

# Proposed Location Model

Initial modelling of the information in [PNFPlaceModel\\_202007Jy02.xlsx](#)

... and later version: [PNFPlaceModel\\_202008Ag31.xlsx](#)

Based on work done in the meeting series [PNFD/SDC AID/AAI Schema Modeling/5G Svc Model - R7 Discussion](#)

Used in the PNF Plug and Play Use Case: [R7 PNF Plug and Play PnP](#)

## 1 Location

### 1.1 Overview

**Qualified Name:** Common::Location

### 1.2 Associations

#### 1.2.1 Overview

**Qualified Name:** Common::Location::Associations

### 1.3 Diagrams

#### 1.3.1 Overview

**Qualified Name:** Common::Location::Diagrams

**Description:**

##### 1.3.1.1 Diagrams

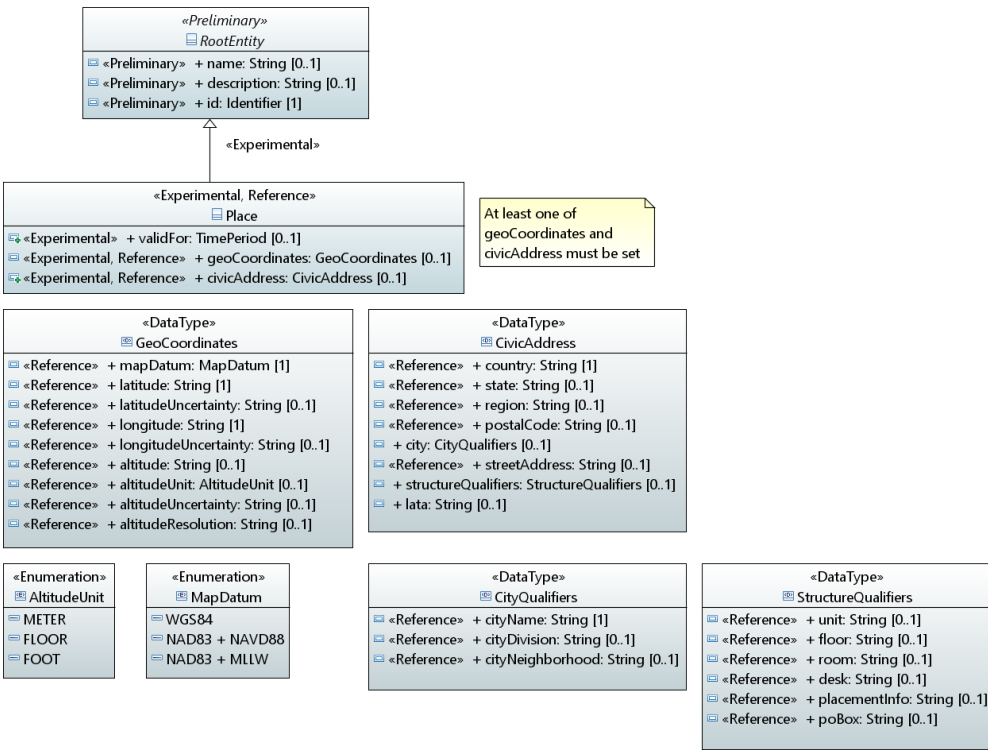


Figure 131: Diagram Place

1.4 ObjectClasses

1.4.1 Overview

Qualified Name: Common::Location::ObjectClasses

1.4.1.1 Classes

1.4.1.1.1 Place class

Qualified Name: Common::Location::ObjectClasses::Place

Parent class: RootEntity

Applied Stereotypes:

- Experimental
- OpenModelClass
- support: MANDATORY
- Reference
- reference: From TMF SID

Table 91 Attributes for Package ObjectClasses

| Attribute Name | Type        | Mult. | Description | Stereotypes                                                                                                                                                                                  |
|----------------|-------------|-------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| valid For      | Time Period | 0..1  |             | Experimental<br><br>OpenModelAttribute<br><br>· partOfObjectKey: 0<br><br>· uniqueSet:<br><br>· isInvariant: false<br><br>· unsigned: false<br><br>· counter: NA<br><br>· support: MANDATORY |

|                        |                        |          |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|------------------------|----------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| geo<br>Coordi<br>nates | Geo<br>Coordi<br>nates | 0..<br>1 | Geographical coordinates | <div>Experimental</div> <div>OpenModelAttribute</div> <div><div><div>·</div><div>partOfObject</div><div>Key: 0</div></div><div><div>·</div><div>uniqueSet:</div></div><div><div>·</div><div>isInvariant:</div><div>false</div></div><div><div>·</div><div>unsigned:</div><div>false</div></div><div><div>·</div><div>counter:</div><div>NA</div></div><div><div>·</div><div>support:</div><div>MANDATORY</div></div></div> <div>Reference</div> <div><div>·</div><div>reference:</div><div>RFC6225</div></div> |
| civic<br>Address       | Civic<br>Address       | 0..<br>1 | Civic address            | <div>Experimental</div> <div>OpenModelAttribute</div> <div><div><div>·</div><div>partOfObject</div><div>Key: 0</div></div><div><div>·</div><div>uniqueSet:</div></div><div><div>·</div><div>isInvariant:</div><div>false</div></div><div><div>·</div><div>unsigned:</div><div>false</div></div><div><div>·</div><div>counter:</div><div>NA</div></div><div><div>·</div><div>support:</div><div>MANDATORY</div></div></div> <div>Reference</div> <div><div>·</div><div>reference:</div><div>RFC4776</div></div> |

|             |        |      |                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                              |
|-------------|--------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| name        | String | 0..1 | Represents a user-friendly identifier of an object. It is a (possibly ambiguous) name by which the object is commonly known in some limited scope (such as an organization) and conforms to the naming conventions of the country or culture with which it is associated. It is NOT used as a naming attribute (i.e., to uniquely identify an instance of the object). | <div>OpenModelAttribute</div> <div><div><div>partOfObject</div><div>Key: 0</div></div><div><div>uniqueSet</div></div><div><div>isInvariant</div><div>false</div></div><div><div>unsigned</div><div>false</div></div><div><div>counter</div><div>NA</div></div><div><div>support</div><div>MANDATORY</div></div></div> <div>Preliminary</div> |
| description | String | 0..1 | Defines a textual free-form description of the object.                                                                                                                                                                                                                                                                                                                 | <div>OpenModelAttribute</div> <div><div><div>partOfObject</div><div>Key: 0</div></div><div><div>uniqueSet</div></div><div><div>isInvariant</div><div>false</div></div><div><div>unsigned</div><div>false</div></div><div><div>counter</div><div>NA</div></div><div><div>support</div><div>MANDATORY</div></div></div> <div>Preliminary</div> |

|    |            |   |                                                                                                                                                                                                  |                                                                                                                                                                                                                                                         |
|----|------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| id | Identifier | 1 | <p>Identifier of this information element. This attribute shall be globally unique.</p> <p>Unambiguously distinguishes different object instances. It is the naming attribute of the object.</p> | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>· partOfObjectKey: 0</li> <li>· uniqueSet:</li> <li>· isInvariant: false</li> <li>· unsigned: false</li> <li>· counter: NA</li> <li>· support: MANDATORY</li> </ul> <p>Preliminary</p> |
|----|------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# 1.5 TypeDefinitions

## 1.5.1 Overview

**Qualified Name:** Common::Location::TypeDefinitions

### 1.5.1.1 Datatypes

#### 1.5.1.1.1 CityQualifiers datatype

**Qualified Name:** Common::Location::TypeDefinitions::CityQualifiers

**Table 71** Attributes for Data Type CityQualifiers

| Attribute Name | Type   | Mult. | Description                       | Stereotypes                                                                                                                                                                                                                                                                    |
|----------------|--------|-------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cityName       | String | 1     | Name of City, Township, or Parish | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> <p>Reference</p> <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=3, 30</li> </ul> |

|                  |        |      |                                                          |                                                                                                                                                                                                                                                                 |
|------------------|--------|------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cityDivision     | String | 0..1 | Name of city division, ex. Borough, District, Ward, Chou | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=4</li> </ul>    |
| cityNeighborhood | String | 0..1 | Name of neighborhood, ex. Block, Street group            | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=5, 6</li> </ul> |

#### 1.5.1.1.2 CivicAddress datatype

**Qualified Name:** Common::Location::TypeDefinitions::CivicAddress

**Table 71 Attributes for Data Type CivicAddress**

| Attribute Name | Type   | Mult. | Description             | Stereotypes                                                                                                                                                                                                                                                                                            |
|----------------|--------|-------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| country        | String | 1     | The name of the country | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: ETSI SOL001 toasca.datatypes.nfv.LocationInfo.country_code</li> </ul> |

|            |                |      |                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                               |
|------------|----------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| state      | String         | 0..1 | The name of the state or province                                                                                                                                                                                              | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=1</li> </ul>  |
| region     | String         | 0..1 | The name of the region                                                                                                                                                                                                         | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=2</li> </ul>  |
| postalCode | String         | 0..1 | The postal code or zip code                                                                                                                                                                                                    | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=24</li> </ul> |
| city       | CityQualifiers | 0..1 | The name of the metropolitan area, city, township, borough, district, or ward. Allows further specific city sub-divisions to be specified, such as: division, borough, district, ward, chou, neighborhood, block, street group | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul>                                                                                            |

|                     |                     |      |                                                                                                                                         |                                                                                                                                                                                                                                                                             |
|---------------------|---------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| streetAddress       | String              | 0..1 | The street address                                                                                                                      | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=16-23, 25, 34-39</li> </ul> |
| lata                | String              | 0..1 | Local access and transport area (LATA) represents a geographical area of the United States, used in U.S. telecommunications regulation. | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul>                                                                                                          |
| structureQualifiers | StructureQualifiers | 0..1 | Additional pre-defined qualifier fields for a structure including: unit, floor, room, desk                                              | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul>                                                                                                          |

#### 1.5.1.1.3 GeoCoordinates datatype

**Qualified Name:** Common::Location::TypeDefinitions::GeoCoordinates

**Table 71 Attributes for Data Type GeoCoordinates**

| Attribute Name | Type     | Mult. | Description                                              | Stereotypes                                                                                                                                                                                                                                               |
|----------------|----------|-------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mapDatum       | MapDatum | 1     | Map Datum used for the coordinates given in this option. | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 Datum</li> </ul> |

|                      |        |      |                                                                                                                                                              |                                                                                                                                                                                                                                                               |
|----------------------|--------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| latitude             | String | 1    | Latitude in binary geodetic form. A 34-bit fixed-point value consisting of 9 bits of integer and 25 bits of fraction.                                        | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 Latitude</li> </ul>  |
| latitudeUncertainty  | String | 0..1 | When mapDatum = WGS84, this field represents latitude uncertainty. $\text{Uncertainty} = 2^{(21 - x)}$ . $x = 21 - \text{ceil}(\log_2(\text{uncertainty}))$  | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 LatUnc</li> </ul>    |
| longitude            | String | 1    | Longitude in binary geodetic form. A 34-bit fixed-point value consisting of 9 bits of integer and 25 bits of fraction.                                       | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 Longitude</li> </ul> |
| longitudeUncertainty | String | 0..1 | When mapDatum = WGS84, this field represents longitude uncertainty. $\text{Uncertainty} = 2^{(21 - x)}$ . $x = 21 - \text{ceil}(\log_2(\text{uncertainty}))$ | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 LongUnc</li> </ul>   |

|                     |               |      |                                                                                 |                                                                                                                                                                                                                                                              |
|---------------------|---------------|------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| altitude            | String        | 0..1 | A 30-bit value defined by the Altitude Type field.                              | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 Altitude</li> </ul> |
| altitudeUncertainty | String        | 0..1 | When mapDatum = WGS84, this field represents altitude uncertainty.              | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 AltUnc</li> </ul>   |
| altitudeUnit        | Altitude Unit | 0..1 | Defines the unit for the altitude value.                                        | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 AType</li> </ul>    |
| altitudeResolution  | String        | 0..1 | Encodes the number of high-order altitude bits that should be considered valid. | OpenModelAttribute <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC6225 AltRes</li> </ul>   |

#### 1.5.1.1.4 StructureQualifiers datatype

**Qualified Name:** Common::Location::TypeDefinitions::StructureQualifiers

**Table 71 Attributes for Data Type StructureQualifiers**

| Attribute Name | Type   | Mult. | Description                      | Stereotypes                                                                                                                                                                                                                                                                 |
|----------------|--------|-------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| unit           | String | 0..1  | Unit (apartment, suite)          | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> <p>Reference</p> <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=26</li> </ul> |
| floor          | String | 0..1  | Floor                            | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> <p>Reference</p> <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=27</li> </ul> |
| room           | String | 0..1  | Room                             | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> <p>Reference</p> <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=28</li> </ul> |
| desk           | String | 0..1  | Seat, desk, cubicle, workstation | <p>OpenModelAttribute</p> <ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> <p>Reference</p> <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=33</li> </ul> |

|               |        |      |                                                   |                                                                                                                                                                                                                                                                      |
|---------------|--------|------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| placementInfo | String | 0..1 | Additional placement information, ex. shelf, rack | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=29, 32</li> </ul> |
| poBox         | String | 0..1 | Post office box number                            | OpenModelAttribute<br><ul style="list-style-type: none"> <li>· isInvariant: false</li> <li>· valueRange: no range constraint</li> <li>· support: MANDATORY</li> </ul> Reference <ul style="list-style-type: none"> <li>· reference: RFC4776 CAtype=31</li> </ul>     |

### 1.5.1.2 Enumerations

#### 1.5.1.2.1 AltitudeUnit enumeration

**Qualified Name:** Common::Location::TypeDefinitions::AltitudeUnit

**Contains Enumeration Literals:**

- METER
- FLOOR
- FOOT

#### 1.5.1.2.2 MapDatum enumeration

**Qualified Name:** Common::Location::TypeDefinitions::MapDatum

**Contains Enumeration Literals:**

- WGS84
- NAD83 + NAVD88
- NAD83 + MLLW