TCCS - Data Model_02_Schema

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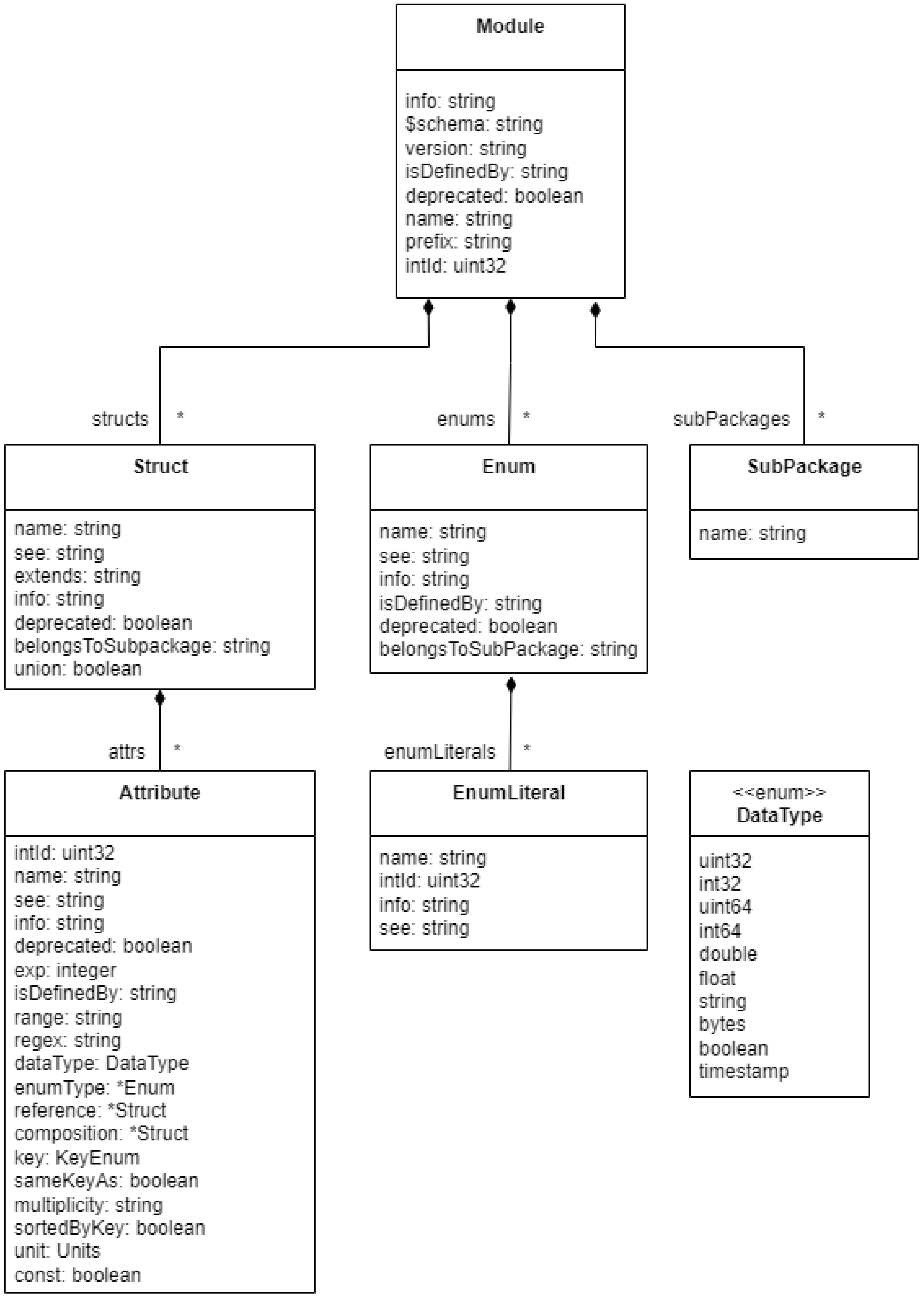
2 Description

SPT2TS-124877 - The Schema can also be found in the ERTMS sharepoint.

Download Folder: TCCS SD1 - Data Model Schema: https://eeigertms.sharepoint.com/:f:/r/sites/SPOpenShare/Gedeelde%20documenten/General/23-07-06%20TCCS%20SD1%20Data%20Model%20v0.2?csf=1&web=1&e=OLAihJ

[Content to be approved **]**

SPT2TS-127928 - A class diagram representing the schema.


Module
info: string
$schema: string
version: string
isDefinedBy: string
deprecated: boolean
name: string
prefix: string
intId: uint32
structs
*
enums
*
subPackages
*
Struct
name: string
see: string
extends: string
info: string
deprecated: boolean
belongsToSubpackage: string
union: boolean
Enum
name: string
see: string
info: string
isDefinedBy: string
deprecated: boolean
belongsToSubPackage: string
SubPackage
name: string
attrs
*
enumLiterals
*
Attribute
intId: uint32
name: string
see: string
info: string
deprecated: boolean
exp: integer
isDefinedBy: string
range: string
regex: string
dataType: DataType
enumType: *Enum
reference: *Struct
composition: *Struct
key: KeyEnum
sameKeyAs: boolean
multiplicity: string
sortedByKey: boolean
unit: Units
const: boolean
EnumLiteral
name: string
intId: uint32
info: string
see: string
<<enum>>
DataType
uint32
int32
uint64
int64
double
float
string
bytes
boolean
timestamp

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SPT2TS-123924 -

```
{
  "$id": "https://ERJU",
  "$schema": "http://json-schema.org/draft-08/schema#",
  "definitions": {
    "attr" : {
      "type": "object",
      "properties": {
        "intId": {"type": "integer", "minimum": 1, "description": "zero-based position"},
        "name": {"type": "string", "pattern": "^[a-z][a-zA-Z0-9_]{0,64}$",
        "description": "Expressive name of the attribute. Given in camelCase and must be accepted as an attribute name by well known programming languages."
      },
      "dataType": {
         "type": "string",
         "enum": ["uint32", "int32", "uint64", "int64", "double", "float", "string", "bytes", "boolean", "timestamp"],
         "description": "The data type of an attribute. Bytes are given as base64 string"
      },
      "composition": {
        "type": "string", "description": "Reference to an owned class. In format prefix.ClassName. Prefix is needed only if in a different namespace."
      },
      "reference": {
        "type": "string",
        "description": "Reference to a shared class. In format prefix.ClassName, Prefix is needed only if in a different namespace."
      },
      "enumType": {
        "type": "string",
        "description": "Reference to an enumeration. In format prefix.EnumerationName, prefix is needed only if in a different namespace."
      },
      "key": {
         "type": "string", "default": "none",
         "description": "defines if the data-object is addressable by this attribute",
         "enum": ["none", "local", "global"]
      },
      "sameKeyAs": {
        "type": "string",
        "description": "if a big class is splitted into parts (layers), all parts share the same key representing original object. Here is the reference to other part-class e.g. infra.TrackEdge"
      },
      "multiplicity": {
          "type": "string",
          "description": "The range of occurences, e.g. 2, 1..2, 1..*",
          "pattern": "(\\d\\.\\.(\\d+|\\*))|\\d+|\\*",
          "default": "1"
      },
      "ordered": {
        "type": "string", "default": "none",
        "enum": ["none", "byIndex", "byKey"],
        "description": "true, if the elements are sorted according to their key-attribute"
      },
      "unit": {
        "type": "string",
        "enum": ["m","s","minute", "km/h","m/s","m/s2","m2","m3", "kg","kN", "Pa","V","W","A","Ohm","K","Hz",
"degree","rad","1/m2","W/m2", "permill","percent","1/m"]
      },
      "info": {"type": "string"},
      "isDefinedBy": {"type": "string", "description": "Reference URL"},
      "deprecated": {"type": "boolean", "default": false},
      "exp": {"type": "integer", "description": "factor to use int for fixed point e.g. 23e-3=0.023"},
      "range": {"type": "string", "pattern": "\\d+\\.\\.\\d+", "description": "for integer values if known"}
    },
    "required": ["intId", "name"],
    "oneOf": [
      {"required": ["dataType"]},
      {"required": ["composition"]},
      {"required": ["reference"]},
      {"required": ["enumType"]}
    ],
    "additionalProperties": false,
},
"EnumLiteral": {
  "type": "object",
  "properties": {
    "name": {"type": "string", "pattern": "^[a-zA-Z][a-zA-Z0-9_]{0,120}$",
      "description": "Name of the enumerator (aka field). Accepted in well known programming languages. Preferably
in capitals"
    },
    "intId": {"type": "integer",
      "description": "integer value to which this enumerator maps. Typically zero-based. The most commonly used
enumerator should evaluate to 0"
    },
    "info": {"type": "string", "description": "=description"},
    "see": {"type": "string", "description": "URL pointing to authoratative documentation, anywhere on the web"}
  },
  "required": ["name", "intId"],
  "additionalProperties": false
},
"struct" : {
  "type": "object",
  "properties": {
    "name": {"type": "string", "pattern": "^[A-Z][a-zA-Z0-9_]{0,64}$",
      "description": "Expressive name of the struct, written in PascalCase and accepted in well known programming languages."
    },
    "see": {
      "type": "string", "description": "reference to an ontology defining the term"
    }
    "extends": {"type": "string",
      "description": "a reference to another struct written as prefix.StructName where prefix is an abbreviation of the namespace URL"
    },
    "attrs": {"type": "array", "items": {"$ref": "#/definitions/attr"}},
    "info": {"type": "string", "description": "Semantics of the class; unequivocal and clear description intended for subject matter experts"},
    "see": {"type": "string", "description": "URL pointing to authoratative documentation, anywhere on the web"},
    "deprecated": {"type": "boolean", "default": false},
    "belongsToSubPackage": {"type": "string", "description": "Reference to a package that the class belongs to, this expresses that this class is in a subject area inside the present namespace"},
    "union": {"type": "boolean", "default": false, "info": "only one attribute is allowed. Valid for dataTypes, enumTypes, compositions and references in mixture."}
  },
  "required": ["name"],
  "additionalProperties": false
},
"enum": {
  "type": "object",
  "properties": {
    "name": {"type": "string", "pattern": "^[A-Z][a-zA-Z0-9_]{0,64}$",
      "description": "Expressive name of the enumeration, written in PascalCase and accepted in well known programming languages."
    },
    "see": {
      "type": "string", "description": "reference to an ontology defining the term"
    }
    "enumLiterals": {"type": "array", "items": {"$ref": "#/definitions/EnumLiteral"}},
    "info": {"type": "string"},
    "isDefinedBy": {"type": "string", "description": "Reference url"},
    "deprecated": {"type": "boolean", "default": false},
    "belongsToSubPackage": {"type": "string", "description": "belongs to package listed in the same namespace in subPackages-property."}
  },
  "required": ["name", "enumLiterals"],
  "additionalProperties": false
},
"package": {
  "type": "object",
  "properties": {
    "name": {"type": "string",
      "description": "groups classes of a similar concern within the namespace for the purpose of documentation"
    }
  },
  "required": ["name"],
  "additionalProperties": false
}
},
"type": "object",
  "description": "Definition of the namespace (module)",
  "properties": {
    "info": {"type": "string"},
    "$schema": {"type": "string", "description": "reference to this schema in each module"},
    "version": {"type": "string", "description": "E.g. 1.02a or 2021-10-07"},
    "isDefinedBy": {"type": "string", "description": "Reference url, e.g. http://example.eu/domain/topology"},
    "containerStruct": {
      "type": "string",
      "description": "name of the struct representing the main container of the package. It is used for creating references /nameOfContainerStruct/nameOfAttr/nameOfAttr/nameOfAttr"
    },
    "deprecated": {"type": "boolean", "default": false, "description":"true when this namespace will be deleted from future releases"},
    "name": {"type": "string",
      "description": "Name of this namespace that expresses the discipline, e.g. Power Supply. Typically the same as, or similar to, the last part of the namespace"
    },
    "prefix": {
      "type": "string", "description": "namespace abbreviation used for name resolution. E.g. TP.TrackEdge is found inside the namespace given by isDefinedBy."
    },
    "intId": {"type": "integer", "minimum": 1,
      "description": "
        use-case1: referencing in Data (Timetable.Trip = /30/7) - main use-case,
        use-case2: for binary protocols replacing attr-names Protobuf/OPC-UA,
        use-case3: referencing in Model (TP.TrackEdge) - use prefix.localName instead"
    },
    "enums": {"type": "array", "items": {"$ref": "#/definitions/enum"}},
    "structs": {"type":  "array", "items": {"$ref":  "#/definitions/struct"}},
    "subPackages": {"type": "array", "items": {"$ref":  "#/definitions/package"},
      "description": "list of packages"
    }
  },
  "required": ["intId", "prefix", "name", "isDefinedBy"],
  "additionalProperties": false
} [ Open ]
```