": 3, "name": "publishedArrival"},
    {"intId": 4, "name": "publishedDeparture"}
  ]
}
]
} [SPT2TS-125298 ]

{
  "structs": [
    {
      "name": "DoorActivity",
      "attrs": [
        {"intId": 1, "name": "openingDoorSide", "enumType": "DoorSide", "info": "noneSide if the doors are kept closed"},
        {"intId": 2, "name": "centralisedOpening", "dataType": "boolean", "info": "true - centralised opening, false - opening by passengers/driver"},
        {"intId": 3, "name": "automaticClosing", "dataType": "boolean", "info": "true by ATO, false - without ATO"}
      ]
    }
  ]
}
} [SPT2TS-126732 ]

{
  "structs": [
    {
      "name": "TrainUnitActivity",
```

"info": "if the train turns around, an additional MovementEvent must be integrated with the new position of train head",

```
"attrs": [
  {"intId": 1, "name": "trainUnitActivityType", "enumType": "TrainUnitActivityType"},
  {"intId": 2, "name": "actualTrainUnitIndex", "dataType": "uint32", "info": "index of TrainUnit in OperationalMovement.operationalTrainUnits before the activity"},
  {"intId": 3, "name": "targetTrainUnitIndex", "dataType": "uint32", "info": "index of TrainUnit in OperationalMovement.operationalTrainUnits after the activity"}
]
```

} [SPT2TS-125313]

```
{"structs": [
  {
    "name": "PhysicalTrainUnitIdentifier",
    "attrs": [
      {"intId": 1, "name": "trainRunningNumber", "dataType": "string", "multiplicity": "0..1"},
      {"intId": 2, "name": "additionalTrainRunningNumber", "dataType": "string", "multiplicity": "0..1", "info": "Distinction between Operational Train Units with the same trainRunningNumber. This may occur if a trainRunningNumber is reused for different spare trains."},
      {"intId": 3, "name": "tafTapTsiTrainID", "dataType": "string", "multiplicity": "0..1"},
      {"intId": 4, "name": "leadingOnBoardUnitId", "dataType": "string", "multiplicity": "0..1", "info": "see NID_ENGINE"}
    ]
  }
]
```

} [SPT2TS-125308]

```
{"enums": [
  {
    "name": "MovementEventType",
    "enumLiterals": [
      {"intId": 0, "name": "pass", "info": "if the speed != 0 at the movement event position"},
      {"intId": 1, "name": "stop", "info": "if the speed == 0 at the movement event position"}
    ]
  },
  {
    "name": "AlignmentType",
    "enumLiterals": [
      {"intId": 0, "name": "head"},
      {"intId": 1, "name": "center"},

```

```
    {"intId": 2, "name": "rear"}
  ]
},
{
  "name": "TrainUnitActivityType",
  "enumLiterals": [
    {"intId": 0, "name": "joinActivity", "info": "uncouple vehicles/parts for self-propelling train parts"},
    {"intId": 1, "name": "splitActivity", "info": "uncouple vehicles/parts for self-propelling train parts"},
    {"intId": 2, "name": "collectActivity", "info": "couple vehicles/parts"},
    {"intId": 3, "name": "dropActivity", "info": "uncouple vehicles/trainParts"},
    {"intId": 4, "name": "turnAroundActivity", "info": "stop to change driving direction of a train. After  
TurnAround a new MovementEvent with changed train position will be inserted into the Movement"},
    {"intId": 5, "name": "meetActivity", "info": "Relevant for PE to request restricted MP in advance"}
  ]
}
]
} [SPT2TS-125311 ]
```

2.4 Operational Plan Restriction

SPT2TS-124448 -

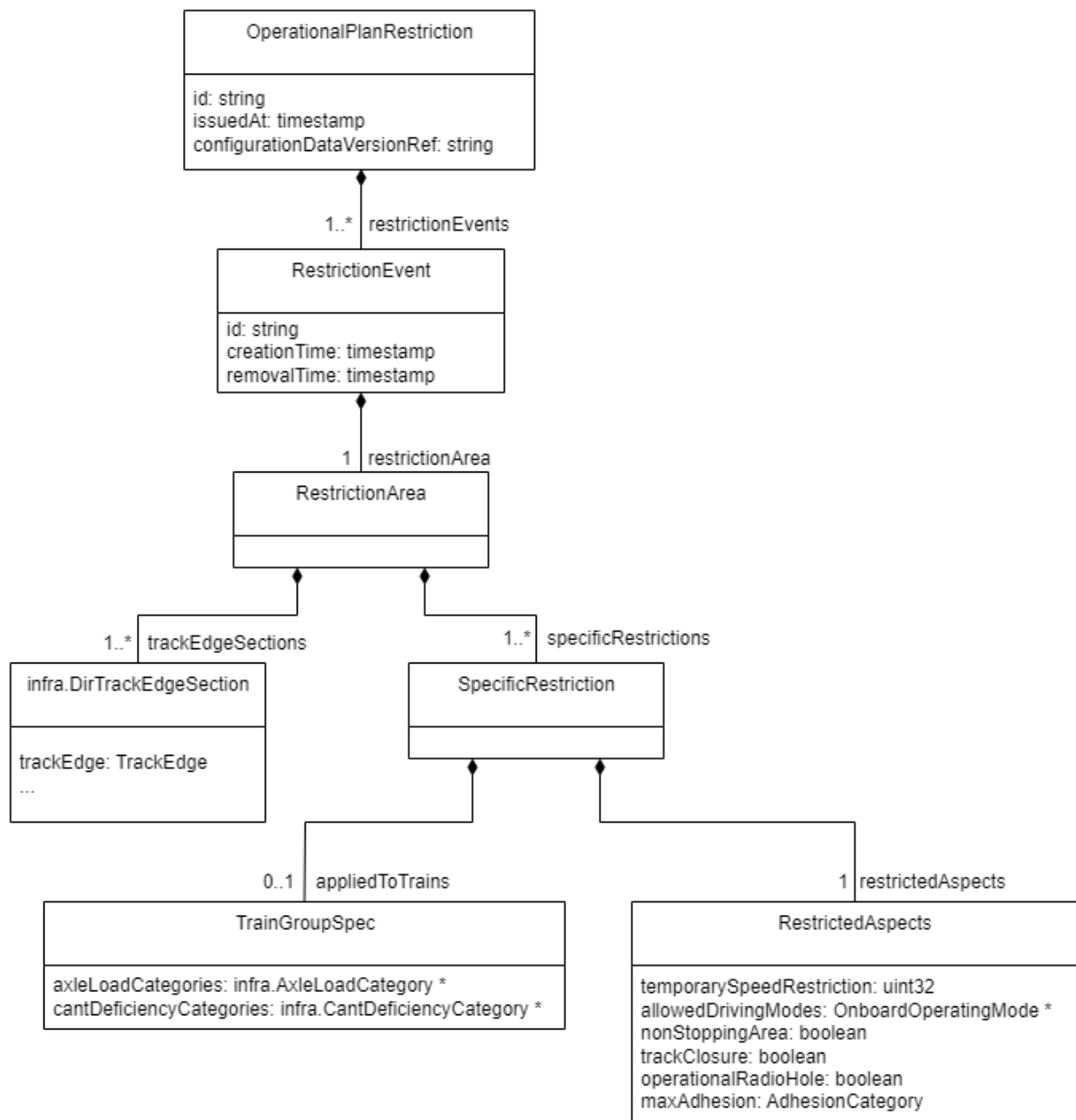


Figure 3 Class diagram for Restriction

Content to be approved]

```

{
  "structs": [
    {
      "name": "OperationalPlanRestriction",
      "attrs": [
        {"intId": 1, "name": "id", "dataType": "string", "key": "global"},
        {"intId": 2, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 3, "name": "configurationDataVersionRef", "dataType": "string", "info": "version of infrastructure data"},
      ]
    }
  ]
}

```

```
    {"intId": 5, "name": "restrictionEvents", "composition": "RestrictionEvent", "multiplicity": "1..*"}  
  ]  
}  
} [SPT2TS-124447 ]
```

```
{  
  "structs": [  
    {  
      "name": "RestrictionEvent",  
      "attrs": [  
        {"intId": 1, "name": "id", "dataType": "string", "key": "global"},  
        {"intId": 2, "name": "creationTime", "dataType": "timestamp", "info": "time when the restrictionArea  
shall be created=implemented=activated in interlocking"},  
        {"intId": 3, "name": "removalTime", "dataType": "timestamp"},  
        {"intId": 4, "name": "restrictionArea", "composition": "RestrictionArea"}  
      ]  
    }  
  ]  
}
```

```
[SPT2TS-126703 ]  
{  
  "structs": [  
    {  
      "name": "RestrictionArea",  
      "attrs": [  
        {"intId": 1, "name": "dirTrackEdgeSections", "composition": "infra.DirTrackEdgeSection", "multiplicity":  
"1..*"},  
        {"intId": 2, "name": "specificRestrictions", "composition": "SpecificRestriction", "multiplicity": "1..*"}  
      ]  
    }  
  ]  
}
```

```
} [SPT2TS-125318 ]  
{  
  "structs": [  
    {  
      "name": "TrainGroupSpec",  
      "info": "train characteristics known to interlocking for safety relevant restrictions",  
      "attrs": [  
        {"intId": 1, "name": "axleLoadCategories", "enumType": "infra.AxleLoadCategory", "multiplicity": "***"},  
        {"intId": 2, "name": "cantDeficiencyCategories", "enumType": "infra.CantDeficiencyCategory",  
"multiplicity": "***"}  
      ]  
    }  
  ]  
}
```

```
]
}}
} [SPT2TS-125319 ]

{"structs": [
{
  "name": "RestrictedAspects",
  "attrs": [
    {"intId": 1, "name": "temporarySpeedRestriction", "dataType": "uint32", "unit": "km/h", "info": "use 0 if
not defined"},
    {"intId": 2, "name": "allowedDrivingModes", "enumType": "OnboardOperatingMode", "multiplicity": "**"},
    {"intId": 3, "name": "nonStopping", "dataType": "boolean", "info": "if true, the trains defined in
trainGroupSpec shall not stop within restriction area"},
    {"intId": 4, "name": "trackClosure", "dataType": "boolean", "info": "if true, the trains defined in
trainGroupSpec shall not enter restriction area"},
    {"intId": 5, "name": "operationalRadioHole", "dataType": "boolean", "info": "if true radio communication
is restricted within restriction area"},
    {"intId": 6, "name": "maxAdhesion", "enumType": "AdhesionCategory"}
  ]
}
}}
} [SPT2TS-125320 ]

{"structs": [
{
  "name": "SpecificRestriction",
  "attrs": [
    {"intId": 1, "name": "appliedToTrains", "composition": "TrainGroupSpec", "multiplicity": "0..1", "info": "if
not provided the restriction is valid for all trains"},
    {"intId": 2, "name": "restrictedAspects", "composition": "RestrictedAspects"}
  ]
}
}}
} [SPT2TS-125315 ]
```

2.5 Operational Plan Warning Measure

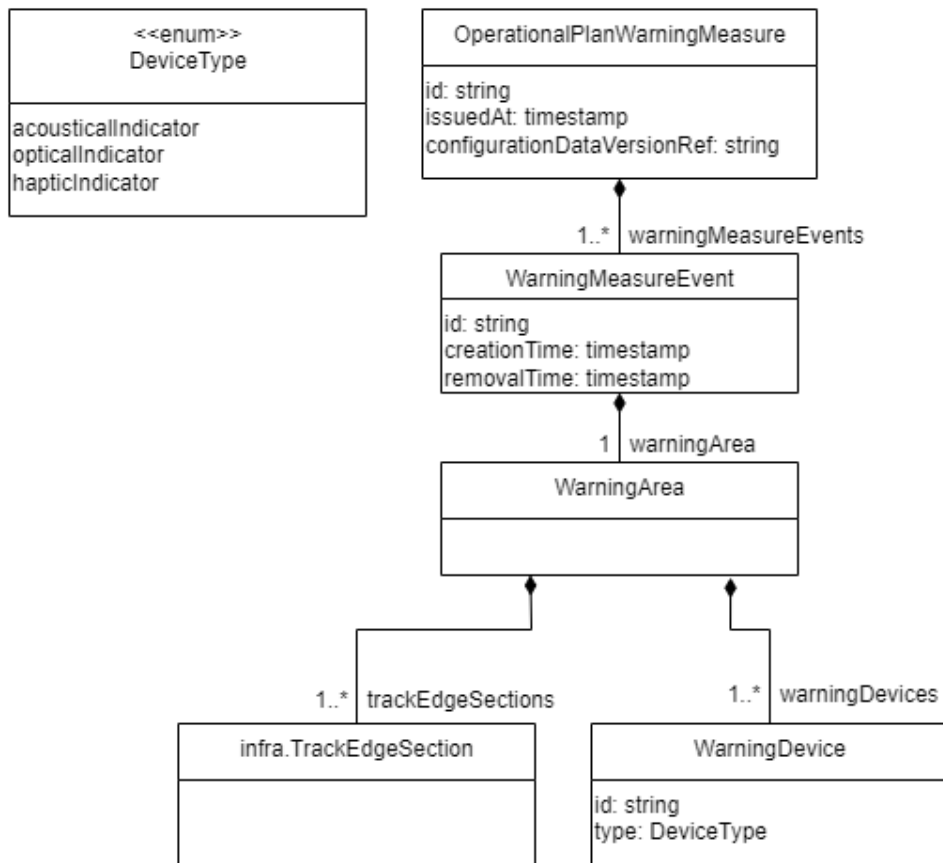


Figure 4 Class diagram for Warning measure

[SPT2TS-124452]

```

{
  "structs": [
    {
      "name": "OperationalPlanWarningMeasure",
      "attrs": [
        {"intId": 1, "name": "id", "dataType": "string", "key": "global"},
        {"intId": 2, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 3, "name": "configurationDataVersionRef", "dataType": "string", "info": "version of
infraestructure data"},
        {"intId": 4, "name": "warningMeasureEvents", "composition": "WarningMeasureEvent", "multiplicity":
"1..*"}
      ]
    }
  ]
} [SPT2TS-124453 ]

```

```

{"structs": [
  {
    "name": "WarningArea",

```

```
"attrs": [  
  {"intId": 1, "name": "trackEdgeSections", "composition": "infra.TrackEdgeSection", "multiplicity": "1..*",  
"info": "protected area"},  
  {"intId": 2, "name": "warningDevices", "composition": "WarningDevice", "multiplicity": "1..*"}  
]  
}]  
} [SPT2TS-125322 ]
```

```
{"structs": [  
  {  
    "name": "WarningDevice",  
    "attrs": [  
      {"intId": 1, "name": "id", "dataType": "string", "key": "global"},  
      {"intId": 2, "name": "deviceType", "enumType": "DeviceType", "info": "defines the different warning  
devices"}  
    ]  
  }  
}]  
} [SPT2TS-125323 ]
```

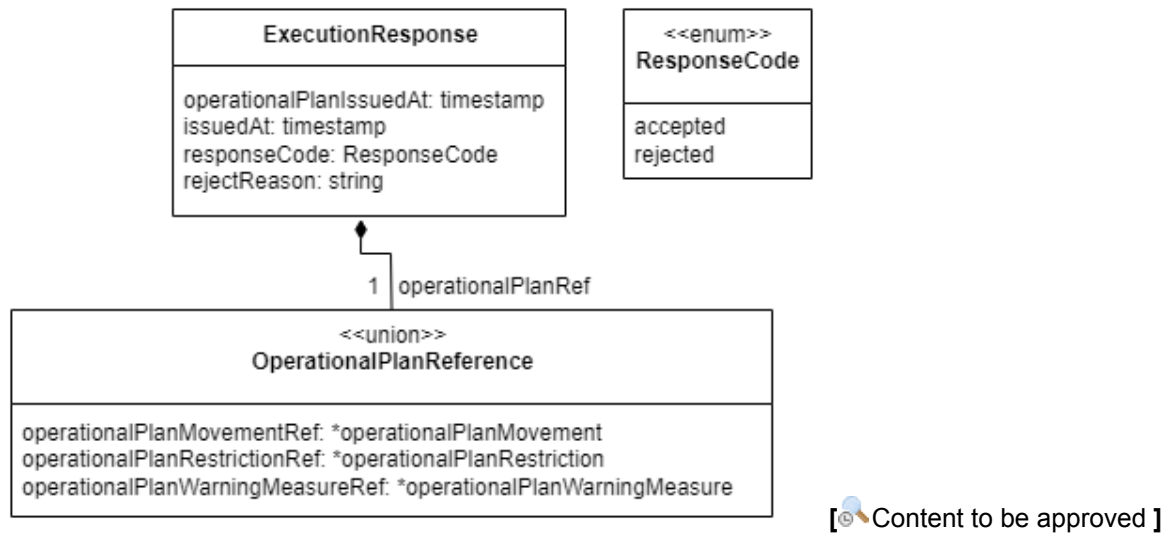
```
{"structs": [  
  {  
    "name": "WarningMeasureEvent",  
    "attrs": [  
      {"intId": 1, "name": "id", "dataType": "string", "key": "global"},  
      {"intId": 2, "name": "creationTime", "dataType": "timestamp", "info": "the same as activationTime"},  
      {"intId": 3, "name": "removalTime", "dataType": "timestamp"},  
      {"intId": 4, "name": "warningArea", "composition": "WarningArea"}  
    ]  
  }  
}]  
} [SPT2TS-125324 ]
```

```
{"enums": [  
  {  
    "name": "DeviceType",  
    "enumLiterals": [  
      {"intId": 0, "name": "acousticalIndicator"},  
      {"intId": 1, "name": "opticalIndicator"},  
      {"intId": 2, "name": "hapticIndicator"}  
    ]  
  }  
}]  
} [SPT2TS-125321 ]
```

3 Dataflow TrafficCS to TMS

3.1 Operational Plan Execution Response

SPT2TS-125684 - Execution Response



```

{
  "structs": [
    {
      "name": "ExecutionResponse",
      "attrs": [
        {"intId": 1, "name": "operationalPlanRef", "composition": "OperationalPlanReference"},
        {"intId": 2, "name": "operationalPlanIssuedAt", "dataType": "timestamp"},
        {"intId": 3, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 4, "name": "responseCode", "enumType": "ResponseCode"},
        {"intId": 5, "name": "rejectReason", "dataType": "string", "multiplicity": "0..1"}
      ]
    }
  ]
} [SPT2TS-125683 ]

{
  "structs": [
    {
      "name": "OperationalPlanReference",
      "union": true,
      "attrs": [
        {"intId": 1, "name": "operationalPlanMovementRef", "reference": "OperationalPlanMovement"},
        {"intId": 2, "name": "operationalPlanRestrictionRef", "reference": "OperationalPlanRestriction"},
      ]
    }
  ]
}

```

```

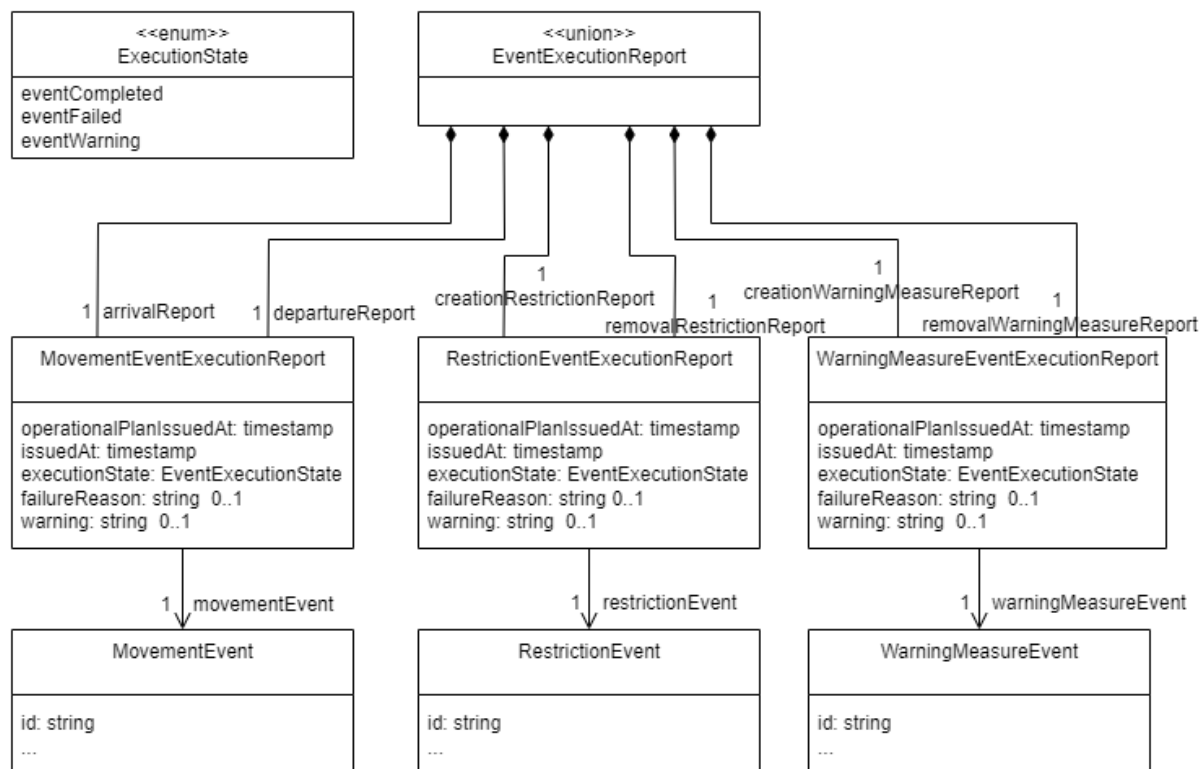
    {"intId": 3, "name": "operationalPlanWarningMeasureRef", "reference":
"OperationalPlanWarningMeasure"}
  ]
}
],
"enums": [
{
  "name": "ResponseCode",
  "enumLiterals": [
    {"intId": 0, "name": "accepted"},
    {"intId": 1, "name": "rejected"}
  ]
}
]
} [SPT2TS-125685 ]

```

3.2 Operational Plan Execution Report

3.2.1 Event Execution Report

SPT2TS-127059 -



[🔒 Content to be approved]

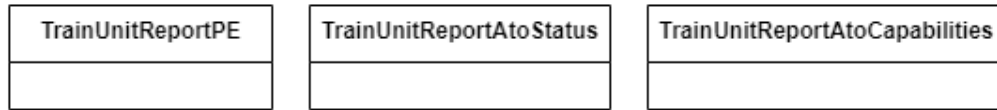
```
{
  "structs": [
    {
      "name": "EventExecutionReport",
      "union": true,
      "attrs": [
        {"intId": 1, "name": "arrivalReport", "composition": "MovementEventExecutionReport", "info": "for
passing only the departure report shall be sent"},
        {"intId": 2, "name": "departureReport", "composition": "MovementEventExecutionReport"},
        {"intId": 3, "name": "creationRestrictionReport", "composition": "RestrictionEventExecutionReport"},
        {"intId": 4, "name": "removalRestrictionReport", "composition": "RestrictionEventExecutionReport"},
        {"intId": 5, "name": "creationWarningMeasureReport", "composition":
"WarningMeasureEventExecutionReport"},
        {"intId": 6, "name": "removalWarningMeasureReport", "composition":
"WarningMeasureEventExecutionReport"}
      ]
    },
    {
      "name": "MovementEventExecutionReport",
      "attrs": [
        {"intId": 1, "name": "movementEvent", "reference": "MovementEvent", "info": "in json is a string with
planId/eventId"},
        {"intId": 2, "name": "operationalPlanIssuedAt", "dataType": "timestamp"},
        {"intId": 3, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 4, "name": "executionState", "enumType": "EventExecutionState"},
        {"intId": 5, "name": "failureReason", "dataType": "string", "multiplicity": "0..1", "info": "informal error
message in English"},
        {"intId": 6, "name": "warning", "dataType": "string", "multiplicity": "0..1", "info": "informal warning
message in English"}
      ]
    },
    {
      "name": "RestrictionEventExecutionReport",
      "attrs": [
        {"intId": 1, "name": "restrictionEvent", "reference": "RestrictionEvent", "info": "in json is a string with
planId/eventId"},
        {"intId": 2, "name": "operationalPlanIssuedAt", "dataType": "timestamp"},
        {"intId": 3, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 4, "name": "executionState", "enumType": "EventExecutionState"},

```

```
    {"intId": 5, "name": "failureReason", "dataType": "string", "multiplicity": "0..1", "info": "informal error  
message in English"},  
    {"intId": 6, "name": "warning", "dataType": "string", "multiplicity": "0..1", "info": "informal warning  
message in English"}  
  ]  
},  
{  
  "name": "WarningMeasureEventExecutionReport",  
  "attrs": [  
    {"intId": 1, "name": "warningMeasureEvent", "reference": "WarningMeasureEvent", "info": "in json is a  
string with planId/eventId"},  
    {"intId": 2, "name": "operationalPlanIssuedAt", "dataType": "timestamp"},  
    {"intId": 3, "name": "issuedAt", "dataType": "timestamp"},  
    {"intId": 4, "name": "executionState", "enumType": "EventExecutionState"},  
    {"intId": 5, "name": "failureReason", "dataType": "string", "multiplicity": "0..1", "info": "informal error  
message in English"},  
    {"intId": 6, "name": "warning", "dataType": "string", "multiplicity": "0..1", "info": "informal warning  
message in English"}  
  ]  
}  
],  
"enums": [  
  {  
    "name": "EventExecutionState",  
    "enumLiterals": [  
      {"intId": 0, "name": "eventCompleted"},  
      {"intId": 1, "name": "eventFailed"},  
      {"intId": 2, "name": "eventWarning"}  
    ]  
  }  
]  
} [SPT2TS-125664 ]
```

3.3 Train Unit Report

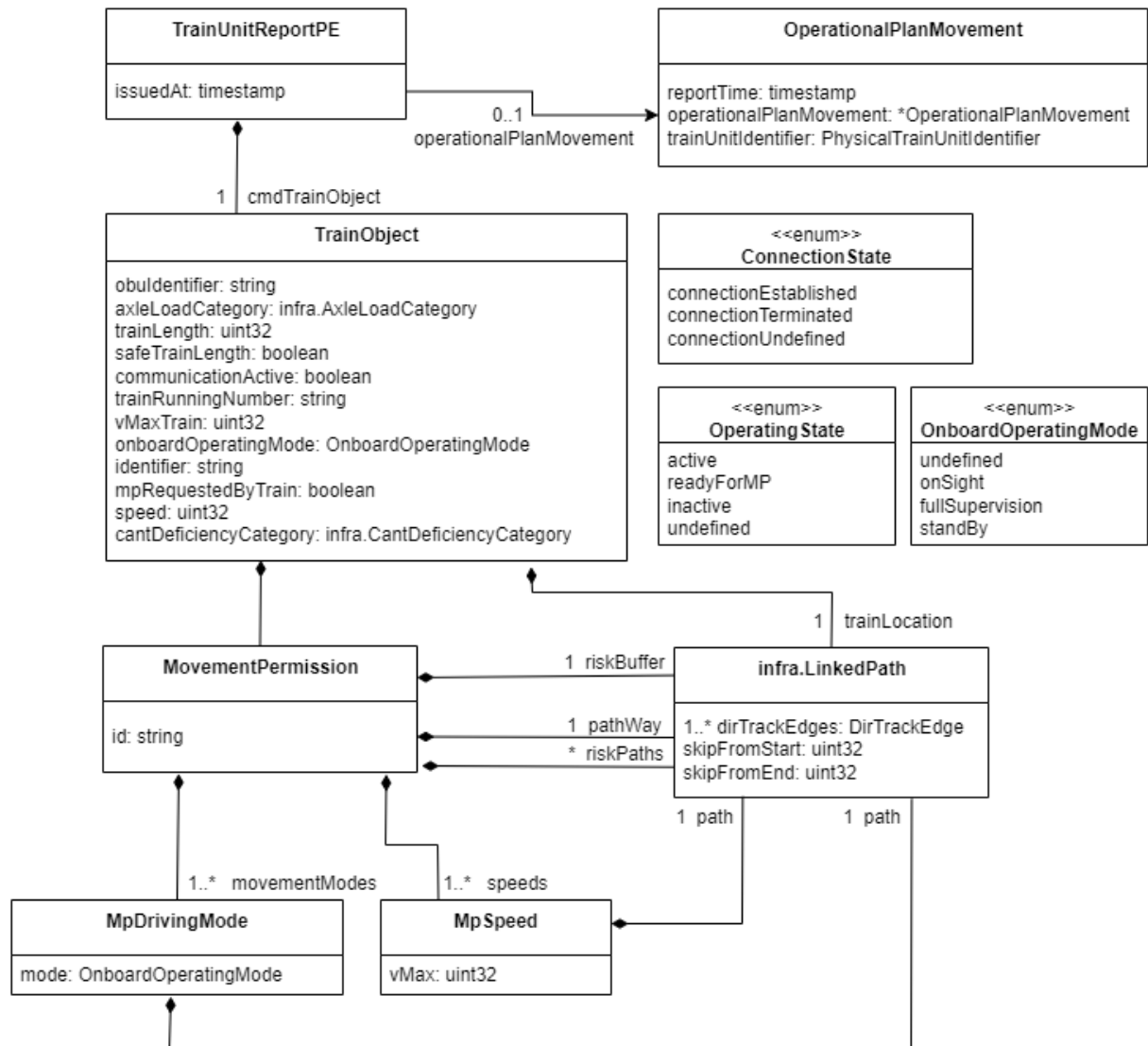
SPT2TS-125702 - There are three types of train unit reports:



[Content to be approved]

3.3.1 Train Unit Report PE

SPT2TS-126819 -



[Content to be approved]

```

{
  "structs": [
    {

```

```

"name": "TrainUnitReportPE",
"attrs": [
  {"intId": 1, "name": "issuedAt", "dataType": "timestamp"},
  {"intId": 2, "name": "operationalPlanMovement", "reference": "OperationalPlanMovement",
"multiplicity": "0..1", "info": "if the new train was created in TrafficCS it does not have an operationalPlan
(Movement) yet"},
  {"intId": 3, "name": "cmdTrainObject", "composition": "TrainObject"}
]
},
{
"name": "TrainObject",
"info": "comes from TrafficCS-PlanExecution",
"attrs": [
  {"intId": 1, "name": "obulIdentifier", "dataType": "string"},
  {"intId": 2, "name": "axleLoadCategory", "enumType": "infra.AxleLoadCategory"},
  {"intId": 3, "name": "movementPermission", "composition": "MovementPermission", "multiplicity":
"0..1"},
  {"intId": 4, "name": "trainLength", "dataType": "uint32", "unit": "m"},
  {"intId": 5, "name": "safeTrainLength", "dataType": "boolean"},
  {"intId": 6, "name": "communicationActive", "dataType": "boolean"},
  {"intId": 7, "name": "trainRunningNumber", "dataType": "string"},
  {"intId": 8, "name": "vMaxTrain", "dataType": "uint32", "unit": "km/h"},
  {"intId": 9, "name": "onboardOperatingMode", "enumType": "OnboardOperatingMode"},
  {"intId": 10, "name": "trainLocation", "composition": "infra.LinkedPath", "info": "contains the position of
the entire train (i.e., from rear to front) including the confidence intervals"},
  {"intId": 11, "name": "trainObjectIdentifier", "dataType": "string", "info": "Generated by
TrainProtectionSystem. It can generate two different trainObjectIds for the same physical train after it
disappeared in a radio hole and appeared again."},
  {"intId": 12, "name": "mpRequestedByTrain", "dataType": "boolean"},
  {"intId": 13, "name": "speed", "dataType": "uint32", "unit": "km/h"},
  {"intId": 14, "name": "cantDeficiencyCategory", "enumType": "infra.CantDeficiencyCategory"}
]
},
{
"name": "MovementPermission",
"attrs": [
  {"intId": 1, "name": "id", "dataType": "string", "info": "id of the movement permission"},
  {"intId": 2, "name": "riskBuffer", "composition": "infra.LinkedPath", "info": "overlap after MP"},
  {"intId": 3, "name": "riskPaths", "composition": "infra.LinkedPath", "multiplicity": "**", "info": "defines the

```


paths over the flank protection area (point, derailer, ...) on the neighboring tracks"},

{ "intId": 4, "name": "pathWay", "composition": "infra.LinkedPath", "info": "describes the linear extent of the MA as in actual path of the train"},

{ "intId": 5, "name": "movementModes", "composition": "MpDrivingMode", "multiplicity": "1..*"},

{ "intId": 6, "name": "speeds", "composition": "MpSpeed", "multiplicity": "1..*"}
]

},

{

"name": "MpSpeed",

"attrs": [

{ "intId": 1, "name": "vMax", "dataType": "uint32", "unit": "km/h"},

{ "intId": 2, "name": "path", "composition": "infra.LinkedPath"}
]

},

{

"name": "MpDrivingMode",

"attrs": [

{ "intId": 1, "name": "drivingMode", "enumType": "OnboardOperatingMode"},

{ "intId": 2, "name": "path", "composition": "infra.LinkedPath"}
]

}

],

"enums": [

{

"name": "ConnectionState",

"enumLiterals": [

{ "intId": 0, "name": "connectionEstablished"},

{ "intId": 1, "name": "connectionTerminated"},

{ "intId": 2, "name": "connectionUndefined"}
]

},

{

"name": "OperatingState",

"enumLiterals": [

{ "intId": 0, "name": "active"},

{ "intId": 1, "name": "readyForMP"},

{ "intId": 2, "name": "inactive"},

{ "intId": 3, "name": "undefined"}
]

}

]

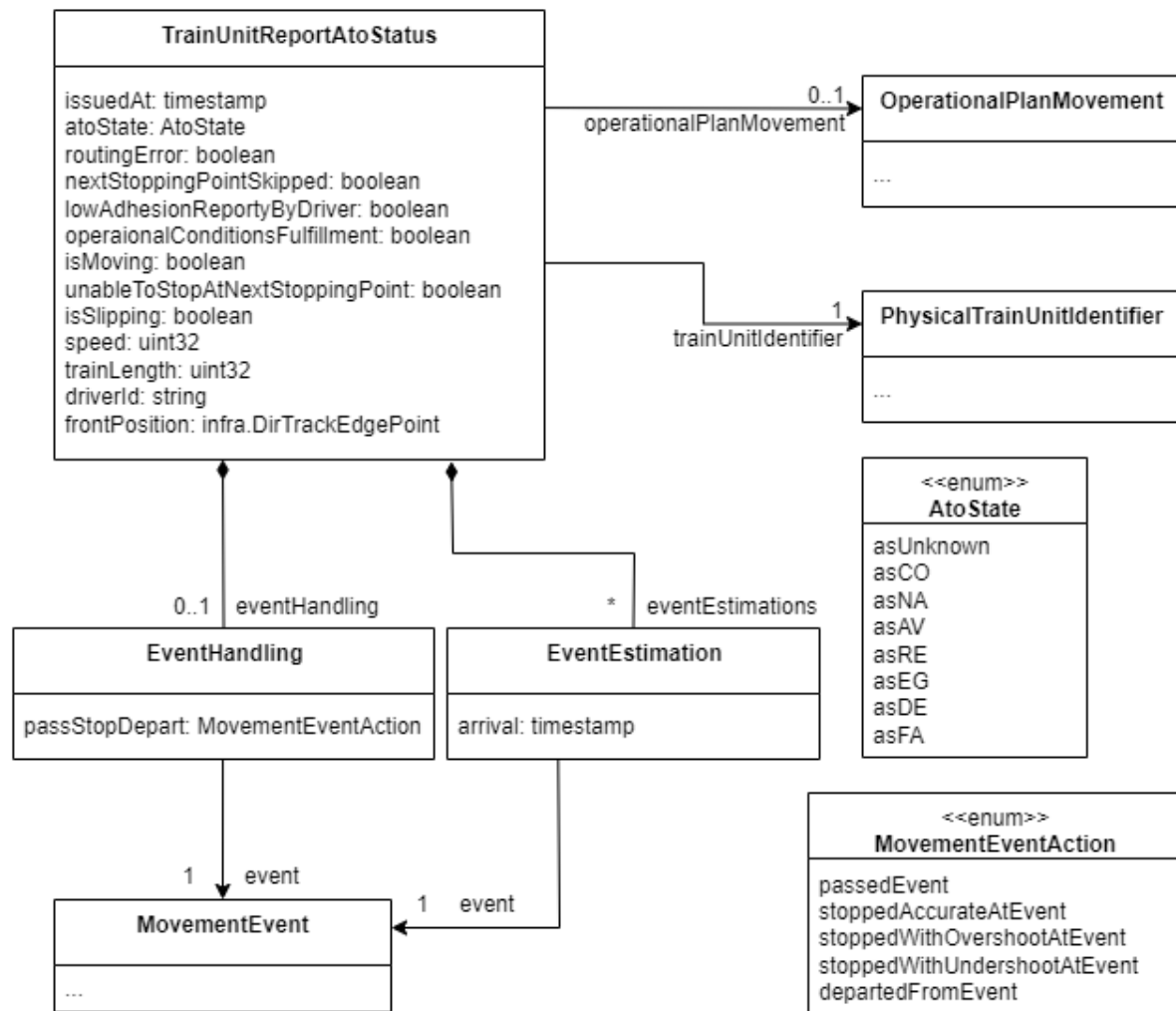
```

},
{
  "name": "OnboardOperatingMode",
  "enumLiterals": [
    {"intId": 0, "name": "undefined"},
    {"intId": 1, "name": "onSight"},
    {"intId": 2, "name": "fullSupervision"},
    {"intId": 3, "name": "standBy"}
  ]
}
]
}
]
} [SPT2TS-125679 ]

```

3.3.2 Train Unit Report ATO Status

SPT2TS-125710 - Train Unit Report Ato Status [🔒 Content to be approved]



[S

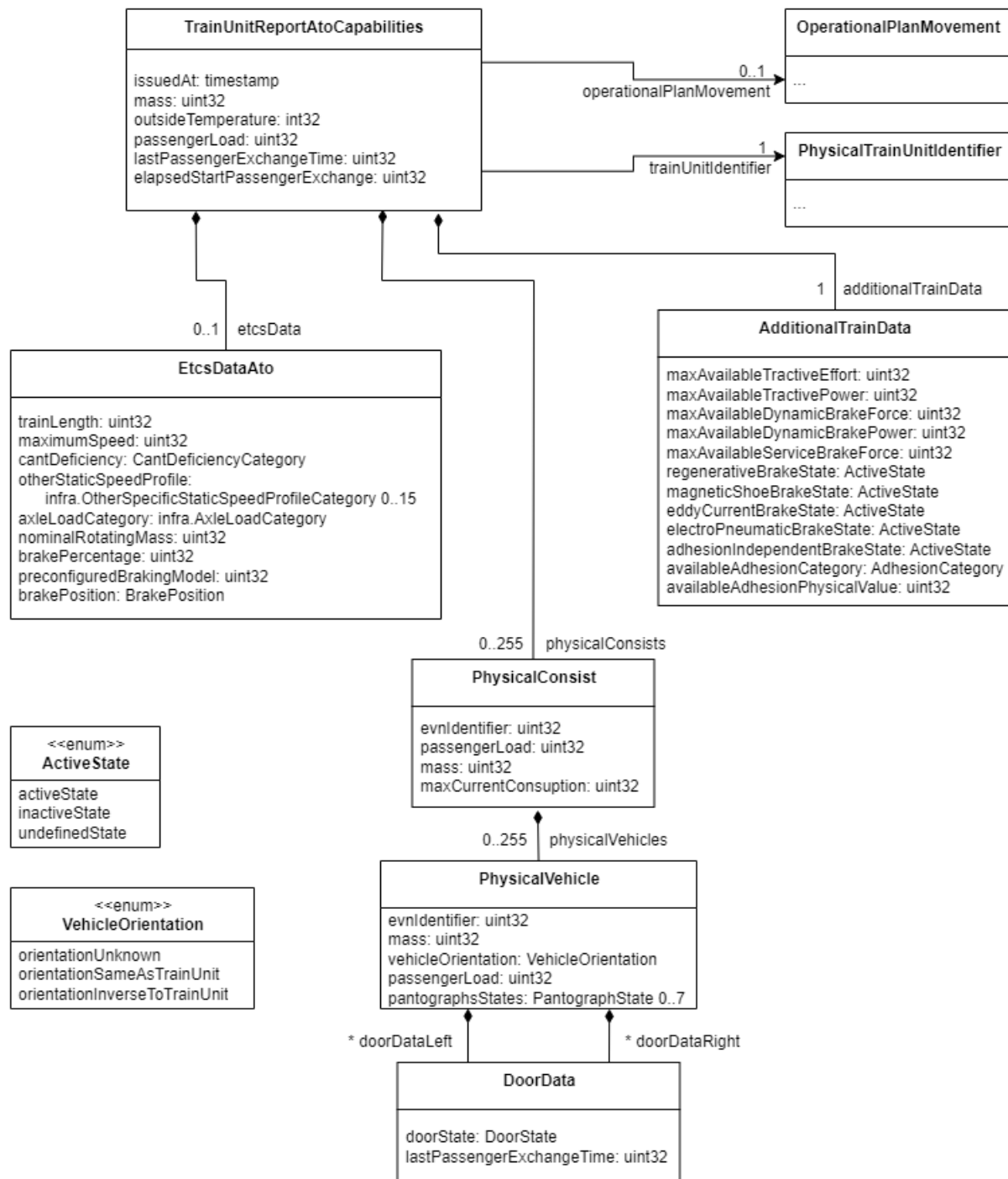
PT2TS-126820]

```
{
  "structs": [
    {
      "name": "TrainUnitReportAtoStatus",
      "info": "source ATO ss126 STR-frame",
      "attrs": [
        {"intId": 1, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 2, "name": "operationalPlanMovement", "reference": "OperationalPlanMovement",
"multiplicity": "0..1", "info": "if the new train was created in TrafficCS it does not have an operationalPlan
(Movement) yet"},
        {"intId": 3, "name": "trainUnitIdentifier", "composition": "PhysicalTrainUnitIdentifier"},
        {"intId": 4, "name": "atoState", "enumType": "AtoState"},
        {"intId": 5, "name": "routingError", "dataType": "boolean", "info": "inconsistent path"},
        {"intId": 6, "name": "nextStoppingPointSkip", "dataType": "boolean", "info": "skip-request by the train
driver. "},
        {"intId": 7, "name": "lowAdhesionReportedByDriver", "dataType": "boolean"},
        {"intId": 8, "name": "operationalConditionsFulfillment", "dataType": "boolean"},
        {"intId": 9, "name": "isMoving", "dataType": "boolean", "info": "speed != 0.0 ?"},
        {"intId": 10, "name": "unableToStopAtNextStoppingPoint", "dataType": "boolean", "info": "the train
is too close and/or too fast for stopping"},
        {"intId": 11, "name": "isSlipping", "dataType": "boolean", "info": "bit7 from SS126"},
        {"intId": 12, "name": "speed", "dataType": "uint32", "unit": "km/h"},
        {"intId": 13, "name": "trainLength", "dataType": "uint32", "unit": "m"},
        {"intId": 14, "name": "driverId", "dataType": "string", "multiplicity": "0..1"},
        {"intId": 15, "name": "frontPosition", "composition": "infra.DirTrackEdgePoint", "info": "the direction can
be deduced from JP and STR in SS 126"},
        {"intId": 16, "name": "eventHandling", "composition": "EventHandling", "multiplicity": "0..1"},
        {"intId": 17, "name": "eventEstimations", "composition": "EventEstimation", "multiplicity": "**"}
      ]
    },
    {
      "name": "EventHandling",
      "attrs": [
        {"intId": 1, "name": "event", "reference": "MovementEvent"},
        {"intId": 2, "name": "passStopDepart", "enumType": "MovementEventAction"}
      ]
    }
  ]
}
```

```
"name": "EventEstimation",
"attrs": [
  {"intId": 1, "name": "event", "reference": "MovementEvent"},
  {"intId": 2, "name": "arrival", "dataType": "timestamp"}
]
},
],
"enums": [
{
  "name": "MovementEventAction",
  "enumLiterals": [
    {"intId": 0, "name": "passedEvent"},
    {"intId": 1, "name": "stoppedAccurateAtEvent"},
    {"intId": 2, "name": "stoppedWithOvershootAtEvent"},
    {"intId": 3, "name": "stoppedWithUndershootAtEvent"},
    {"intId": 4, "name": "departedFromEvent"}
  ]
},
{
  "name": "AtoState",
  "enumLiterals": [
    {"intId": 0, "name": "unknown"},
    {"intId": 1, "name": "CO", "info": "State Configuration"},
    {"intId": 2, "name": "NA", "info": "State Not Available"},
    {"intId": 3, "name": "AV", "info": "State Available"},
    {"intId": 4, "name": "RE", "info": "State Ready"},
    {"intId": 5, "name": "EG", "info": "State Engaged"},
    {"intId": 6, "name": "DE", "info": "State Disengaged"},
    {"intId": 7, "name": "FA", "info": "State Failure"}
  ]
}
]
} [SPT2TS-125680 ]
```

3.3.3 Train Unit Report ATO Capabilities

SPT2TS-126812 - Train Unit Report Ato Capabilities [🔒 Content to be approved]



[SPT2TS-125693]

```

{
  "structs": [
    {
      "name": "TrainUnitReportAtoCapabilities",
    }
  ]
}
  
```

```

"info": "source - ATO Train Capability Report",
"attrs": [
  {"intId": 1, "name": "issuedAt", "dataType": "timestamp"},
  {"intId": 2, "name": "operationalPlanMovement", "reference": "OperationalPlanMovement",
"multiplicity": "0..1", "info": "if the new train was created in TrafficCS it does not have an operationalPlan
(Movement) yet"},
  {"intId": 3, "name": "trainUnitIdentifier", "composition": "PhysicalTrainUnitIdentifier"},
  {"intId": 4, "name": "mass", "dataType": "uint32", "unit": "kg", "exp": 2, "info": "train mass including
load, 0 if unknown"},
  {"intId": 5, "name": "outsideTemperature", "dataType": "int32", "unit": "degree", "info": "127 if
unknown"},
  {"intId": 6, "name": "etcsData", "composition": "EtcsDataAto", "multiplicity": "0..1", "info": "not provided
if invalid"},
  {"intId": 7, "name": "passengerLoad", "dataType": "uint32", "unit": "percent", "range": "0..255", "info":
"255 unknown"},
  {"intId": 8, "name": "lastPassengerExchangeTime", "dataType": "uint32", "unit": "s", "info": "65535:
unknown"},
  {"intId": 9, "name": "elapsedStartPassengerExchange", "dataType": "uint32", "unit": "s",
"info": "Time elapsed between standstill and the doors are released for operation or opening; 4096:
unknown"},
  {"intId": 10, "name": "additionalTrainData", "composition": "AdditionalTrainData", "multiplicity": "0..1"},
  {"intId": 11, "name": "physicalConsists", "composition": "PhysicalConsist", "multiplicity": "0..255",
"info": "0-unknown"}
]
}}
} [SPT2TS-125671 ]

{
  "structs": [
    {
      "name": "EtcsDataAto",
      "attrs": [
        {"intId": 1, "name": "trainLength", "dataType": "uint32", "unit": "m", "info": "0 if unknown"},
        {"intId": 2, "name": "maximumSpeed", "dataType": "uint32", "unit": "km/h", "info": "0 if unknown"},
        {"intId": 3, "name": "cantDeficiencyCategory", "enumType": "infra.CantDeficiencyCategory"},
        {"intId": 4, "name": "otherInternationalCategory", "enumType": "infra.OtherSpecificStaticSpeedProfileC
ategory", "multiplicity": "0..15"},
        {"intId": 5, "name": "axleLoadCategory", "enumType": "infra.AxleLoadCategory"},
        {"intId": 6, "name": "nominalRotatingMass", "dataType": "uint32", "unit": "kg", "info": "relates to total
train weight. 16 if unknown"},

```

```

    {"intId": 7, "name": "brakePercentage", "dataType": "uint32", "unit": "percent", "info": "255 if unknown"},
    {"intId": 8, "name": "preconfiguredBrakingModel", "dataType": "uint32", "info": "255 if unknown"},
    {"intId": 9, "name": "brakePosition", "enumType": "BrakePosition"}
  ]
}
]
} [SPT2TS-125694 ]
{
  "structs": [
  {
    "name": "DoorData",
    "attrs": [
      {"intId": 1, "name": "doorState", "enumType": "DoorState"},
      {"intId": 2, "name": "lastPassengerExchangeTime", "dataType": "uint32", "unit": "s", "info": "255:
unknown"}
    ]
  }
]
} [SPT2TS-125695 ]
{
  "structs": [
  {
    "name": "AdditionalTrainData",
    "attrs": [
      {"intId": 1, "name": "maxAvailableTractiveEffort", "dataType": "uint32", "unit": "N", "exp": 3, "range":
"0..3000", "info": "65535: unknown"},
      {"intId": 2, "name": "maxAvailableTractivePower", "dataType": "uint32", "unit": "W", "exp": 3, "range":
"0..32000", "info": "65535 - unknown"},
      {"intId": 3, "name": "maxAvailableDynamicBrakeForce", "dataType": "uint32", "unit": "N", "exp": 3,
"range": "0..3000", "info": "65535: unknown"},
      {"intId": 4, "name": "maxAvailableDynamicBrakePower", "dataType": "uint32", "unit": "W", "exp": 3,
"range": "0..32000", "info": "65535 - unknown"},
      {"intId": 5, "name": "maxAvailableServiceBrakeForce", "dataType": "uint32", "unit": "N", "exp": 3,
"range": "0..3000", "info": "65535: unknown"},
      {"intId": 6, "name": "regenerativeBrakeState", "enumType": "ActiveState"},
      {"intId": 7, "name": "magneticShoeBrakeState", "enumType": "ActiveState"},
      {"intId": 8, "name": "eddyCurrentBrakeState", "enumType": "ActiveState"},
      {"intId": 9, "name": "electroPneumaticBrakeState", "enumType": "ActiveState"},
      {"intId": 10, "name": "adhesionIndependentBrakeState", "enumType": "ActiveState"},

```

```
{
  "intId": 11, "name": "availableAdhesionCategory", "enumType": "AdhesionCategory", "info": "053 in Subset"},
  {
    "intId": 12, "name": "availableAdhesionPhysicalValue", "dataType": "uint32", "exp": -3, "info": "600 if unknown"}
  ]
}
} [SPT2TS-125697 ]

{
  "structs": [
    {
      "name": "PhysicalConsist",
      "attrs": [
        {
          "intId": 1, "name": "evnIdentifier", "dataType": "uint32", "info": "European vehicle number (EVN) 12 digits, 0=unknown"},
        {
          "intId": 2, "name": "passengerLoad", "dataType": "uint32", "unit": "percent", "info": "255=unknown"},
        {
          "intId": 3, "name": "mass", "dataType": "uint32", "unit": "kg", "exp": 2, "range": "0..150000", "info": "32767: unknown"},
        {
          "intId": 4, "name": "maxCurrentConsumption", "dataType": "uint32", "unit": "A", "exp": 1, "range": "0..1023", "info": "1023: unknown"},
        {
          "intId": 5, "name": "physicalVehicles", "composition": "PhysicalVehicle", "multiplicity": "0..255", "info": "empty=unknown"}
      ]
    }
  ]
} [SPT2TS-125698 ]

{
  "structs": [
    {
      "name": "PhysicalVehicle",
      "attrs": [
        {
          "intId": 1, "name": "evnIdentifier", "dataType": "uint32", "info": "European vehicle number (EVN) [2018/1614/EU] 12 digits, 0: unknown"},
        {
          "intId": 2, "name": "mass", "dataType": "uint32", "unit": "kg", "exp": 2, "range": "0..150000", "info": "2047: unknown"},
        {
          "intId": 3, "name": "vehicleOrientation", "enumType": "VehicleOrientation"},
        {
          "intId": 4, "name": "doorDataLeft", "composition": "DoorData", "multiplicity": "0..7", "info": "left in respect of normal orientation"},
        {
          "intId": 5, "name": "doorDataRight", "composition": "DoorData", "multiplicity": "0..7"},
        {
          "intId": 6, "name": "passengerLoad", "dataType": "uint32", "unit": "percent", "info": "255=unknown"},

```



```
{ "intId": 7, "name": "pantographsStates", "enumType": "PantographState", "multiplicity": "0..7" }
]
}
],
"enums": [
  {
    "name": "DoorState",
    "enumLiterals": [
      { "intId": 0, "name": "doorStateUnknown",
      { "intId": 1, "name": "doorStateBlocked", "info": "defect",
      { "intId": 2, "name": "doorStateAvailable"
    ]
  },
  {
    "name": "PantographState",
    "enumLiterals": [
      { "intId": 0, "name": "pantographBlocked", "info": "can not be used, defect",
      { "intId": 1, "name": "pantographLowered",
      { "intId": 2, "name": "pantographRaised",
      { "intId": 3, "name": "pantographStateUnknown"
    ]
  },
  {
    "name": "DoorSide",
    "enumLiterals": [
      { "intId": 0, "name": "doorSideLeft",
      { "intId": 1, "name": "doorSideRight",
      { "intId": 2, "name": "doorSideBoth",
      { "intId": 3, "name": "doorNoneSide",
      { "intId": 4, "name": "doorSideUnknown"
    ]
  },
  {
    "name": "ActiveState",
    "enumLiterals": [
      { "intId": 0, "name": "activeState",
      { "intId": 1, "name": "inactiveState",
      { "intId": 2, "name": "undefinedState"
    ]
  }
```

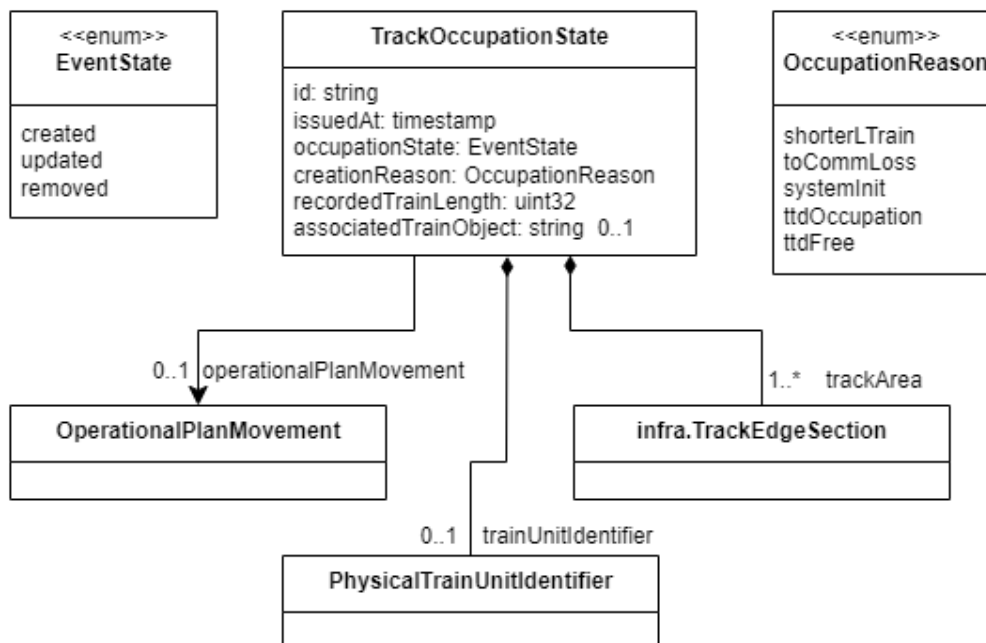
```

},
{
  "name": "VehicleOrientation",
  "enumLiterals": [
    {"intId": 0, "name": "orientationUnknown"},
    {"intId": 1, "name": "orientationSameAsTrainUnit"},
    {"intId": 2, "name": "orientationInverseToTrainUnit"}
  ]
}
]
} [SPT2TS-125699 ]

```

3.4 Track Occupation State

SPT2TS-126813 - Track Occupation State [🔒 Content to be approved]



[SPT2TS-126814

```

]
{
  "structs": [
    {
      "name": "TrackOccupationState",
      "info": "sent by low-level system on each track occupation registered, contains  
CMD.UnresolvedTrackboundObject",
      "attrs": [
        {"intId": 1, "name": "id", "dataType": "string", "key": "global", "info": "id of  
UnresolvedTrackboundObject"},

```

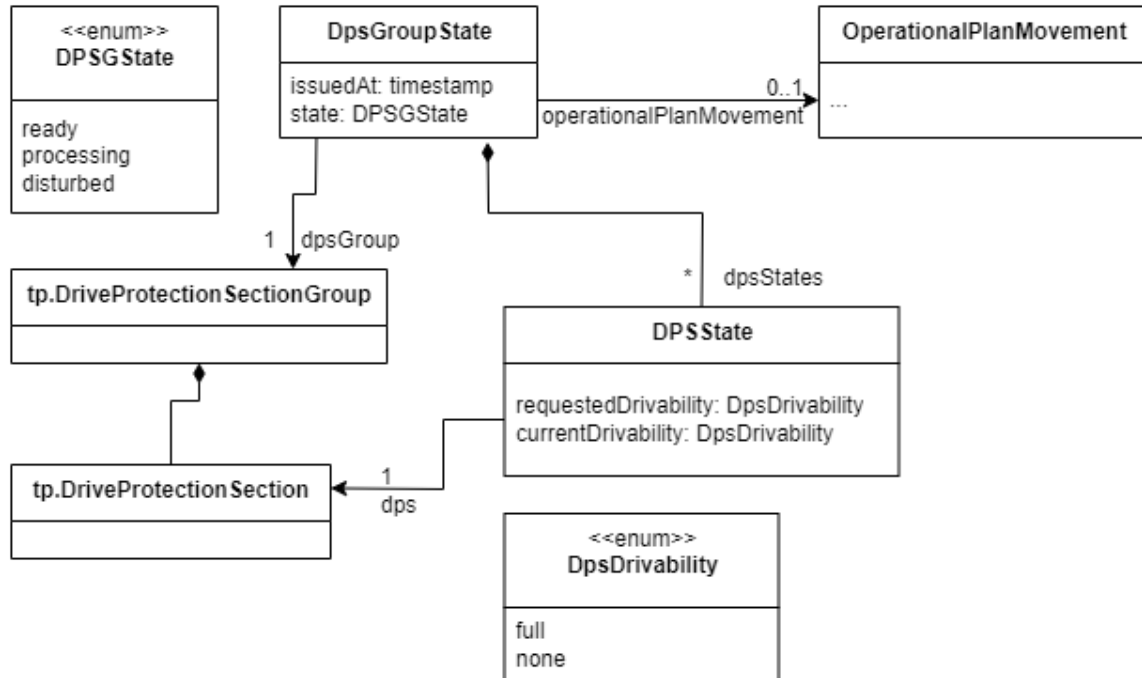
```

{"intId": 2, "name": "issuedAt", "dataType": "timestamp"},
{"intId": 3, "name": "operationalPlanMovement", "reference": "OperationalPlanMovement",
"multiplicity": "0..1"},
{"intId": 4, "name": "trainUnitIdentifier", "composition": "PhysicalTrainUnitIdentifier", "multiplicity":
"0..1"},
{"intId": 5, "name": "occupationState", "enumType": "EventState"},
{"intId": 6, "name": "creationReason", "enumType": "OccupationReason"},
{"intId": 7, "name": "recordedTrainLength", "dataType": "uint32", "unit": "m", "info": "use 0 if not
defined"},
{"intId": 8, "name": "trackArea", "composition": "infra.TrackEdgeSection", "multiplicity": "1..*"},
{"intId": 9, "name": "associatedTrainObject", "dataType": "string", "multiplicity": "0..1", "info":
"trainObjectId defined in MovementPermission"}
]
},
],
"enums": [
{
"name": "EventState",
"enumLiterals": [
{"intId": 0, "name": "created"},
{"intId": 1, "name": "updated"},
{"intId": 2, "name": "removed"}
]
},
{
"name": "OccupationReason",
"enumLiterals": [
{"intId": 0, "name": "shorterLTrain"},
{"intId": 1, "name": "toCommLoss"},
{"intId": 2, "name": "systemInit"},
{"intId": 3, "name": "ttdOccupation"},
{"intId": 4, "name": "ttdFree"}
]
}
]
} [SPT2TS-125672 ]

```

3.5 DPS Group State

SPT2TS-125705 - Field Element State [🔒 Content to be approved]



[SPT2TS-126816]

```

{
  "structs": [
    {
      "name": "DpsGroupState",
      "attrs": [
        {"intId": 1, "name": "dpsGroup", "reference": "tp.DriveProtectionSectionGroup"},
        {"intId": 2, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 3, "name": "operationalPlanMovement", "reference": "OperationalPlanMovement"},
        {"intId": 4, "name": "state", "enumType": "DPSSGState", "info": "common state of the drive protection section group"},
        {"intId": 5, "name": "dpsStates", "composition": "DPSSState", "multiplicity": "*", "info": "States of drive protection sections"}
      ],
      "multiplicity": "0..1"
    },
    {
      "name": "DPSSState",
      "attrs": [
        {"intId": 1, "name": "dps", "reference": "tp.DriveProtectionSection"}
      ]
    }
  ]
}

```

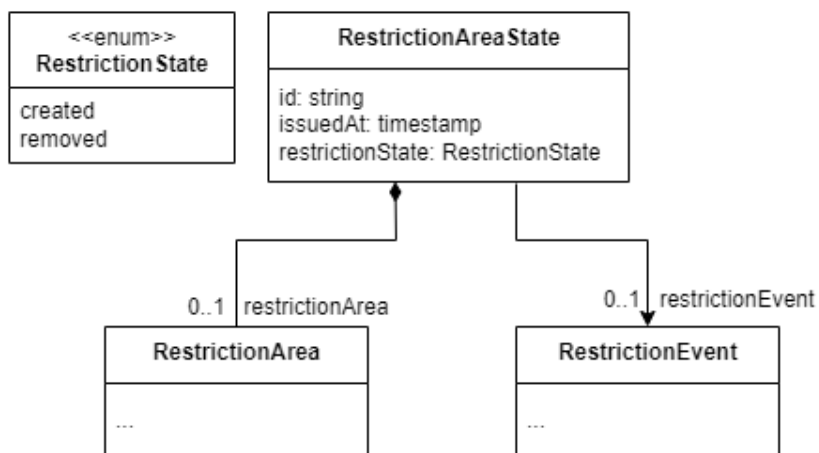
```

{"intId": 2, "name": "requestedDrivability", "enumType": "DpsDrivability"},
{"intId": 3, "name": "currentDrivability", "enumType": "DpsDrivability"}
]
},
],
"enums": [
{
"name": "DPSGState",
"info": "States of drive protection section group",
"enumLiterals": [
{"intId": 0, "name": "ready"},
{"intId": 1, "name": "processing"},
{"intId": 2, "name": "disturbed"}
]
},
{
"name": "DpsDrivability",
"info": "drivability of a drive protection section",
"enumLiterals": [
{"intId": 0, "name": "full"},
{"intId": 1, "name": "none"}
]
}
]
} [SPT2TS-125700 ]

```

3.6 Restriction Area State

SPT2TS-127068 -

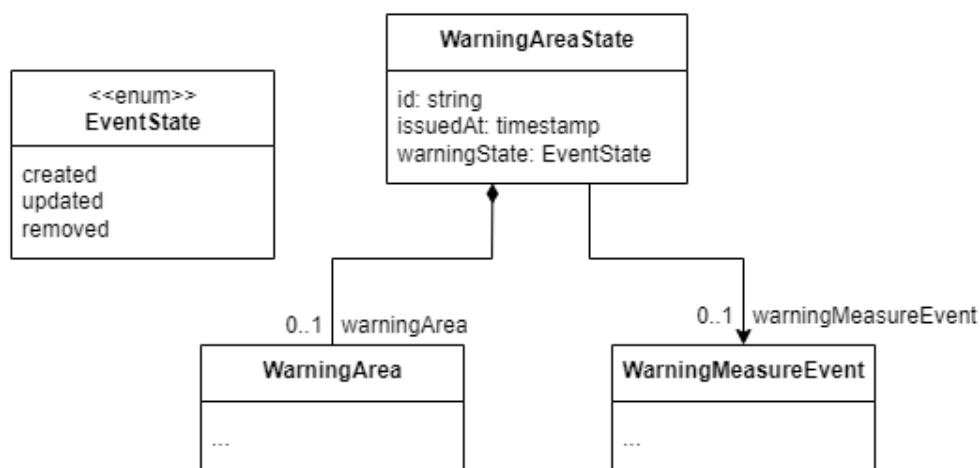


[🔒 Content to be approved]

```
{
  "structs": [
    {
      "name": "RestrictionAreaState",
      "attrs": [
        {"intId": 1, "name": "id", "dataType": "string", "key": "global", "info": "id of restrictionArea generated by interlocking"},
        {"intId": 2, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 3, "name": "restrictionEvent", "reference": "RestrictionEvent", "multiplicity": "0..1", "info": "is provided if planned one"},
        {"intId": 4, "name": "restrictionState", "enumType": "RestrictionState"},
        {"intId": 5, "name": "restrictionArea", "composition": "RestrictionArea", "multiplicity": "0..1", "info": "provided if created by PE or implemented differently than planned"}
      ]
    }
  ],
  "enums": [
    {
      "name": "RestrictionState",
      "enumLiterals": [
        {"intId": 0, "name": "created"},
        {"intId": 1, "name": "removed"}
      ]
    }
  ]
} [SPT2TS-127062 ]
```

3.7 Warning Area State

SPT2TS-127069 -



be approved]

```
{
  "structs": [
    {
      "name": "WarningAreaState",
      "info": "sent at low-level for each activated/deactivated warning area",
      "attrs": [
        {"intId": 1, "name": "id", "dataType": "string", "key": "global", "info": "warningArea-id generated by interlocking"},
        {"intId": 2, "name": "issuedAt", "dataType": "timestamp"},
        {"intId": 3, "name": "warningMeasureEvent", "reference": "WarningMeasureEvent", "multiplicity": "0..1"},
        {"intId": 4, "name": "warningState", "enumType": "EventState"},
        {"intId": 5, "name": "warningArea", "composition": "WarningArea", "multiplicity": "0..1", "info": "provided if differs from warningMeasureEvent.warningArea or unplanned"}
      ]
    }
  ]
}
```

[SPT2TS-127063]