

# TM Forum Specification

## Geographic Address Management API User Guide

TMF673

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Direct inquiries to the TM Forum office:

4 Century Drive, Suite 100

Parsippany, NJ 07054, USA

Tel No. +1 973 944 5100

Fax No. +1 973 998 7196

TM Forum Web Page: [www.tmforum.org](http://www.tmforum.org)

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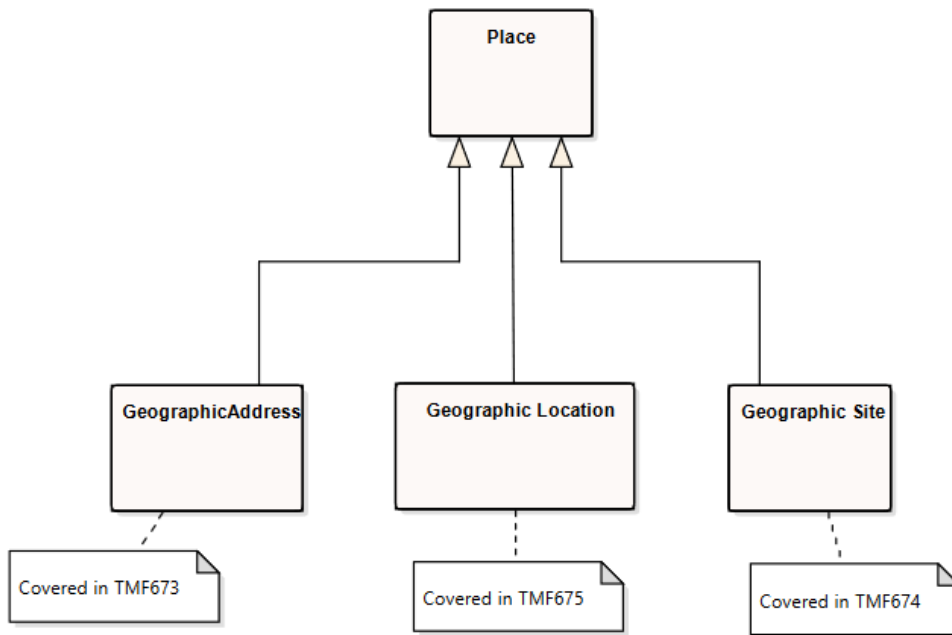
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N/A

# Introduction

The following document is the specification of the REST API for Geographic Address management. A geographic address is a specialization of the abstract Place entity (like Geographic Site and Geographic Location).



The following document is the specification of the REST API for geographic address management. It includes the model definition as well as all available operations.

The Geographic Address Management API provides a standardized client interface to an Address management system.

It allows looking for worldwide addresses.

It can also be used to validate geographic address data, to be sure that it corresponds to a real geographic address.

Finally, it can be used to look for a geographic address by: searching an area as a start (city, town ...), then zooming on the streets of this area, and finally listing all the street segments (numbers) in a street.

## SAMPLE USE CASES

This section includes a set of main use cases that can be performed with this API. Additional use cases can be generated using the operations and resources defined in this specification.

- Validate an address input by customer as part of order capture process
- Get the location (GeographicalLocation) of a given address
- Get geographic objects (Area, Street, StreetSegment) associated to an address

## Support of polymorphism and extension patterns

Support of polymorphic collections and types and schema based extension is provided by means of a list of generic meta-attributes that we describe below. Polymorphism in collections occurs when entities inherit from base entities, for instance a Warehouse and Customer Access inheriting properties from the Geographic Site entity itself inheriting from geographic place.

Generic support of polymorphism and pattern extensions is described in the TMF API Guidelines v3.0 Part 2 document.

The `@type` attribute provides a way to represent the actual class type of an entity. For example, within a list of Geographic Site (or Geographic place) instances some may be instances of Warehouse where other could be instances of Customer Access. The `@type` gives this information. All resources and sub-resources of this API have a `@type` attributes that can be provided when this is useful.

The `@referredType` can be used within reference entities (like for instance in PlaceRef object) to explicitly denote the actual entity type of the referred class. Notice that in reference entities the `@type`, when used, denotes the class type of the reference itself, such as WarehouseRef or CustomerAccessRef, and not the class type of the referred object. However, since reference classes are rarely sub-classed, `@type` is generally not useful in reference objects.

The `@schemaLocation` property can be used in resources to allow specifying user-defined properties of an Entity or to specify the expected *characteristics* of an entity.

The `@baseType` attribute gives a way to provide explicitly the base of class of a given resource that has been extended.

Some APIs, like Product Ordering, support providing a GeographicAddress as a polymorphic version of Place, per reference or per value. However, in the case there is a need to provide a specific GeographicSubAddress this cannot be done solely per reference, because the href mechanism doesn't allow this. In that case the GeographicAddress itself can be provided per reference, but the GeographicSubAddress (at least its id) has to be provided per value:

```
...
"place":
{
  "id": "7513180",
  "geographicSubAddress":
  {
    "id": "3"
  },
  "@type": "GeographicAddress"
}
```

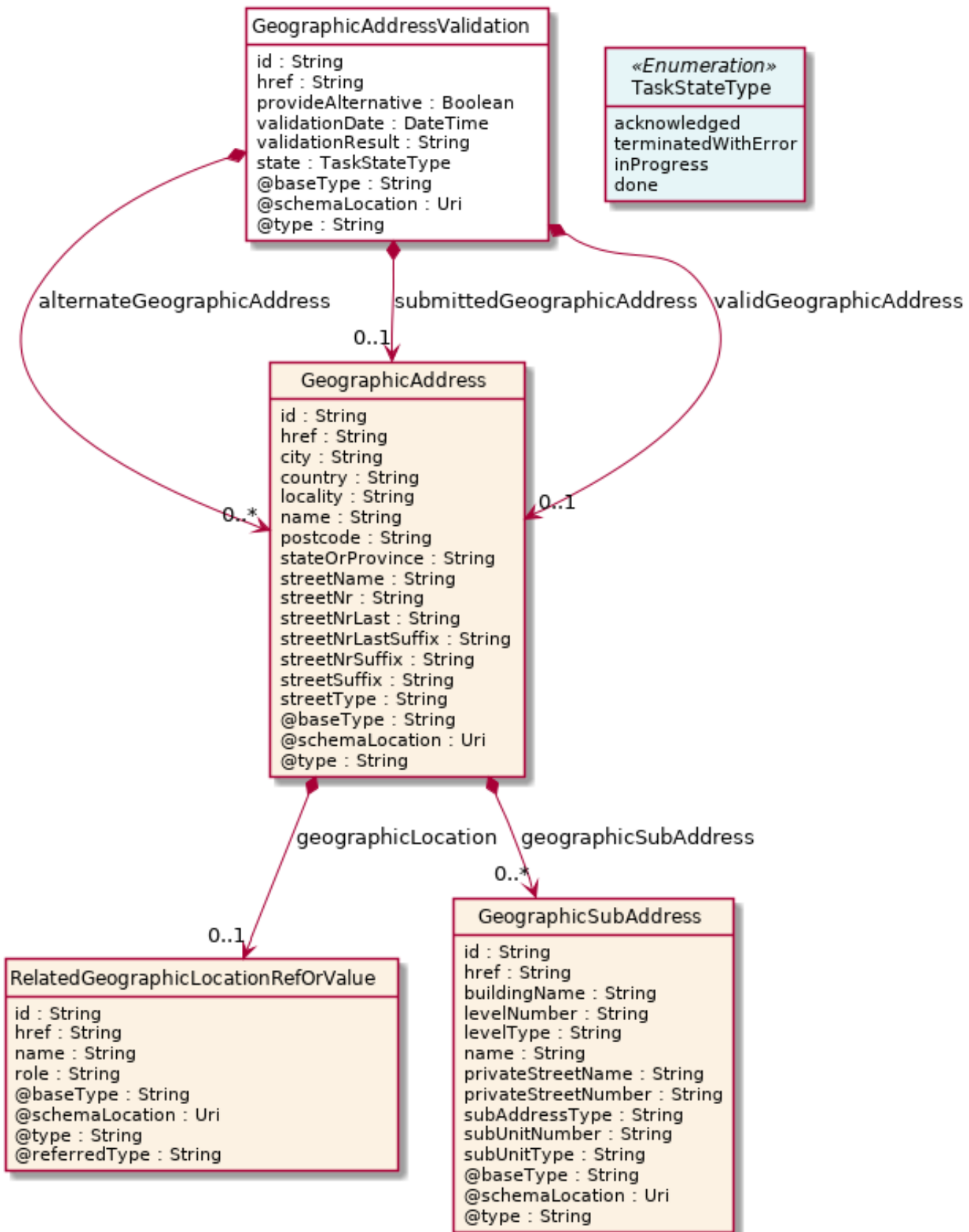
# RESOURCE MODEL

## Managed Entity and Task Resource Models

### Geographic Address Validation resource

This resource is used to manage address validation request and response.

#### Resource model



**Field descriptions**GeographicAddressValidation fields

alternateGeographicAddress	A list of geographic addresses (GeographicAddress [*]). Structured textual way of describing how to find a Property in an urban area (country properties are often defined differently). Note : Address corresponds to SID UrbanPropertyAddress.
href	A string. An URI used to access to the address validation resource.
id	A string. Unique identifier of the Address Validation.
provideAlternative	A boolean. Indicator provided by the requester to specify if alternate addresses must be provided in case of partial or fail result.
status	A string. Status of the address validation (InProgress, terminatedWithError, done).
validAddress	A geographic address (GeographicAddress). Structured textual way of describing how to find a Property in an urban area (country properties are often defined differently). Note : Address corresponds to SID UrbanPropertyAddress.
validationDate	A date time (DateTime). Date when the address validation is performed.
validationResult	A string. Result of the address validation (success, partial, fail).

GeographicAddress sub-resource

Structured textual way of describing how to find a Property in an urban area (country properties are often defined differently).

Note : Address corresponds to SID UrbanPropertyAddress.

href	A string. Unique reference of the place.
id	A string. Unique identifier of the place.
name	A string. A user-friendly name for the place, such as [Paris Store], [London Store], [Main Home].
city	A string. City that the address is in.
country	A string. Country that the address is in.
geographicLocation	A geographic location ref or value (GeographicLocationRefOrValue).
geographicSubAddress	A list of geographic sub addresses (GeographicSubAddress [*]). Representation of a GeographicSubAddress It is used for addressing within a property in an urban area (country properties are

often defined differently). It may refer to a building, a building cluster, or a floor of a multistory building.

locality	A string. An area of defined or undefined boundaries within a local authority or other legislatively defined area, usually rural or semi-rural in nature. [ANZLIC-STREET], or a suburb, a bounded locality within a city, town or shire principally of urban character [ANZLICSTREET].
postcode	A string. descriptor for a postal delivery area, used to speed and simplify the delivery of mail (also known as zipcode).
stateOrProvince	A string. the State or Province that the address is in.
streetName	A string. Name of the street or other street type.
streetNr	A string. Number identifying a specific property on a public street. It may be combined with streetNrLast for ranged addresses.
streetNrLast	A string. Last number in a range of street numbers allocated to a property.
streetNrLastSuffix	A string. Last street number suffix for a ranged address.
streetNrSuffix	A string. the first street number suffix.
streetSuffix	A string. A modifier denoting a relative direction.
streetType	A string. alley, avenue, boulevard, brae, crescent, drive, highway, lane, terrace, parade, place, tarn, way, wharf.

### GeographicSubAddress sub-resource

#### Representation of a GeographicSubAddress

It is used for addressing within a property in an urban area (country properties are often defined differently). It may refer to a building, a building cluster, or a floor of a multistory building.

buildingName	A string. allows for buildings that have well-known names.
href	A string. Link to the subAddress.
id	A string. Unique Identifier of the subAddress.
levelNumber	A string. used where a level type may be repeated e.g. BASEMENT 1, BASEMENT 2.
levelType	A string. describes level types within a building.
name	A string. Name of the subAddress to identify it with a meaningful identification.
privateStreetName	A string. private streets internal to a property (e.g. a university) may have internal names that are not recorded by the land title office.

privateStreetNumber	A string. private streets numbers internal to a private street.
subAddressType	A string. Type of subAddress : it can be a subunit or a private street.
subUnitNumber	A string. the discriminator used for the subunit often just a simple number e.g. FLAT 5, may also be a range.
subUnitType	A string. the type of subunit e.g.BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, WHARF.

### Json representation sample

We provide below the json representation of an example of a 'GeographicAddressValidation' resource object

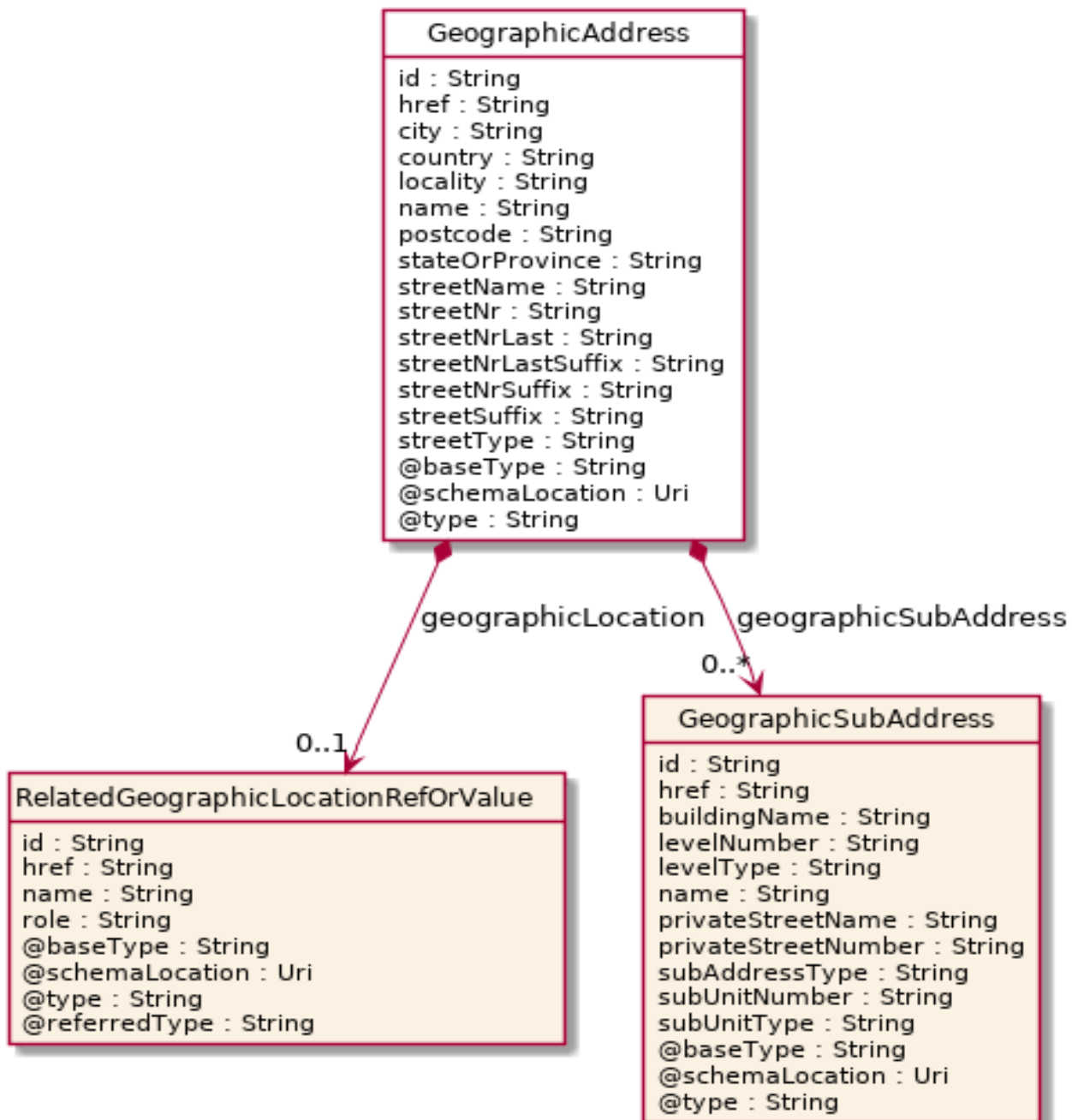
```
{
  "id": "1a2b3c",
  "href": "/tmf-api/geographicAddressManagement/v4/geographicAddressValidation/1a2b3c",
  "provideAlternative": "true",
  "status": "done",
  "validationDate": "2017-05-03T00:00",
  "validationResult": "partial",
  "submittedGeographicAddress": {
    "streetNr": "151",
    "streetName": "Landgrabenweg",
    "postcode": "53227",
    "postcodeExtension": "1",
    "city": "Bonn",
    "stateOrProvince": "NRW",
    "country": "Germany",
    "@type": "FieldedAddress",
    "@baseType": "GeographicAddress",
    "@schemaLocation": "http://github.com/MEF-GIT/FieldedAddress.json"
  },
  "alternateGeographicAddress": [
    {
      "id": "9912",
      "href": "/tmf-api/geographicAddressManagement/v4/geographicAddress/9912",
      "streetNr": "151",
      "streetNrSuffix": "Erstbau",
      "streetName": "Landgrabenweg",
      "streetType": "road",
      "streetSuffix": "",
      "postcode": "53227",
      "locality": "Beuel",
      "city": "Bonn",
      "stateOrProvince": "NRW",
      "country": "Germany",
      "geographicLocationRefOrValue": {
        "id": "9597",
        "href": "/tmf-api/geographicAddressManagement/v4/geographicLocation/9597"
      }
    }
  ]
}
```

### Geographic Address resource

Structured textual way of describing how to find a Property in an urban area (country properties are often defined differently).

Note : Address corresponds to SID UrbanPropertyAddress.

#### Resource model



**Field descriptions**GeographicAddress fields

href	A string. Unique reference of the place.
id	A string. Unique identifier of the place.
name	A string. A user-friendly name for the place, such as [Paris Store], [London Store], [Main Home].
city	A string. City that the address is in.
country	A string. Country that the address is in.
geographicLocation	A geographic location ref or value (GeographicLocationRefOrValue).
geographicSubAddress	A list of geographic sub addresses (GeographicSubAddress [*]). Representation of a GeographicSubAddress It is used for addressing within a property in an urban area (country properties are often defined differently). It may refer to a building, a building cluster, or a floor of a multistory building.
locality	A string. An area of defined or undefined boundaries within a local authority or other legislatively defined area, usually rural or semi-rural in nature. [ANZLIC-STREET], or a suburb, a bounded locality within a city, town or shire principally of urban character [ANZLICSTREET].
postcode	A string. descriptor for a postal delivery area, used to speed and simplify the delivery of mail (also known as zipcode).
stateOrProvince	A string. the State or Province that the address is in.
streetName	A string. Name of the street or other street type.
streetNr	A string. Number identifying a specific property on a public street. It may be combined with streetNrLast for ranged addresses.
streetNrLast	A string. Last number in a range of street numbers allocated to a property.
streetNrLastSuffix	A string. Last street number suffix for a ranged address.
streetNrSuffix	A string. the first street number suffix.
streetSuffix	A string. A modifier denoting a relative direction.
streetType	A string. alley, avenue, boulevard, brae, crescent, drive, highway, lane, terrace, parade, place, tarn, way, wharf.

GeographicSubAddress sub-resource

### Representation of a GeographicSubAddress

It is used for addressing within a property in an urban area (country properties are often defined differently). It may refer to a building, a building cluster, or a floor of a multistory building.

buildingName	A string. allows for buildings that have well-known names.
href	A string. Link to the subAddress.
id	A string. Unique Identifier of the subAddress.
levelNumber	A string. used where a level type may be repeated e.g. BASEMENT 1, BASEMENT 2.
levelType	A string. describes level types within a building.
name	A string. Name of the subAddress to identify it with a meaningful identification.
privateStreetName	A string. private streets internal to a property (e.g. a university) may have internal names that are not recorded by the land title office.
privateStreetNumber	A string. private streets numbers internal to a private street.
subAddressType	A string. Type of subAddress : it can be a subunit or a private street.
subUnitNumber	A string. the discriminator used for the subunit often just a simple number e.g. FLAT 5, may also be a range.
subUnitType	A string. the type of subunit e.g. BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, WHARF.

### Json representation sample

We provide below the json representation of an example of a 'GeographicAddress' resource object

```
{
  "id": "9090",
  "href": "/tmf-api/geographicAddressManagement/v4/geographicAddress/9090",
  "streetNr": "225",
  "streetNrSuffix": "B",
  "streetNrLast": "",
  "streetNrLastSuffix": "",
  "streetName": " Strathmore",
  "streetType": "Terrace",
  "streetSuffix": "",
  "postcode": "5004",
  "locality": "Brighton.",
  "city": "Brighton",
  "stateOrProvince": "SA",
  "country": "Australia",
  "@type": "GeographicAddress ",
  "geographicLocation": {
    "id": "abcdef",
    "href": "/tmf-api/geographicAddressManagement/v4/geographicLocation/abcdef",
```

```

    "name": "Nice Acropolis"
  },
  "geographicSubAddress": [
    {
      "id": "3833",
      "href": "/tmf-api/geographicAddressManagement/v4/geographicSubAddress/3833",
      "type": "SubUnit",
      "name": "Mimosas",
      "subUnitType": "flat",
      "subUnitNumber": "239",
      "levelType": "floor",
      "levelNumber": "3",
      "buildingName": "Catalysts",
      "privateStreetNumber": "",
      "privateStreetName": "",
      "@type": "GeographicSubAddress"
    },
    {
      "id": "3834",
      "href": "/tmf-api/geographicAddressManagement/v4/geographicSubAddress/3834",
      "type": "SubUnit",
      "name": "Heaven",
      "subUnitType": "flat",
      "subUnitNumber": "007",
      "levelType": "floor",
      "levelNumber": "3",
      "buildingName": "VIP area",
      "privateStreetNumber": "",
      "privateStreetName": "",
      "@type": "GeographicSubAddress"
    }
  ]
}

```

## Geographic Sub Address resource

Representation of a GeographicSubAddress

It is used for addressing within a property in an urban area (country properties are often defined differently). It may refer to a building, a building cluster, or a floor of a multistory building.

### Field descriptions

#### GeographicSubAddress fields

buildingName	A string. allows for buildings that have well-known names.
href	A string. Link to the subAddress.
id	A string. Unique Identifier of the subAddress.
levelNumber	A string. used where a level type may be repeated e.g. BASEMENT 1, BASEMENT 2.

levelType	A string. describes level types within a building.
name	A string. Name of the subAddress to identify it with a meaningful identification.
privateStreetName	A string. private streets internal to a property (e.g. a university) may have internal names that are not recorded by the land title office.
privateStreetNumber	A string. private streets numbers internal to a private street.
subAddressType	A string. Type of subAddress : it can be a subunit or a private street.
subUnitNumber	A string. the discriminator used for the subunit often just a simple number e.g. FLAT 5, may also be a range.
subUnitType	A string. the type of subunit e.g.BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, WHARF.

### Json representation sample

We provide below the json representation of an example of a 'GeographicSubAddress' resource object

```
{
  "buildingName": "a string ...",
  "href": "/tmf-api/geographicAddressManagement/v4/geographicAddress/1234/geographicSubAddress/9334",
  "id": "9334",
  "levelNumber": "a string ...",
  "levelType": "a string ...",
  "name": "a string ...",
  "privateStreetName": "a string ...",
  "privateStreetNumber": "a string ...",
  "subAddressType": "a string ...",
  "subUnitNumber": "a string ...",
  "subUnitType": "a string ..."
}
```

## Notification Resource Models

1 notifications are defined for this API

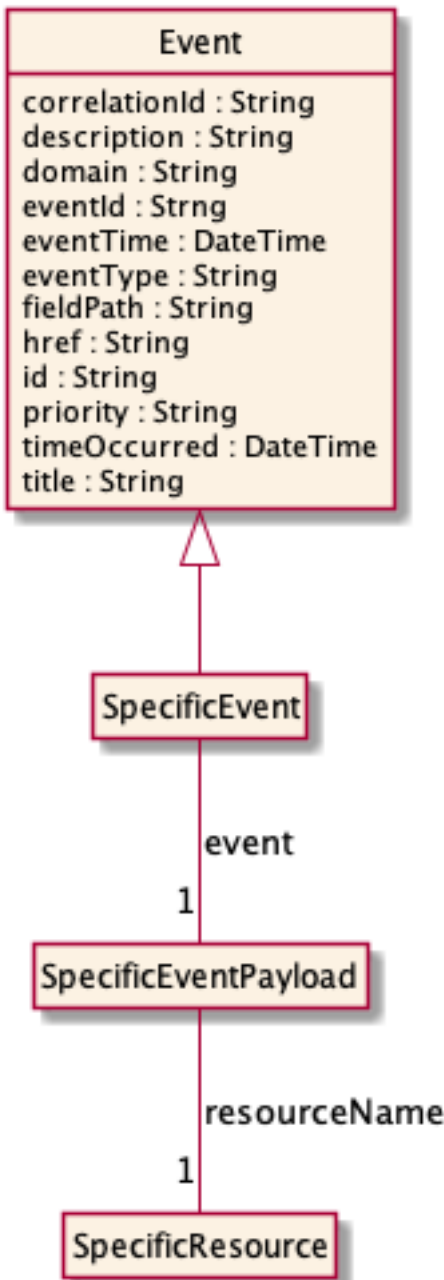
Notifications related to GeographicAddressValidation:

- GeographicAddressValidationStateChangeEvent

The notification structure for all notifications in this API follow the pattern depicted by the figure below.

A notification event resource (depicted by "SpecificEvent" placeholder) is a sub class of a generic Event structure containing at least an id of the event occurrence (eventId), an event timestamp (eventTime), and the name of the resource (eventType).

This notification structure owns an event payload structure ("SpecificEventPayload" placeholder) linked to the resource concerned by the notification using the resource name as access field ("resourceName" placeholder).



### Geographic Address Validation State Change Event

Notification GeographicAddressValidationStateChangeEvent case for resource GeographicAddressValidation

#### Json representation sample

We provide below the json representation of an example of a 'GeographicAddressValidationStateChangeEvent' notification event object

```

{
  "eventId": "00001",
  "eventTime": "2015-11-16T16:42:25-04:00",

```

```
"eventType":"GeographicAddressValidationStateChangeEvent",
"event": {
  "geographicAddressValidation" :
    {-- SEE GeographicAddressValidation RESOURCE SAMPLE --}
}
}
```

## API OPERATIONS

Remember the following Uniform Contract:

Operation on Entities	Uniform API Operation	Description
Query Entities	GET Resource	GET must be used to retrieve a representation of a resource.
Create Entity	POST Resource	POST must be used to create a new resource
Partial Update of an Entity	PATCH Resource	PATCH must be used to partially update a resource
Complete Update of an Entity	PUT Resource	PUT must be used to completely update a resource identified by its resource URI
Remove an Entity	DELETE Resource	DELETE must be used to remove a resource
Execute an Action on an Entity	POST on TASK Resource	POST must be used to execute Task Resources
Other Request Methods	POST on TASK Resource	GET and POST must not be used to tunnel other request methods.

Filtering and attribute selection rules are described in the TMF REST Design Guidelines.

Notifications are also described in a subsequent section.

## Operations on Geographic Address Validation

### List geographic address validations

**GET** /geographicAddressValidation?fields=...&{filtering}

#### Description

This operation list geographic address validation entities.

Attribute selection is enabled for all first level attributes.

Filtering may be available depending on the compliance level supported by an implementation.

#### Usage Samples

Here's an example of a request for retrieving GeographicAddressValidation resources.

<b>Request</b>
GET /tmf-api/geographicAddressManagement/v4/geographicAddressValidation Accept: application/json
<b>Response</b>
200  [ { "id": "1a2b3c", "href": "/tmf-api/geographicAddressManagement/v4/geographicAddressValidation/1a2b3c", "provideAlternative": "true", "status": "done", "validationDate": "2017-05-03T00:00", "validationResult": "partial", "submittedGeographicAddress": { "streetNr": "151", "streetName": "Landgrabenweg", "postcode": "53227", "postcodeExtension": "1", "city": "Bonn", "stateOrProvince": "NRW", "country": "Germany", "@type": "FieldedAddress", "@baseTtype": "GeographicAddress", "@schemaLocation": "http://github.com/MEF-GIT/FieldedAddress.json" }, "alternateGeographicAddress": [ {

```

    "id": "9912",
    "streetNr": "151",
    "streetNrSuffix": "Erstbau",
    "streetName": "Landgrabenweg",
    "streetType": "road",
    "streetSuffix": "",
    "postcode": "53227",
    "locality": "Beuel",
    "city": "Bonn",
    "stateOrProvince": "NRW",
    "country": "Germany",
    "geographicLocationRefOrValue": {
      "id": "9597"
    }
  }
]

```

## Retrieve geographic address validation

**GET**

**/geographicAddressValidation/{id}?fields=...&{filtering}**

### Description

This operation retrieves a geographic address validation entity.

Attribute selection is enabled for all first level attributes.

Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

### Usage Samples

Here's an example of a request for retrieving a GeographicAddressValidation resource.

<b>Request</b>
GET /tmf-api/geographicAddressManagement/v4/geographicAddressValidation/1a2b3c Accept: application/json
<b>Response</b>
200  { "id": "1a2b3c", "provideAlternative": "true",

```

"status": "done",
"validationDate": "2017-05-03T00:00",
"validationResult": "partial",
"submittedGeographicAddress": {
  "streetNr": "151",
  "streetName": "Landgrabenweg",
  "postcode": "53227",
  "postcodeExtension": "1",
  "city": "Bonn",
  "stateOrProvince": "NRW",
  "country": "Germany",
  "@type": "FieldedAddress",
  "@baseType": "GeographicAddress",
  "@schemaLocation": "http://github.com/MEF-GIT/FieldedAddress.json"
},
"alternateGeographicAddress": [
  {
    "id": "9912",
    "streetNr": "151",
    "streetNrSuffix": "Erstbau",
    "streetName": "Landgrabenweg",
    "streetType": "road",
    "streetSuffix": "",
    "postcode": "53227",
    "locality": "Beuel",
    "city": "Bonn",
    "stateOrProvince": "NRW",
    "country": "Germany",
    "geographicLocationRefOrValue": {
      "id": "9597"
    }
  }
]
}

```

## Create geographic address validation

### POST /geographicAddressValidation

#### Description

This operation creates a geographic address validation entity.

#### Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a GeographicAddressValidation, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
submittedGeographicAddress	
provideAlternative	

Non Mandatory Attributes	Rule
alternateGeographicAddress	
status	
validAddress	
validationDate	
validationResult	

### Usage Samples

Here's an example of a request for creating a GeographicAddressValidation resource. In this example the request only passes mandatory attributes.

Request
POST /tmf-api/geographicAddressManagement/v4/geographicAddressValidation Content-Type: application/json  <pre>{   "provideAlternative": "true",   "submittedGeographicAddress": {     "streetNr": "151",     "streetName": "Landgrabenweg",     "postcode": "53227",     "city": "Bonn",     "stateOrProvince": "NRW",     "country": "Germany",     "@type": "GeographicAddress"   } }</pre>
Response
201  <pre>{   "id": "1a2b3c",   "href": "https://host:port/location/geographicAddressValidation/1a2b3c",   "provideAlternative": "true",   "submittedGeographicAddress": {     "streetNr": "151",     "streetName": "Landgrabenweg",</pre>

```

"postcode": "53227",
"postcodeExtension": "1",
"city": "Bonn",
"stateOrProvince": "NRW",
"country": "Germany",
"@type": "FieldedAddress",
"@baseType": "GeographicAddress",
"@schemaLocation": "http://github.com/MEF-GIT/FieldedAddress.json"
}
}

```

## Patch geographic address validation

### PATCH /geographicAddressValidation/{id}

#### Description

This operation allows partial updates of a geographic address validation entity. Support of json/merge (<https://tools.ietf.org/html/rfc7386>) is mandatory, support of json/patch (<http://tools.ietf.org/html/rfc5789>) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

#### Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
alternateGeographicAddress	
provideAlternative	
status	
validAddress	
validationDate	
validationResult	

Non Patchable Attributes	Rule
id	
href	

#### Usage Samples

Here's an example of a request for patching a GeographicAddressValidation resource.

**Request**

PATCH /tmf-api/geographicAddressManagement/v4/geographicAddressValidation/1a2b3c  
 Content-Type: application/merge-patch+json

```
{
  "name": "new name"
}
```

**Response**

200

```
{
  "id": "1a2b3c",
  "href": "/tmf-api/geographicAddressManagement/v4/geographicAddressValidation/1a2b3c",
  "provideAlternative": "true",
  "status": "done",
  "validationDate": "2017-05-03T00:00",
  "validationResult": "partial",
  "submittedGeographicAddress": {
    "streetNr": "151",
    "streetName": "Landgrabenweg",
    "postcode": "53227",
    "postcodeExtension": "1",
    "city": "Bonn",
    "stateOrProvince": "NRW",
    "country": "Germany",
    "@type": "FieldedAddress",
    "@baseType": "GeographicAddress",
    "@schemaLocation": "http://github.com/MEF-GIT/FieldedAddress.json"
  },
  "alternateGeographicAddress": [
    {
      "id": "9912",
      "href": "https://host:port/location/geographicAddress/9912",
      "streetNr": "151",
      "streetNrSuffix": "Erstbau",
      "streetName": "Landgrabenweg",
      "streetType": "road",
      "streetSuffix": "",
      "postcode": "53227",
      "locality": "Beuel",
      "city": "Bonn",
      "stateOrProvince": "NRW",
      "country": "Germany",
      "geographicLocationRefOrValue": {
        "id": "9597",
        "href": "/tmf-api/geographicAddressManagement/v4/geographicLocation/9597"
      }
    }
  ]
}
```

```

  },
  "name": "new name"
}

```

## Operations on Geographic Address

### List geographic addresses

**GET** /geographicAddress?fields=...&{filtering}

#### Description

This operation list geographic address entities.

Attribute selection is enabled for all first level attributes.

Filtering may be available depending on the compliance level supported by an implementation.

#### Usage Samples

Here's an example of a request for retrieving GeographicAddress resources.

<b>Request</b>
GET /tmf-api/geographicAddressManagement/v4/geographicAddress Accept: application/json
<b>Response</b>
200  [ { "id": "9090", "href": "/tmf-api/geographicAddressManagement/v4/geographicAddress/9090", "streetNr": "225", "streetNrSuffix": "B", "streetNrLast": "", "streetNrLastSuffix": "", "streetName": " Strathmore", "streetType": "Terrace", "streetSuffix": "", "postcode": "5004", "locality": "Brighton.", "city": "Brighton", "stateOrProvince": "SA", "country": "Australia", "@type": "GeographicAddress ", "geographicLocation": { "id": "abcdef",

```

    "href": "/tmf-api/geographicAddressManagement/v4/geographicLocation/abcdef",
    "name": "Nice Acropolis"
  },
  "geographicSubAddress": [
    {
      "id": "3833",
      "href": "/tmf-api/geographicAddressManagement/v4/geographicSubAddress/3833",
      "type": "SubUnit",
      "name": "Mimosas",
      "subUnitType": "flat",
      "subUnitNumber": "239",
      "levelType": "floor",
      "levelNumber": "3",
      "buildingName": "Catalysts",
      "privateStreetNumber": "",
      "privateStreetName": "",
      "@type": "GeographicSubAddress"
    },
    {
      "id": "3834",
      "href": "/tmf-api/geographicAddressManagement/v4/geographicSubAddress/3834",
      "type": "SubUnit",
      "name": "Heaven",
      "subUnitType": "flat",
      "subUnitNumber": "007",
      "levelType": "floor",
      "levelNumber": "3",
      "buildingName": "VIP area",
      "privateStreetNumber": "",
      "privateStreetName": "",
      "@type": "GeographicSubAddress"
    }
  ]
}
]

```

## Retrieve geographic address

**GET** /geographicAddress/{id}?fields=...&{filtering}

### Description

This operation retrieves a geographic address entity.

Attribute selection is enabled for all first level attributes.

Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

### Usage Samples

Here's an example of a request for retrieving a GeographicAddress resource.

**Request**

GET /tmf-api/geographicAddressManagement/v4/geographicAddress/9090  
 Accept: application/json

**Response**

200

```
{
  "id": "9090",
  "href": "/tmf-api/geographicAddressManagement/v4/geographicAddress/9090",
  "streetNr": "225",
  "streetNrSuffix": "B",
  "streetNrLast": "",
  "streetNrLastSuffix": "",
  "streetName": " Strathmore",
  "streetType": "Terrace",
  "streetSuffix": "",
  "postcode": "5004",
  "locality": "Brighton.",
  "city": "Brighton",
  "stateOrProvince": "SA",
  "country": "Australia",
  "@type": "GeographicAddress ",
  "geographicLocation": {
    "id": "abcdef",
    "href": ""/tmf-api/geographicAddressManagement/v4/geographicLocation/abcdef",
    "name": "Nice Acropolis"
  },
  "geographicSubAddress": [
    {
      "id": "3833",
      "href": "/tmf-api/geographicAddressManagement/v4/geographicSubAddress/3833",
      "type": "SubUnit",
      "name": "Mimosas",
      "subUnitType": "flat",
      "subUnitNumber": "239",
      "levelType": "floor",
      "levelNumber": "3",
      "buildingName": "Catalysts",
      "privateStreetNumber": "",
      "privateStreetName": "",
      "@type": "GeographicSubAddress"
    },
    {
      "id": "3834",
      "href": "/tmf-api/geographicAddressManagement/v4/geographicSubAddress/3834",
      "type": "SubUnit",
      "name": "Heaven",
      "subUnitType": "flat",
```

```

    "subUnitNumber": "007",
    "levelType": "floor",
    "levelNumber": "3",
    "buildingName": "VIP area",
    "privateStreetNumber": "",
    "privateStreetName": "",
    "@type": "GeographicSubAddress"
  }
]
}

```

## Operations on Geographic Sub Address

### List geographic sub addresses

#### GET

**geographicAddress/{geographicAddressId}/geographicSubAddress?  
fields=...&{filtering}**

#### Description

This operation list geographic sub address entities.

Attribute selection is enabled for all first level attributes.

Filtering may be available depending on the compliance level supported by an implementation.

#### Usage Samples

Here's an example of a request for retrieving GeographicSubAddress resources.

<b>Request</b>
GET /tmf-api/geographicAddressManagement/v4/geographicAddress/1245/geographicSubAddress Accept: application/json
<b>Response</b>
200  [ { "buildingName": "a string ...", "href": "/tmf-api/geographicAddressManagement/v4/geographicAddress/1245/geographicSubAddress/9334", "id": "9334", "levelNumber": "a string ...", "levelType": "a string ...",

```

"name": "a string ...",
"privateStreetName": "a string ...",
"privateStreetNumber": "a string ...",
"subAddressType": "a string ...",
"subUnitNumber": "a string ...",
"subUnitType": "a string ..."
}
]

```

## Retrieve geographic sub address

### GET

`geographicAddress/{geographicAddressId}/geographicSubAddress/{id}?fields=...&{filtering}`

### Description

This operation retrieves a geographic sub address entity.

Attribute selection is enabled for all first level attributes.

Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

### Usage Samples

Here's an example of a request for retrieving a GeographicSubAddress resource.

<b>Request</b>
GET /tmf-api/geographicAddressManagement/v4/geographicAddress/12345/geographicSubAddress/9334 Accept: application/json
<b>Response</b>
200  { "buildingName": "a string ...", "href": "/tmf-api/geographicAddressManagement/v4/geographicAddress/12345/geographicSubAddress/9334", "id": "9334", "levelNumber": "a string ...", "levelType": "a string ...", "name": "a string ...", "privateStreetName": "a string ...", "privateStreetNumber": "a string ...", "subAddressType": "a string ...", "subUnitNumber": "a string ...",

```
"subUnitType": "a string ..."  
}
```

## API NOTIFICATIONS

For every single of operation on the entities use the following templates and provide sample REST notification POST calls.

It is assumed that the Pub/Sub uses the Register and UnRegister mechanisms described in the REST Guidelines reproduced below.

### Register listener

#### POST /hub

#### Description

Sets the communication endpoint address the service instance must use to deliver information about its health state, execution state, failures and metrics. Subsequent POST calls will be rejected by the service if it does not support multiple listeners. In this case DELETE /api/hub/{id} must be called before an endpoint can be created again.

#### Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 409 if request is not successful.

#### Usage Samples

Here's an example of a request for registering a listener.

<b>Request</b>
<pre>POST /api/hub Accept: application/json  {"callback": "http://in.listener.com"}</pre>
<b>Response</b>
<pre>201 Content-Type: application/json Location: /api/hub/42  {"id": "42", "callback": "http://in.listener.com", "query": null}</pre>

## Unregister listener

**DELETE** /hub/{id}

### Description

Clears the communication endpoint address that was set by creating the Hub.

### Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 404 if the resource is not found.

### Usage Samples

Here's an example of a request for un-registering a listener.

<b>Request</b>
DELETE /api/hub/42 Accept: application/json
<b>Response</b>
204

## Publish Event to listener

**POST** /client/listener

### Description

Clears the communication endpoint address that was set by creating the Hub.

Provides to a registered listener the description of the event that was raised. The /client/listener url is the callback url passed when registering the listener.

### Behavior

Returns HTTP/1.1 status code 201 if the service is able to set the configuration.

### Usage Samples

Here's an example of a notification received by the listener. In this example "EVENT TYPE" should be replaced by one of the notification types supported by this API (see Notification resources Models section) and EVENT BODY refers to the data structure of the given notification type.

<b>Request</b>
POST /client/listener Accept: application/json  { "event": { EVENT BODY }, "eventType": "EVENT_TYPE" }
<b>Response</b>
201

For detailed examples on the general TM Forum notification mechanism, see the TMF REST Design Guidelines.

## Acknowledgements

### Version History

Release Number	Date	Release led by:	Description
1.0	04/15/2017	Pierre Gauthier TM Forum <a href="mailto:pgauthier@tmforum.org">pgauthier@tmforum.org</a>  Mariano Belaunde Orange Labs	First Release of the Document.
2.0	11/06/2018	Mariano Belaunde Orange Labs	Alignment with Guidelines 3.0
4.0.0	28-May-2020	Pierre Gauthier TM Forum <a href="mailto:pgauthier@tmforum.org">pgauthier@tmforum.org</a>  Mariano Belaunde Orange Labs	Version 4.0 of the API REST

### Release History

Release Number	Date	Release led by:	Description
Pre-production	28-May-2020	Pierre Gauthier TM Forum  Mariano Belaunde Orange Labs	Version 4.0 of the API REST
Production	20-Jul-2020	Adrienne Walcott	Updated to reflect TM Forum Approved Status

### Contributors to Document

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