TCCS SD1 - Data Model - MAP

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2 Package "Map"

2.1 Package Header

SPT2TS-124910 - Package header

{
"$schema": "ERJU meta-model.json",
"isDefinedBy": "http://ERJU/datamodel/0.4/map",
"name": "Map",
"containerStruct": "MapMgmt",
"prefix": "map",
"intId": 7,
"version": "1.0",
"info": "Data model to build map",
"enums": [], "structs": []
}

2.2 Map Area

SPT2TS-124911 - A map is considered a kind of projection of real-world elements in 2D/3D space. As there are many possible projections, adding special coordinates as part of the specification of real-world objects is not reasonable. Contratry, the maps are constructed by the specification of coordinates in a special coordinate system. Most geo-coordinate systems are specified by the European Petroleum Survey Group Geodesy (EPSG), which assigned unique 4-5 digits-key-numbers to all possible geo-coordinate systems. Several MapArea objects having the same epsg-code represent one map. As the EPSG-code starts at 1024, the value '1' can be assigned to monitor coordinates.
Different functional elements like Marker boards, Points, Balises, etc. can have projections on the map.

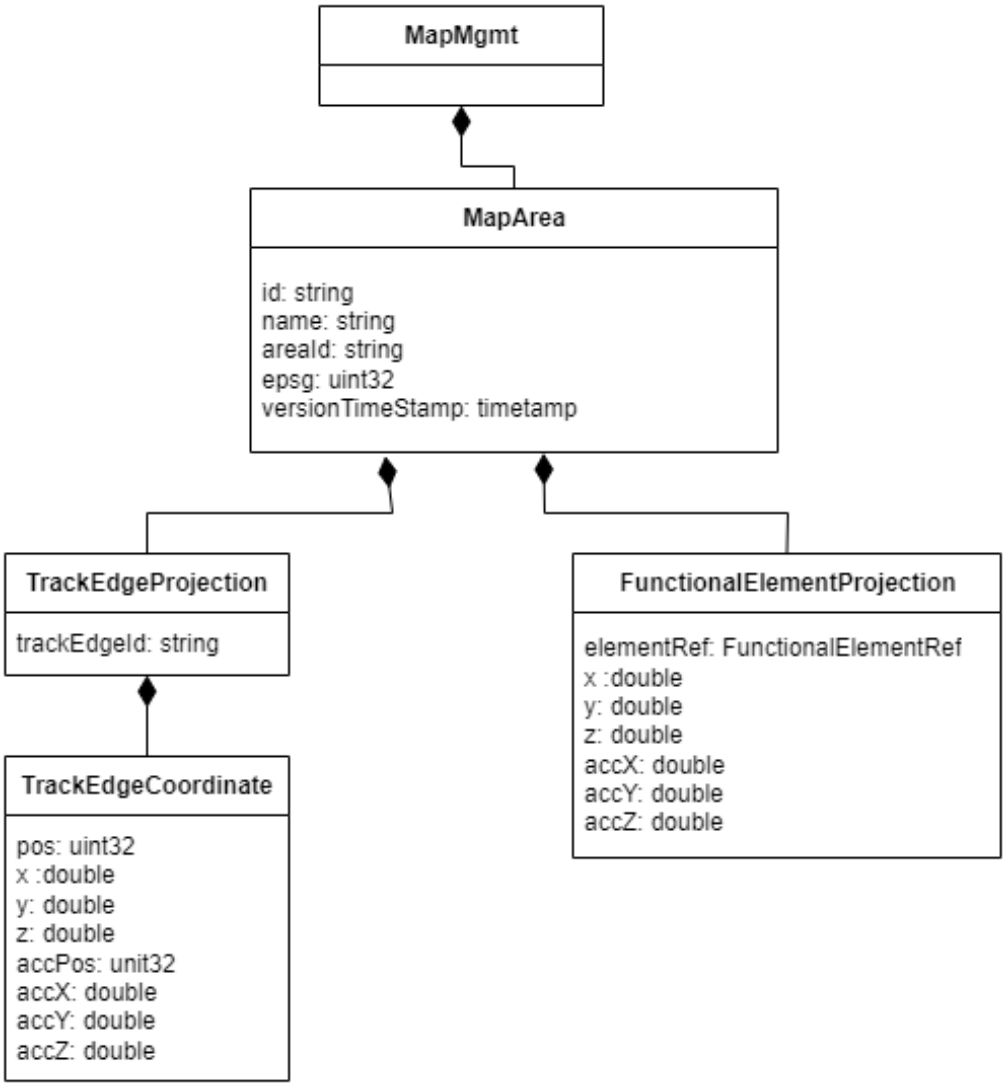

Figure 1 Class Diagram for Map definition

[Content to be approved]

SPT2TS-63836 - MapArea


```
{
  "structs": [
    {
      "name": "MapArea",
      "attrs": [
        {"intId": 1, "name": "id", "dataType": "string", "key": "global", "info": "Identity of the object; used for referencing"},
        {"intId": 2, "name": "name", "dataType": "string", "info": "User-friendly name, only if different from id", "multiplicity": "0..1"},
        {"intId": 3, "name": "versionTimestamp", "dataType": "timestamp", "info": "version information which is valid since timestamp"},
        {"intId": 4, "name": "areaId", "dataType": "string", "info": "there could be several maps representing one area"},
        {"intId": 5, "name": "epsg", "dataType": "uint32", "info": "EPSG code, 1 - monitor coordinates"},
        {"intId": 6, "name": "trackEdgeProjections", "composition": "TrackEdgeProjection", "sortedByKey": true, "multiplicity": "*", "sortedByKey": true, "info": "composes of track edges"},
        {"intId": 7, "name": "functionalElements", "composition": "FunctionalElementProjection", "multiplicity": "*", "info": "composes of functional elements"}
      ]
    }]
}
```


SPT2TS-125485 - TrackEdgeProjection


```
{
  "structs": [
   {
     "name": "TrackEdgeProjection",
     "attrs": [
       {"intId": 1, "name": "id", "dataType": "string", "key": "global", "sameKeyAs": "infra.TrackEdge", "info": "Identity of the object; used for referencing"},
       {"intId": 2, "name": "coordinates", "composition": "TrackEdgeCoordinate", "multiplicity": "2..*", "sortedByKey": false, "info": "composes of coordinates"}
     ]
```

```
  },
  {
    "name": "TrackEdgeCoordinate",
    "attrs": [
      {"intId": 1, "name": "pos", "dataType": "uint32", "unit": "m", "exp": -3, "info": "position on the associated Track Edge"},
      {"intId": 2, "name":  "x", "dataType": "double", "info": "todo: mapping to each EPSG-code"},
      {"intId": 3, "name":  "y", "dataType": "double", "info": "todo: mapping to each EPSG-code"},
      {"intId": 4, "name":  "z", "dataType": "double", "info": "todo: mapping to each EPSG-code"},
      {"intId": 5, "name": "accPos", "dataType": "uint32", "unit": "m", "exp": -3, "info": "absolute accuracy as 1sigma. Use 0 if not defined"},
      {"intId": 6, "name":  "accX", "dataType": "double", "info": "absolute accuracy as 1sigma. Use 0.0 if not defined"},
      {"intId": 7, "name":  "accY", "dataType": "double", "info": "absolute accuracy as 1sigma. Use 0.0 if not defined"},
      {"intId": 8, "name":  "accZ", "dataType": "double", "info": "absolute accuracy as 1sigma. Use 0.0 if not defined"}
    ]
  }]
}
```


SPT2TS-125486 - FunctionalElementProjection


```
{
  "structs": [
  {
    "name": "FunctionalElementProjection",
    "attrs": [
      {"intId": 1, "name": "elementRef", "composition": "FunctionalElementRef", "info": "composes of element refs"},
      {"intId": 2, "name":  "x", "dataType": "double", "info": "todo: mapping to each EPSG-code"},
      {"intId": 3, "name":  "y", "dataType": "double", "info": "todo: mapping to each EPSG-code"},
      {"intId": 4, "name":  "z", "dataType": "double", "info": "todo: mapping to each EPSG-code"},
      {"intId": 5, "name":  "accX", "dataType": "double", "info": "absolute accuracy as 1sigma. Use 0.0 if not defined"},
      {"intId": 6, "name":  "accY", "dataType": "double", "info": "absolute accuracy as 1sigma. Use 0.0 if not defined"},
```

{"intId": 7, "name": "accZ", "dataType": "double", "info": "absolute accuracy as 1sigma. Use 0.0 if not defined"}
]
},
{
"name": "FunctionalElementRef",
"union": true,
"attrs": [
{"intId": 1, "name": "simplePoint", "reference": "infra.SimplePoint", "info": "refers to simple point"},
{"intId": 2, "name": "etcsMarker", "reference": "infra.ETCSMarker", "info": "refers to ETCS marker"},
{"intId": 3, "name": "stopLocation", "reference": "infra.StopLocation", "info": "refers to stop location"},
{"intId": 4, "name": "timingPoint", "reference": "infra.TimingPoint", "info": "refers to timing point"},
{"intId": 5, "name": "operationalPoint", "reference": "infra.OperationalPoint", "info": "refers to operational point"},
{"intId": 6, "name": "balise", "reference": "infra.Balise", "info": "refers to balise"}
]
}
]
}

SPT2TS-125484 - MapMgmt

{
"structs": [
{
"name": "MapMgmt",
"attrs": [
{"intId": 1, "name": "mapAreas", "composition": "MapArea", "multiplicity": "*", "sortedByKey": true, "info": "composes of map areas"}
]
}]
}