

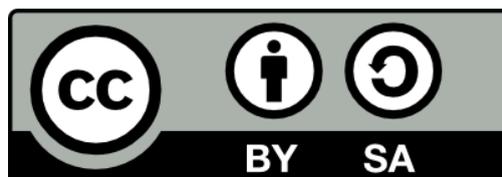


# AlpineBits®

## DestinationData 2020-04

AlpineBits® is an interface specification for exchanging data in tourism sector, specially tailored for alpine tourism.

AlpineBits® DestinationData specifies a REST API for exchanging destination data based on the AlpineBits® DestinationData Ontology. The API is build upon JSON:API v1.0 designed to support the client-server communication model, with a focus on system-to-system communication.



©AlpineBits Alliance. This document is licensed under the Creative Commons Attribution-ShareAlike 3.0 Unported Licence.

Permissions beyond the scope of the license may be available at [www.alpinebits.org](http://www.alpinebits.org).

# Table of Contents

<b>1. Introduction</b>	<b>3</b>
1.1. Conventions and Definitions	3
<b>2. The AlpineBits® DestinationData Ontology</b>	<b>4</b>
2.1. Modeling Language: OntoUML	4
2.2. Ontology Description	5
2.2.1. Agent	6
2.2.2. Media Object	7
2.2.3. Place	8
2.2.4. Event, Event Series and Venue	8
2.2.5. Mountain Areas	10
2.2.6. Trails, Snowparks, and Lifts	11
2.2.7. Snow Measurement	11
<b>3. API Architecture</b>	<b>13</b>
3.1. Server Responsibilities	13
3.2. Request Messages	13
3.2.1. Message Headers	13
3.2.2. Message Body	13
3.3. Response Messages	14
3.3.1. Success Messages	14
3.3.2. Error Messages	16
3.3.3. Error Status Codes	17
3.4. API Features	18
3.4.1. Hypermedia Controls	18
3.4.2. Pagination	18
3.4.3. Sparse Fieldsets	20
3.4.4. Inclusion of Related Resources	20
3.5. Endpoints	21
3.5.1. Base Endpoint	21
3.5.2. Version Endpoints	21
3.5.3. Resource Endpoints	22
<b>4. Datatypes</b>	<b>24</b>
4.1. address	24
4.2. contact point	25
4.3. date	27
4.4. date-time	28
4.5. email	28
4.6. geometry	28
4.6.1. point	28
4.6.2. multi-point	28
4.6.3. line-string	29
4.6.4. multi-line-string	29
4.6.5. polygon	30
4.6.6. multi-polygon	31
4.7. hours specification	32
4.8. snow condition	35

4.9. text	36
4.10. time	37
4.11. category string	37
4.12. url	37
<b>5. Resources</b>	<b>38</b>
5.1. Basic resource schema	38
5.1.1. Basic Fields	38
5.1.2. Meta Object	39
5.1.3. Attributes Object	39
5.1.4. Relationships Object	40
5.1.5. Links Object	43
5.2. Resource schemas	43
5.2.1. Agents	43
5.2.2. Events	48
5.2.3. Event Series	54
5.2.4. Lifts	58
5.2.5. Media Objects	64
5.2.6. Mountain Areas	68
5.2.7. Snowparks	76
5.2.8. Trails	82
5.2.9. Venues	88
<b>Appendix A: AlpineBits® DestinationData developer resources</b>	<b>92</b>

# Disclaimer

This specification is distributed in the hope that it will be useful but WITHOUT ANY WARRANTY.

If you find errors or have proposals for enhancements, do not hesitate to contact us by creating an issue on the public GitLab repository: <https://gitlab.com/alpinebits/destinationdata/standard-specification>.

## About the AlpineBits Alliance

The "AlpineBits Alliance" is a group of SME operating in the touristic sector working together to innovate and open the data exchange in the alpine tourism, and therefore to optimize the online presence, sales and marketing efforts of the hotels, other accommodations and destinations in the alpine territory and also worldwide.

### AlpineBits Alliance

Via Bolzano 63/A

39057 Frangarto / Appiano s.s.d.v. (BZ) - ITALY

VAT Reg No: IT02797280217

<https://www.alpinebits.org>

[info@alpinebits.org](mailto:info@alpinebits.org)

## AlpineBits Alliance Members

ADDITIVE OHG - <https://www.additive.eu>

Altea Software Srl - <http://www.altea.it>

aries.creative KG - <http://www.ariescreative.com>

ASA OHG - <http://www.asaon.com>

Brandnamic GmbH - <http://www.brandnamic.com>

Consisto Arl - <https://www.consisto.it>

Destination Srl - <http://www.destinationsrl.it>

GardenaNet snc - <http://www.gardena.net>

Giggle GmbH - <https://giggle.tips>

HGV - <http://www.hgv.it>

IDM Südtirol - Alto Adige - <http://www.idm-suedtirol.com>

Internet Consulting GmbH - <https://www.internet-consulting.it>

Internet Service GmbH - <http://www.internetservice.it>

LTS - <http://www.lts.it>

Marketing Factory GmbH - <http://www.marketingfactory.it>

MM-One Group Srl - <http://www.mm-one.com>

NOI Techpark - <https://noi.bz.it>

Outdooractive GmbH - <https://corporate.outdooractive.com>

PCS Hotelsoftware GmbH - <http://www.pcs-phoenix.com>

Peer GmbH - <http://www.peer.biz>

Rateboard GmbH - <http://www.rateboard.io>

Schneemenschen GmbH - <http://www.schneemenschen.de>

SiMedia GmbH - <http://www.simedia.com>

Südtiroler Bauernbund - [www.sbb.it](http://www.sbb.it)

XLbit snc - <http://www.xlbit.com>

Yanovis - <http://www.yanovis.com>

### Authors of this document:

AlpineBits® DestinationData repository contributors - <https://gitlab.com/alpinebits/destinationdata/standard-specification>

This document has been produced in collaboration with the Conceptual and Cognitive Modelling Research Group (CORE) of the Free University of Bozen-Bolzano.

# Document Change Log

Important note: make sure to have the latest version of this document! The latest version is available at <https://www.alpinebits.org>.

Protocol version	Doc. release date	Description
2020-04	2020-04-30	First release published.

# 1. Introduction

This document describes a standard for exchanging data in the tourism domain, called **AlpineBits® DestinationData**.

**AlpineBits® DestinationData** is built upon:

- an [OntoUML](#) ontology that describes the conceptualization and scope of the standard;
- the [RESTfull architectural style](#);
- the [JSON:API v1.0](#) specification for REST APIs that exchange JSON data through HTTP messages;
- [HTTPS](#) and [basic authentication](#) protocols for secure communication
- the [JSON Schema](#) standard - [draft 7](#) for validation of message in the **AlpineBits® DestinationData** standard
- the [GeoJSON](#) standard for modeling JSON geospatial data
- [Schema.org](#) structured data for inspiration on the design of resource types

The **AlpineBits® DestinationData** standard is intended for the exchange of touristic information between systems acting as clients and servers, where clients consume the data provided by the servers.

The **AlpineBits® DestinationData** standard includes the definition of:

- specific server endpoints
- resource types
- support to GET requests
- request and response headers and parameters
- additional request features (e.g., pagination and hypermedia controls)

At the current version of the standard, the scope of **AlpineBits® DestinationData** covers exchanging data about events, event series, event venues, mountain areas, lifts, trails, snowparks, agents, and media objects.

## 1.1. Conventions and Definitions

The keywords “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC 2119](#).

Additionally, the following terminology is consistently used throughout this document:

- **CLIENT**: the client system consuming data provided by a server
- **SERVER**: the server system provides data to client systems and implements the **AlpineBits® DestinationData**
- **Resource Type**: a type that describes the attributes and relations of a set of resources
- **Resource**: an identified object that conforms to a resource type
- **Endpoint**: the trailing part of a URL that provides access to HTTP requests on an API

## 2. The AlpineBits® DestinationData Ontology

The **AlpineBits® DestinationData Ontology** formalizes the worldview shared by AlpineBits members over concepts from the tourism domain. It is meant to support semantic interoperability between members through a technology-agnostic conceptual model.

The ontology consistently documents the members' agreement at the conceptual level and drives the development of the **AlpineBits® DestinationData**, while the API specification documents their agreement at the technological level (see chapters 3, 4, and 5).

A user of the **AlpineBits® DestinationData** may use this ontology as a reference to interpret the real-world semantics of the data she will consume from a SERVER, thus avoiding interoperability issues.

### 2.1. Modeling Language: OntoUML

The **AlpineBits® DestinationData Ontology** is designed using the [OntoUML](#), an ontologically well-founded extension of the [UML Class Diagram](#) that can be used to represent a domain of interest from a computationally independent perspective.

OntoUML consists of a set of stereotypes applicable to classes, associations, and attributes, with precisely defined formal semantics derived from the [Unified Foundational Ontology \(UFO\)](#), an axiomatic formal theory based on theories from analytic metaphysics, philosophical logic, cognitive psychology, and linguistics.

An important meta-property of an OntoUML class stereotype is dubbed **rigidity**.

- A *rigid class* statically classifies its instances, i.e., an instance of a rigid class must instantiate it throughout its whole existence. Examples include `Person`, `Animal`, `Organization`, `Contract`, and `Marriage`.
- An *anti-rigid class* dynamically classifies its instances, i.e., an instance of an anti-rigid class at a given point in time may cease to be so later on. Examples include `Teenager`, `Adult`, `Student`, and `Spouse`.

Another fundamental meta-property for classes is **sortality**.

- a *sortal class* is one whose instances share a common identity principle, where the sortal class must either provide this principle or inherit it from a superclass. Examples of classes that provide identity principles include `Person`, `House`, and `Car`, and those that inherit such principles include `Student`, `Man`, `Adult`, `Town House`, and `Sports Car`.
- a *non-sortal class* is one whose set of instances includes entities complying with different identity principles. Examples include `Agent`, which classifies instances of sortal classes `Person` and `Organization`, and `Physical Object`, which classifies instances of sortal classes `Car` and `House` (among others).

The OntoUML class stereotypes used in the **AlpineBits® DestinationData Ontology** are:

- «`kind`»: a rigid sortal (identity provider) class that classifies object-like entities. Examples of typical kinds include `Person`, `Organization`, `Car`, and `House`.
- «`relator`»: a rigid sortal (identity provider) class that classifies relational entities, also known as relationships. Examples include `Marriage`, which relates two instances of `Spouse`; `Contract`, which relates instances of `Party` in the context of formal agreements; and `Enrollment`, which relates an instance of `Student` to an instance of `Educational Institution`.
- «`quality`»: a rigid sortal (identity provider) class that classifies entities that represent aspects of other entities and are measurable in some value space (i.e., conceptual space). A quality may be used to compare individuals, on the basis of the value it takes in a certain quality space (for example, a mass in the kilogram scale, or a position within the RGB spectrum). Examples include `Weight` (as in the weight of a person), `Name` (as in the name of an organization), `Color` (as in the color of a car), and `Duration` (as in the duration of a concert).

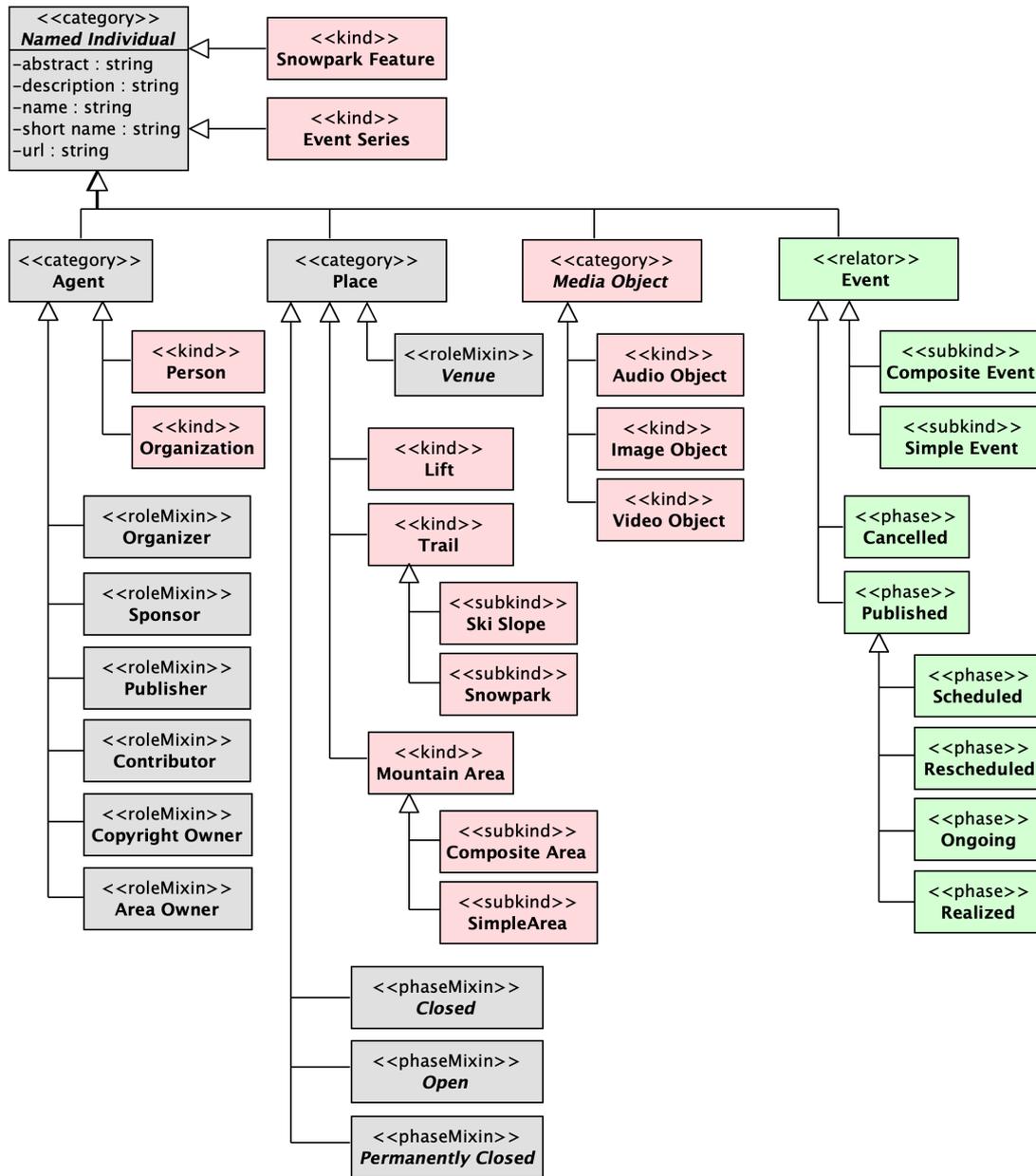
- «subkind»: a rigid sortal class that inherits its identity from another sortal. Examples of subkinds include For-Profit Organization, Fiat 500, and Civil Marriage.
- «role»: an anti-rigid sortal class whose instantiation depends on a relational condition. Examples include Student, Artist, and Legally Recognized Marriage.
- «phase»: an anti-rigid sortal class whose instantiation depends on a change in an intrinsic property. For example, Child may be a subclass of Person whose instances are people up to 12 years old.
- «category»: a rigid non-sortal class that classifies entities of different sorts. Examples include Agent, which classifies instances of both Person and Organization; and Animal, which classifies instances of different species of animals, including Felis Catus (domestic cat), Canis Lupus Familiaris (dog), and Panthera Leo (lion).
- «roleMixin»: an anti-rigid non-sortal class that classifies roles playable by individuals of different sorts. Examples include Organizer, as the agent that organizes some event, and Copyright Owner, as the agent that holds the right to some intellectual property.
- «type»: a rigid class that classifies entities that have instances themselves (i.e., other classes). Examples include Car Model, whose instances may include Fiat 500 and Tesla Model S; and Event Type, whose instances may include Musical Event and Sports Event.
- «datatype»: a class that classifies values contained in a well-defined conceptual space, e.g., integer and real numbers (in their respective sets), Mass in Kilograms, and RGB Color.
- «enumeration»: a class that classifies values within a discrete finite conceptual space. Examples include Day of Week, whose possible instances are the 7 days of the week; and Driver License Category, whose possible instances are A, B, C, D, and E.

The OntoUML association stereotypes used in the **AlpineBits® DestinationData Ontology** are:

- «mediation»: an existential dependence relation that connects relators to the entities they bind. For example, instances of the relator Marriage mediate instances of the class Spouse; instances of the relator Contract mediate instances of the class Contract Party.
- «characterization»: an existential dependence relation that connects an aspect (e.g., a quality) to the entity it characterizes. For example, instances of the class Color characterize instances of the class Physical Object.
- «material»: a relation that connects entities based on something dependent on these entities. For example, instances of the association "married with" connect instances of the class Spouse that have a marriage relationship dependent on them.
- «componentOf»: a part-whole relation that connects objects with their functional components. Examples include the composition relation between an instance of Car and the instance of Engine installed on it; the relation between an instance of Human Body and an instance of Heart.
- «historicalDependence»: a relation that binds entities because of an event that happened in the past. For example, an instance of Place may be related through a historical dependence to an instance of Image Object that is a representation of that place at a point in time.
- «instantiation»: a relation between two classes representing that instances of one may be classified by instances of the other. For example, the relation between Car and Car Model, which represents that every car is an instance of a car model.

## 2.2. Ontology Description

The figure below depicts the taxonomy of individuals defined by the **AlpineBits® DestinationData Ontology**:



All classes of individuals in the **AlpineBits® DestinationData Ontology** specialize **Named Individual**. **Named Individual** has the following properties: `abstract`, a short description of the individual; `description`, a description of the individual more thorough than an abstract; `name`, the name of the individual; `short name`, the short version of the name of the individual (e.g., an abbreviation); `url`, a link that leads to additional information regarding the individual.

The additional classes of individuals in the figure above are described in the following sections.

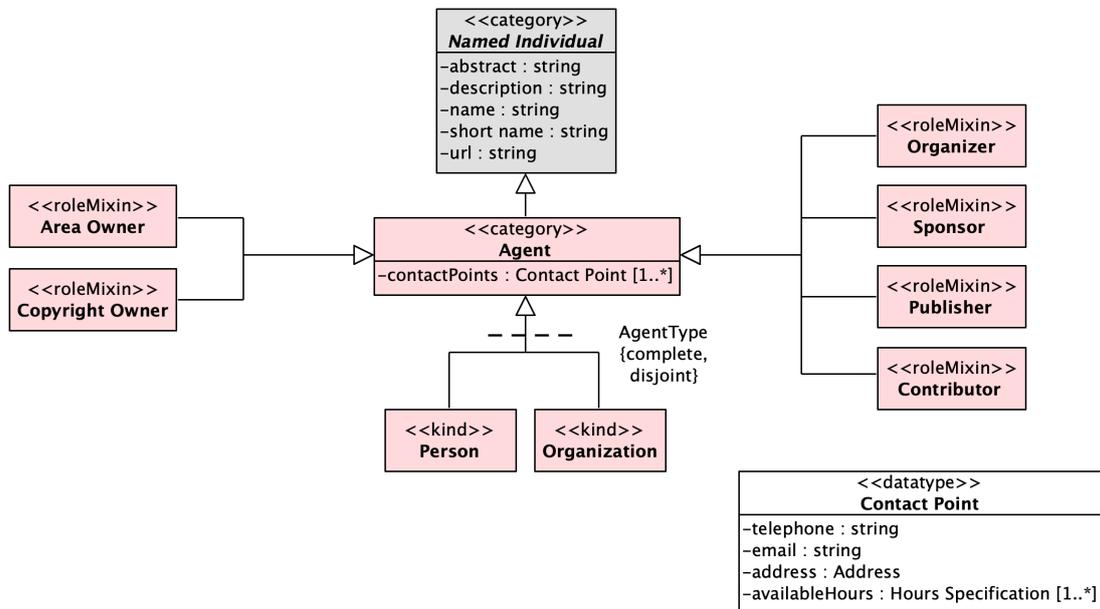
### 2.2.1. Agent

An individual who bears mental attitudes and is capable of performing actions and perceiving events.

An **Agent** is either a **Person**, such as Albert Einstein, Marie Curie, Lionel Messi, and Serena Williams, or an **Organization**, such as Apple, Facebook, the AlpineBits Alliance, and the Free University of Bozen-Bolzano.

An **Agent** can play several roles within the touristic domain, namely the **Organizer**, **Sponsor**, **Publisher**, or **Contributor** of an event, the **Copyright Owner** of a media object, and the **Area Owner** of a mountain area.

A fragment of the ontology depicting **Agent** and its properties is presented below:



In addition to the attributes inherited from `Named Individual`, Agents have a property named `contactPoints`, which identifies a list of `Contact Points` one can use to get in touch with an Agent.

A `Contact Point` informs *how* to contact an Agent, namely its email address, telephone number, and physical address, but also *when* to do it by means of the `availableHours` property.

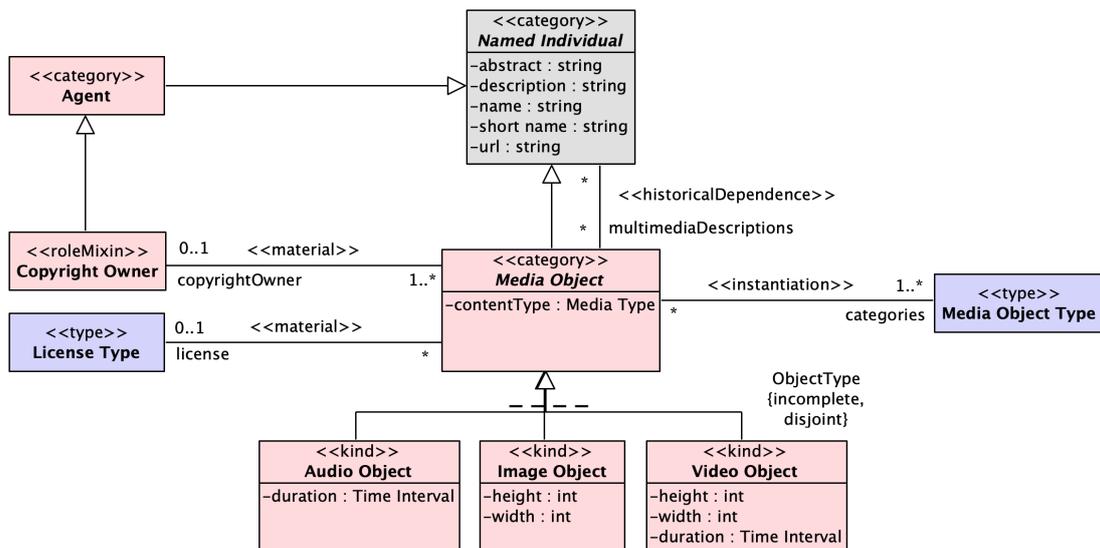
`Contact Point` information is relevant for tourists who want to contact the owner of a mountain area to know about its slopes conditions, or for customers who want to contact an event's organizer about ticket prices.

## 2.2.2. Media Object

An object that materializes creative works into a digital format to enable processing and sharing.

Three disjoint types of `Media Objects` are identified in the ontology, namely `Audio Object`, e.g. an audio file containing a recording of a song, `Image Object`, e.g. an image file depicting a lift, and `Video Object`, e.g. a video file containing a recording of a musical performance.

A fragment of the ontology depicting `Media Object`, its properties, and subtypes is shown below:



In addition to the attributes inherited from `Named Individual`, `Media Object` is characterized by `contentType`, which refers to the `Media Types` (formerly known as MIME Types) defined by the Internet Assigned Numbers Authority (IANA).

A **Media Object**, or more precisely, the creative work embedded in it, can be owned and by agent, termed the **Copyright Owner**. Additionally, it may be available for reuse by others according to a **License Type**, such as the [Creative Commons 1.0 Universal](#).

A **Media Object** often depicts a **Named Individual**, such as events, event venues, lifts, trails, and snowparks. This depiction is captured in the ontology by means of the historical dependence between **Named Individual** and **Media Object**.

### 2.2.3. Place

An individual that has a fixed physical location and can be localized within a **Global Positioning System (GPS)** (adapted from [Schema.org](#)). Examples of places include a town square, a stadium, a trail, a gas station, and a park.

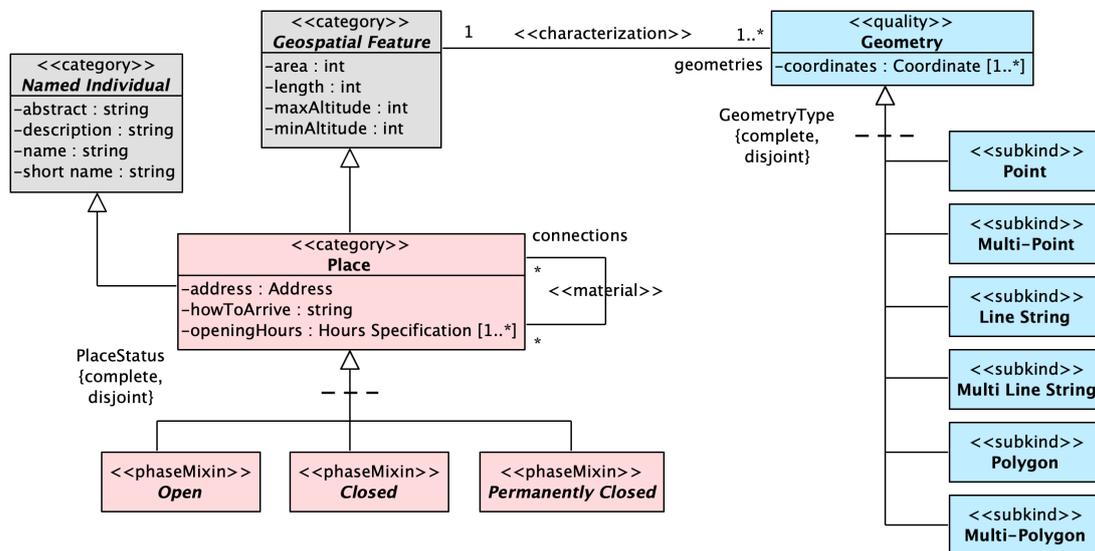
A **Place** may go through two phases: **In Operation** and **Permanently Closed**. The first classifies places that are functioning, regardless if they are currently open or not. The second classifies those that have terminated its operations. The sub-phases of **In Operation** identify the current state of a place according to its opening hours, i.e., if it is open or closed at a given point in time.

**Place** specializes **Named Entity** and thus, inherits all of its attributes.

**Place** is additionally characterized by the attributes **address**, **howToArrive**, and **openingHours**: **address** represents the physical address of a place; **howToArrive** is a textual description on how to arrive at a place; and **openingHours** identifies when a place is (or should be) open.

A **Place** may be physically connected to other places and give access to them. For instance, the **Falzeben Gondola at Merano 2000** gives access to the **Falzeben I** and **Wallpach** slopes. In the ontology, this relation is captured by the **connections** self-type association defined for **Place**

A fragment of the ontology centered around the **Place** concept, its properties, and subtypes is shown below:



The GPS information that can be associated to a **Place** is represented by means of the **Geometry** quality, which is sub-classified into the following subtypes according to its geometrical shape: **Point**, **Multi Point**, **Line String**, **Multi Line String**, **Polygon**, and **Multi Polygon**. Instances of **Geometry** must instantiate exactly one of the aforementioned subtypes.

The **coordinates** attribute in the **Geometry** class is the list of points that compose the geometry.

### 2.2.4. Event, Event Series and Venue

An **Event** is something that is planned to happen at a particular place and time, organized by an agent for a particular purpose, and is of interest to a general audience (adapted from the [Core Public Event](#)

Vocabulary).

Examples include the Südtirol Jazz Festival 2018, the South Tyrol Free Software Conference organized in 2019, the Bolzano Christmas Market of 2019, and a Serie A match between Juventus and Napoli.

In addition to the attributes inherited from `Named Individual`, an `Event` has the attributes `startDate`, `endDate`, and `capacity`: a `startDate` which describes when the event is planned to start; an `endDate` which describes when the event is planned to end; and `capacity` which describes how many people can attend the event.

An `Event` happens at one or more places, which are dubbed its `Venues`. For instance, the venue of Bolzano Christmas Market in 2019 was `Piazza Walther`.

An `Event` may involve several `Agents`, i.e. persons or organizations, in different ways. An `Organizer` plans the event and is legally responsible for it; the `Publisher` provides data about it; a `Sponsor` supports its organization, usually by making financial contributions; and a `Contributor` actively participates in the event, such as a presenter, a singer or an expositor.

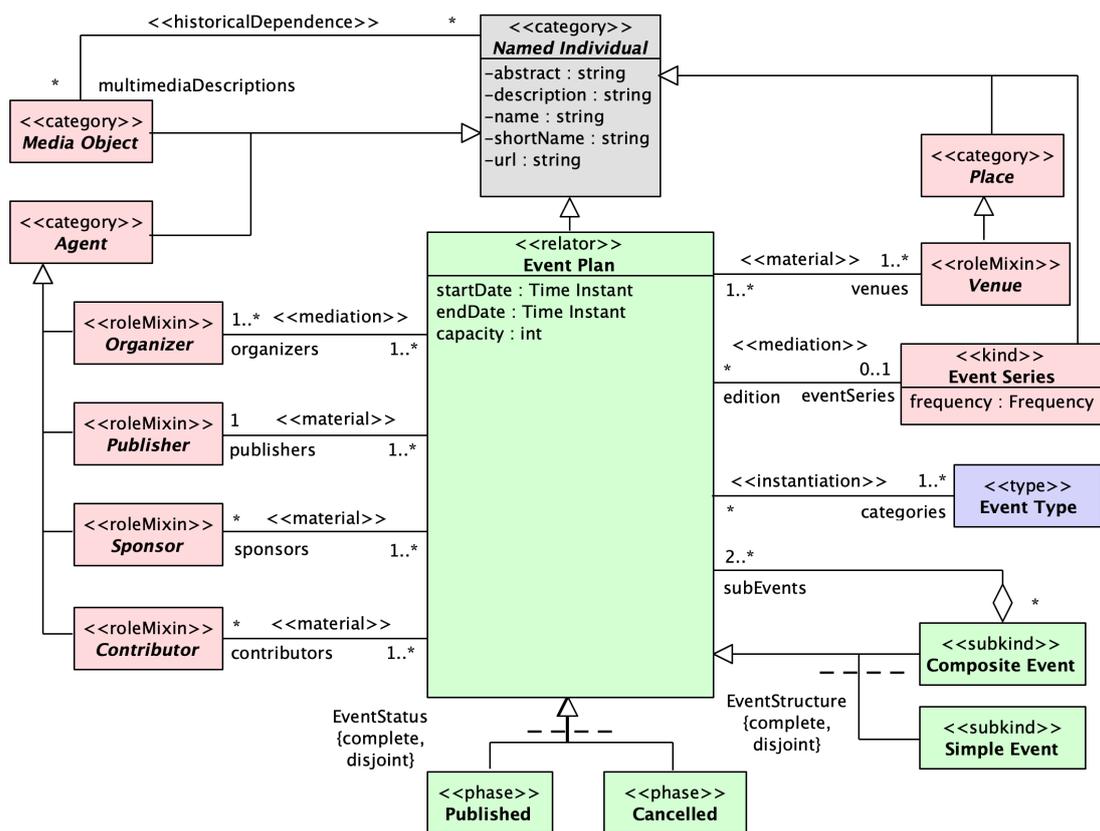
Events may be composed of smaller events. For instance, the Südtirol Jazz Festival 2019 was composed of over 30 individual concerts. This type of event is classified as a `Composite Event` in the ontology, while those without sub-events are deemed `Simple Events`.

An `Event` is in one of two phases, namely `Published` and `Cancelled`. The former refers to those whose plans are or were valid, while the latter refers to those that have been canceled.

Some `Events` are recurrently organized over time. The "template" for such events is called an `Event Series`. Examples include the Olympics, which is organized every 4 years, the Bolzano Christmas Market, which is organized every year, and the Food Truck Weekend, which is organized sporadically in Trento.

The frequency in which an `Event Series` is organized is captured in the ontology by the homonymous attribute.

A fragment of the ontology focused on the concepts of `Event`, `Event Series`, and `Venue` is shown below:

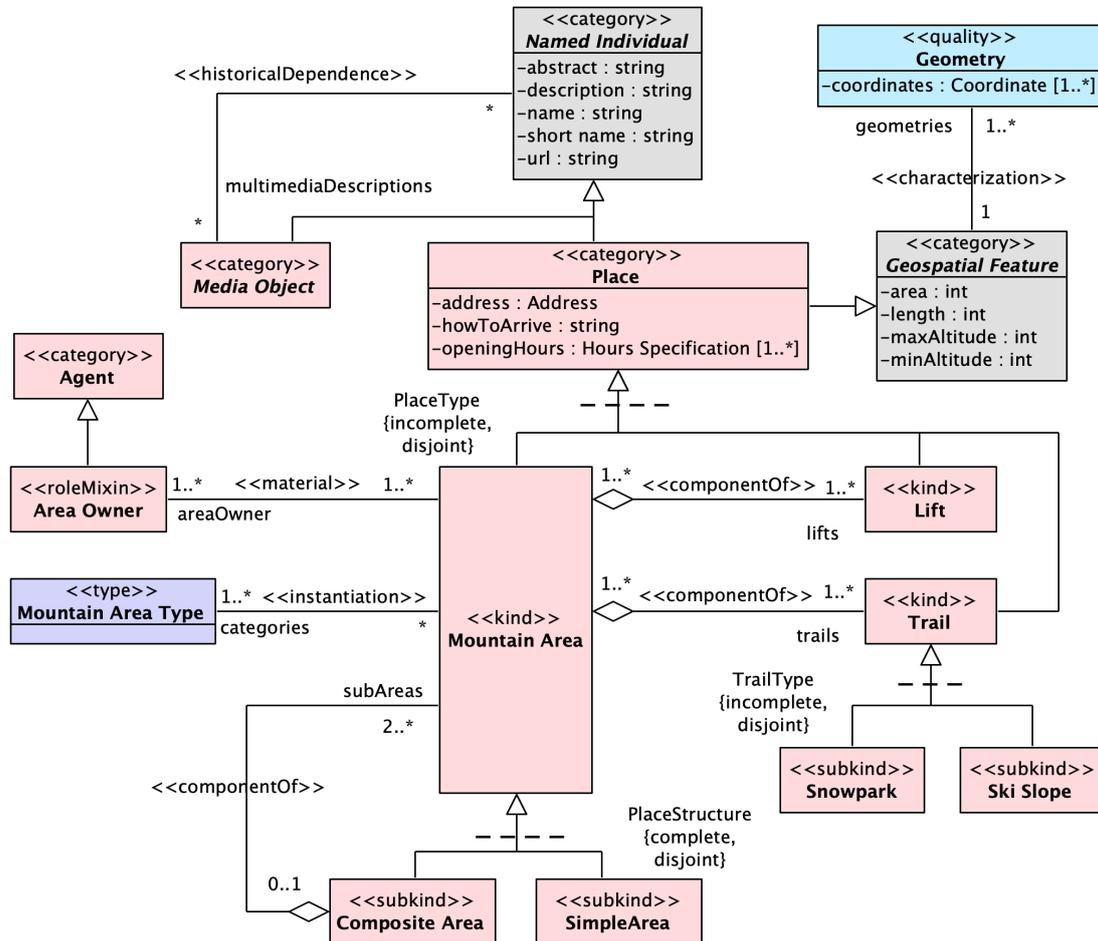


## 2.2.5. Mountain Areas

A **Mountain Area** is a geographical region in which alpine sports and activities can be performed, such as skiing, snowboarding, climbing, and hiking.

Examples include Dolomiti Superski, located in South Tyrol, Italy, Zermatt Matterhorn, located in Switzerland, and St. Anton Arlberg, located in Austria.

An excerpt of the ontology regarding **Mountain Area** its relations and properties is shown below:



As a particular type of **Place**, **Mountain Area** inherits all of its attributes and relations, which includes address and GPS-related properties.

Instances of **Mountain Area** are often very large areas that contain a wide number of other places. Among these, the ontology highlights the following two components types: **Lift** and **Trail**.

**Mountain Areas** may aggregate other mountain areas. This is the case of Dolomiti Superski and Ortler Skiarena, which aggregate several smaller areas in South Tyrol. In such cases, the broader area contains, by transitivity, every **Lift**, **Trail**, and **Snowpark** within its contained areas.

Note, the composition of mountain areas is:

- *irreflexive*: an area cannot compose itself;
- *transitive*: if area X includes area Y and area Y includes area Z, it implies that X is also includes area Z;
- *antisymmetric*: if area X includes area Y, area Y cannot include area X.

A **Mountain Area** is usually owned by some private organization. For instance, the Merano 2000 is a mountain area whose owner is the organization Merano 2000 Funivie Spa.

## 2.2.6. Trails, Snowparks, and Lifts

A *Trail* is a physical path that supports the practice of some type of sports activity. It may be of several types, including ski slopes, snowparks, sledge slopes, hiking trails, cross-country ski trails, climbing trails, and so on.

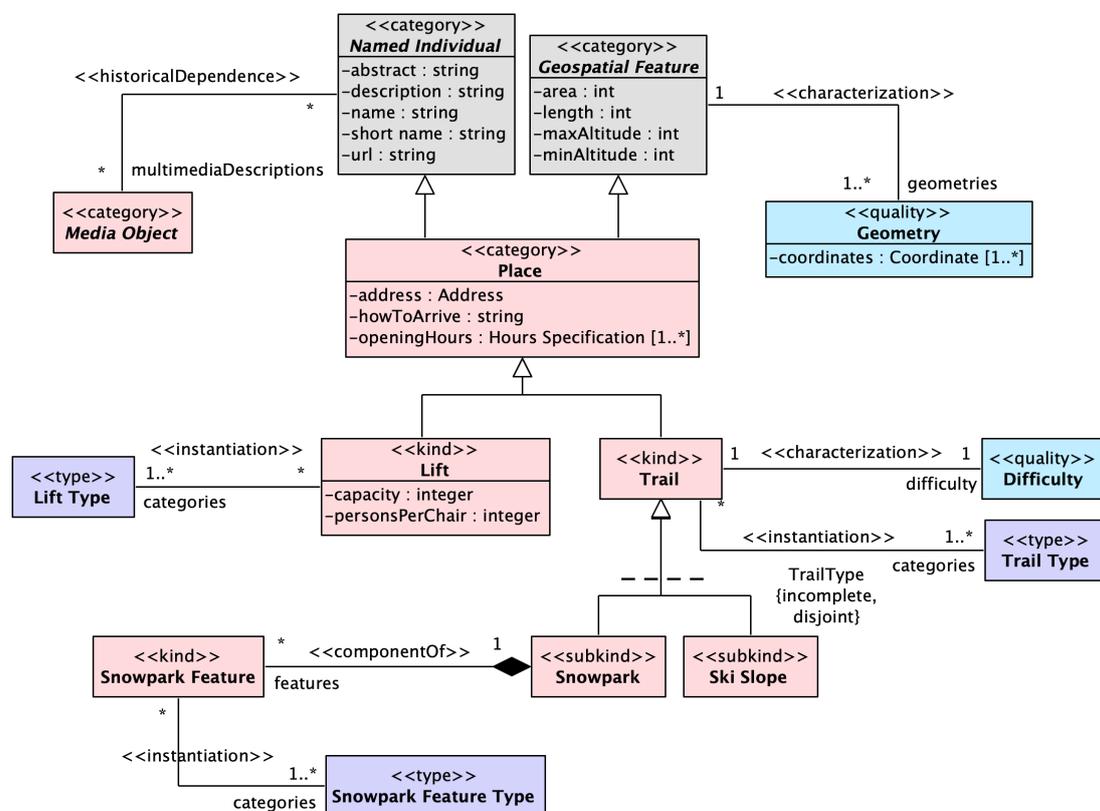
The complexity of skiing or snowboarding in a given *Ski Slope* is captured by the attributes *american difficulty* and *european difficulty*, each of which refer to the difficulty of the slope according to the regional scales.

A *Snowpark* is a particular type of *Trail* that is designed to allow skiers and snowboarders to perform freestyle tricks by providing them with special features, such as jumps and rails.

The difficulty level of a *Snowpark* is captured by its homonymous attribute.

A *Lift* is a machine designed to transport people uphill, often being used to transport skiers in mountain areas. *Lifts* may be of several types, such as chairlifts, gondolas, and cableways.

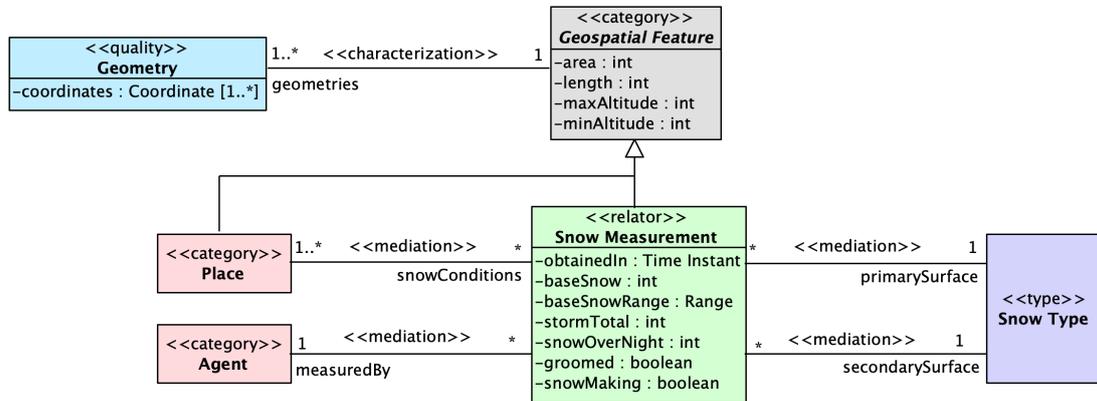
A fragment of the ontology that formalizes *Lift* and *Trail* is presented below:



## 2.2.7. Snow Measurement

A relevant piece of information for alpine tourists during the winter season is the snow condition of mountain areas and ski slopes. This is captured in the ontology by means of the *Snow Measurement* concept, a relator that describes the result of a measuring activity performed by an *Agent*, at a particular *Place*, in a given point in time (*date*).

An excerpt of the ontology describing *Snow Measurement* is shown below:



Note that Snow Measurement specializes Geospatial Feature. This means that its instances may be localized using GPS Geometries of any shape.

A Snow Measurement identifies the following descriptive properties:

- **baseSnow**: the height of snow in the vicinities of the measurement location
- **baseSnowRange**: the variation of the baseSnow measurement in the vicinities of the measurement location
- **groomed**: indicates whether or not the snow has been groomed in the vicinities of the measurement location
- **primarySurface**: the main type of snow found in the vicinities of the measurement location
- **secondarySurface**: the secondary type of snow found in the vicinities of the measurement location
- **snowMaking**: indicates whether or not the snow in the vicinities of the measurement location has been artificially produced
- **snowOverNight**: the height of snow accumulated in the previous night in the vicinities of the measurement location
- **stormTotal**: the height of snow accumulated from the last snowstorm in the vicinities of the measurement location

## 3. API Architecture

**AlpineBits® DestinationData** specifies a REST API designed to support the [client-server communication model](#), with a focus on system-to-system communication.

This API is built upon [JSON:API v1.0](#), a specification containing best practices for the implementation of REST APIs that exchange JSON data over HTTP.

**AlpineBits® DestinationData** relies on its underlying transport protocol to take care of security issues. Hence **the use of HTTPS is REQUIRED**.

### 3.1. Server Responsibilities

A SERVER MUST be able to handle GET requests on the [endpoints defined in this standard](#), replying with the appropriate HTTP status codes as defined in this document.

This standard does not encompass request messages for other HTTP methods, such as POST, PATCH, and DELETE, but the SERVER MAY implement them.

A SERVER MUST comply with the JSON:API v1.0 in all HTTP methods it implements.

### 3.2. Request Messages

A request message starts an interaction between a CLIENT and a SERVER, being sent by the former to the latter.

#### 3.2.1. Message Headers

A GET request message MUST include the header `Accept: application/vnd.api+json`, which indicates that the request is for data serialized according to the media type defined in JSON:API v1.0.

A SERVER MAY support additional media types, such as `application/json` and `application/xml`.

A SERVER MUST respond with a `406 Not Acceptable` status code if a request's `Accept` header contains the JSON:API media type and all instances of that media type are modified with media type parameters.

A SERVER MUST support authentication through the [basic authentication](#) mechanism.

The following example presents the `Authorization` header of a request using basic authentication.

```
GET /1.0/events HTTP/1.1
Host: https://example.com
Accept: application/vnd.api+json
Authorization: Basic Y2hyaXM6c2VjcmV0
```

Note that the value of the `Authorization` header is the string `john:secret` encoded in [base64](#) (`Y2hyaXM6c2VjcmV0`), as defined by the basic access authentication standard.

A SERVER MAY support additional authentication methods (e.g., [OAuth](#), [JSON Web Token](#), and [OpenID Connect](#)) or even non-authenticated requests.

If a SERVER does not support non-authenticated requests, it MUST reject them with response messages containing the HTTP status code `401 Unauthorized`.

This same response MUST be returned if a request made using the basic authentication mechanism contains an invalid combination of username and password.

#### 3.2.2. Message Body

A CLIENT SHALL NOT include a body to HTTP GET requests.

A SERVER MUST reject HTTP GET requests containing a body.

### 3.3. Response Messages

A response message closes an interaction between a CLIENT and a SERVER, being sent by the latter to the former in response to a previous request message.

If a response message includes a body, the SERVER MUST:

- Encode this body in UTF-8; and
- Include the following header in the message:  
Content-Type: application/vnd.api+json.

Note that the SERVER MUST NOT add encoding parameters to the Content-Type header in order to enable compatibility with JSON:API v1.0 and its future releases.

A response message MUST include an appropriate HTTP status code.

Response messages are classified into [Success Messages](#) and [Error Messages](#), which are detailed in the following subsections.

#### 3.3.1. Success Messages

A success message is one that results from a successful request made to a SERVER.

##### Message Headers

A success message header MUST contain an HTTP status code in the class [2xx Success](#), as in:

```
HTTP/1.1 200 OK
Content-Type: application/vnd.api+json
```

##### Message Body

A success message MUST have a JSON body with the following fields:

- **data**: an object or array of objects containing resource data. This field is mandatory, but when a response contains no data, it MUST be set to null.

Refer to [Resources](#) for more details about the inner structure of this field.

- **links**: an object containing links for navigating the API. Links are used for self-referencing, resource relationships, and pagination. This field is mandatory and non-nullable, as it MUST always contain a self link for self-referencing.

Refer to [Pagination](#) for more details.

- **jsonapi**: an object describing the JSON:API version adopted by the SERVER. This field is optional but non-nullable. If set, it must contain the object { "version": "1.0" }.
- **meta**: an object that contains metadata about its container. This field is optional but non-nullable. It is used, for instance, to share pagination data.

Refer to [Pagination](#) for more details.

- **included**: an array of resource objects included in the message that are related to those in the data field. This field is optional but non-nullable.

See [Inclusion of Related Resources](#) for more details.

A success message body SHALL NOT have fields in addition to those listed above.

An overview of the basic structure of a success message body is depicted below:

```
{
  "jsonapi": {
    "version": "1.0"
  },
  "meta": { ... },
  "data": ...,
  "included": [ ... ],
  "links": { ... },
}
```

Take, for instance, the request below for media object resources with inclusion of resources present in the `copyrightOwner` relationship field:

```
GET /1.0/mediaObjects?include=copyrightOwner HTTP/1.1
Host: https://example.com
Accept: application/vnd.api+json
Authorization: Basic Y2hyaXM6c2VjcmV0
```

The SERVER could generate, as a successful response, the following response message (header and body):

```
HTTP/1.1 200 OK
Content-Type: application/vnd.api+json

{
  "jsonapi": {
    "version": "1.0"
  },
  "meta": {
    "count": 10,
    "pages": 10
  },
  "links": {
    "next": "https://example.com/1.0/mediaObjects?page[number]=2",
    "prev": "https://example.com/1.0/mediaObjects?page[number]=1",
    "first": "https://example.com/1.0/mediaObjects?page[number]=1",
    "last": "https://example.com/1.0/mediaObjects?page[number]=10",
    "self": "https://example.com/1.0/mediaObjects"
  },
  "data": [
    {
      "type": "mediaObjects",
      "id": "1",
      "meta": {
        "dataProvider": null,
        "lastUpdate": null
      },
      "attributes": {
        "abstract": null,
        "contentType": "text/markdown",
        "categories": null,
        "description": null,
        "duration": null,
        "height": null,
        "license": null,
        "name": null,
        "shortName": null,
        "url": "https://example.com/description.md",
        "width": null
      },
      "relationships": {
        "copyrightOwner": {
          "data": {
            "type": "agents",
            "id": "1"
          }
        }
      }
    }
  ]
}
```

```

    "links": {
      "related": "https://example.com/1.0/mediaObjects/1/copyrightOwner/"
    }
  },
  "links": {
    "self": "https://example.com/1.0/mediaObjects/1"
  }
},
],
"included": [
  {
    "type": "agents",
    "id": "1",
    "meta": {
      "dataProvider": null,
      "lastUpdate": null
    },
    "attributes": {
      "abstract": null,
      "categories": null,
      "contactPoints": null,
      "dataProvider": null,
      "description": null,
      "lastUpdate": null,
      "name": {
        "eng": "Free University of Bozen-Bolzano"
      },
      "shortName": null,
      "url": null
    },
    "relationships": {
      "multimediaDescriptions": null
    },
    "links": {
      "self": "https://example.com/1.0/agents/1"
    }
  }
]
}

```

asciidoc/examples/event.full.json

### 3.3.2. Error Messages

An error message is one that results from an unsuccessful request made to a SERVER.

#### Message Headers

An error message header MUST contain an HTTP status code either in the class [Client Error 4xx](#) or the class [Server Error 5xx](#), as in:

```
HTTP/1.1 401 Unauthorized
```

If a request message results in multiple errors, the status code in error message SHOULD be the most general status code applicable. For example, if a request results in the errors 415 `Unsupported Media Type` and 410 `Gone`, the header SHOULD contain the error code 400 `Bad Request`.

#### Message Body

This version of the standard does not define specific error scenarios. Thus, it is OPTIONAL for a SERVER to include a body in an error message.

If it does, the body MUST comply with the JSON:API v1.0. This means an object described by the following fields:

- **error**: an array of [error objects](#) as defined in JSON:API v1.0. This version of the standard does not define specific error objects. This field is mandatory and non-nullable.
- **jsonapi**: an object describing the JSON:API version adopted by the SERVER. This field is optional but non-nullable. If set, it must contain the object { "version": "1.0" }.
- **meta**: an object that contains non-standard meta-information about its container. This field is optional but non-nullable.
- **links**: an object containing links. This field is optional but non-nullable.

An error message body SHALL NOT have fields in addition to those listed above.

For more details on error message bodies, refer to the [JSON:API v1.0](#) specification.

An overview of the basic structure of an error message body is depicted below:

```
{
  "jsonapi": {
    "version": "1.0"
  },
  "meta": { ... },
  "error": [
    {
      "status": "404",
      "title": "Endpoint not available"
    }
  ],
  "links": { ... }
}
```

The following example presents an error message (header and body) containing multiple error objects.

```
HTTP/1.1 400 Bad Request
Content-Type: application/vnd.api+json

{
  "jsonapi": {
    "version": "1.0"
  },
  "errors": [
    {
      "status": 404,
      "title": "Resource not found."
    },
    {
      "status": 405,
      "title": "Method not supported."
    }
  ]
}
```

`asciidoc/examples/error.example.json`

### 3.3.3. Error Status Codes

A SERVER MUST reply with specific status codes in the following cases:

- **400 Bad Request**: when a CLIENT uses unknown or invalid URL parameters in the request message.
- **401 Unauthorized**: when a CLIENT makes an authenticated request that failed which failed to be validated by the SERVER.
- **404 Not Found**: when a CLIENT makes a request for a non-existing resource or to a non-implemented endpoint.

- 405 Method Not Allowed: when a CLIENT makes a request using an HTTP method that is not supported by the SERVER.
- 406 Not Acceptable: when a CLIENT makes a request with an Accept header containing a media type not supported by the SERVER or with encoding parameters in application/vnd.api+json.
- 410 Gone: when a CLIENT requests a resource that is no longer available in the SERVER (e.g. it may have been deleted).

### 3.4. API Features

The **AlpineBits® DestinationData** standard specifies a set of API features to be implemented by a SERVER. These features are intended to make communication between CLIENTS and SERVERS more effective and efficient.

Four features are discussed, namely [Hypermedia Controls](#), [Pagination](#), [Sparse Fieldsets](#), and [Inclusion of Related Resources](#).

#### 3.4.1. Hypermedia Controls

Hypermedia control is a strategy to encode resource navigation and manipulation within the messages exchanged through an API.

The **AlpineBits® DestinationData** standard adopts the hypermedia strategy defined in JSON:API v1.0, which is briefly described in the following paragraphs.

To provide hypermedia controls for CLIENTS to navigate the API, a SERVER MUST include a `links` object according to what is defined in this standard.

A SERVER MUST use the endpoints it implements in order to refer to resources through `links` objects (e.g., in `self` and `related` links).

##### Action Discovery

SERVERS that support additional HTTP methods SHOULD support [action discovery](#).

To do so, a SERVER needs to:

- Support HEAD requests on all of its endpoints
- Answer HEAD requests with messages containing an `Allow` header listing the HTTP methods it supports on the requested endpoint.

The following two snippets exemplify a HEAD request made by a CLIENT and its response sent by a SERVER.

```
HEAD /1.0/events HTTP/1.1
Host: https://example.com/
Authorization: Basic Y2hyaXM6c2VjcmV0
```

```
HTTP/1.1 200 OK
Allow: GET,POST,PATCH,DELETE
```

A response message to a HEAD request message does not contain a body.

#### 3.4.2. Pagination

The [pagination feature](#) allows a CLIENT to request a subset of the resources available at any given endpoint.

The response message containing such a subset is referred to as a page.

A SERVER MUST implement pagination for GET requests in every [base endpoint](#), such as `/1.0/events` and `/1.0/mountainAreas`.

The pagination strategy adopted in this standard uses two parameters:

- `page[size]`: the number of resources included in a page.
- `page[number]`: the number of the page

The following request message exemplifies the use of pagination parameters:

```
GET /1.0/events?page[size]=10&page[number]=2 HTTP/1.1
Host: https://example.com
Accept: application/vnd.api+json
```

The request asks for the second page (`page[number]=2`) in the collection of event resources, divided in pages containing 10 events each (`page[size]=10`).

Note that pagination parameters are included in a request as URL parameters in the request, i.e. by adding them to the URL after the question mark character (`?`), as defined by the [JSON:API v1.0](#) standard.

A CLIENT MAY include one or both pagination parameters in a request message.

The SERVER SHOULD define a default page size.

The SERVER MUST respond with the first page in case no pagination parameters are sent in the request.

In paginated responses, the SERVER MUST add the following fields to the `links` object in the message body:

- `first`: a string that represents the URL to request the first page of resources in that endpoint. Non-nullable.
- `last`: a string that represents the URL to request the last page of resources in that endpoint. Non-nullable.
- `self`: a string that represents the URL to request the current page of resources in that endpoint. Non-nullable.
- `next`: a string that represents the URL to request the next page of resources in that endpoint. The next URL MUST be the same as `last` in case the next page is out of bounds. Non-nullable.
- `prev`: a string that represents the URL to request the previous page of resources in that endpoint. The prev URL MUST be the same as `first` in case the previous page is out of bounds. Non-nullable.

In paginated responses, the SERVER MUST add the following fields to the `meta` object in the message body:

- `count`: a number that indicates the number of resources available in the endpoint. Non-nullable.
- `pages`: a number that indicates the number of resources pages in the collection according to the provided page size. Non-nullable.

The following message excerpt illustrates a response to the paginated request previously provided:

```
HTTP/1.1 200 OK
Content-Type: application/vnd.api+json

{
  "meta": {
    "count": 1000,
    "pages": 100
  },
  "links": {
    "first": "https://example.com/1.0/events?page[number]=1",
    "last": "https://example.com/1.0/events?page[number]=100",
    "self": "https://example.com/1.0/events?page[number]=2",
    "next": "https://example.com/1.0/events?page[number]=3",
    "prev": "https://example.com/1.0/events?page[number]=1"
  },
  ...
}
```

### 3.4.3. Sparse Fieldsets

The sparse fieldset feature allows a CLIENT to request a specific subset of resources' attributes and relationships fields given a resource type.

This feature allows CLIENTS to receive smaller payloads in their responses by selecting only the desired data.

For example, in the following request, the CLIENT requests for agent resources, but only the attributes name and contactPoints:

```
GET /1.0/agents?fields[agents]=name,contactPoints HTTP/1.1
Host: https://example.com
Accept: application/vnd.api+json
```

The SERVER MAY support sparse fieldsets according to the [JSON:API v1.0 specification](#). The feature applies both to endpoints that return collections of resources, e.g. `/1.0/events`, and those that return individual resources, e.g. `/1.0/events/123`.

In order to select the fields they want, the CLIENT MUST append them as URL parameters in the request.

Each parameter is identified using the keyword `fields` with the resource type within brackets, as in `fields[events]` and `fields[mediaObject]`.

The desired fields for each resource type follow the parameter definition, as in `fields[events]=name,startDate,organizers` and `fields[mediaObject]=name,url,license`.

### 3.4.4. Inclusion of Related Resources

The [inclusion of related resources](#) feature allows a CLIENT to request a SERVER to add, in a response message, the resources related to the base resource.

For example, a CLIENT may request a SERVER for event resources and to include agent resources that appear in the `organizers` field of the events returned in the response.

An example of a request asking for related resources is shown below:

```
GET /1.0/events?include=organizers HTTP/1.1
Accept: application/vnd.api+json
```

It is RECOMMENDED that the SERVER supports the inclusion of related resources.

In [successful messages](#), the SERVER MUST add the related resources of requested relationships to the included array.

To ask for the inclusion of related resources, a CLIENT MUST append `includes` as a URL parameter of the request message.

The resources to be included are listed and separated by commas, as in `/1.0/events?include=organizers,sponsors` and `/1.0/mountainAreas?include=trails,lifts,snowparks`.

In order to request resources related to other resources, a dot-separated path for each relationship name can be specified, as in `/1.0/events?include=organizers.multimediaDescriptions` and `/1.0/mountainAreas?include=multimediaDescriptions.copyrightOwner`.

If the SERVER is unable to identify a relationship or does not support the inclusion of resources from a relationship, it MUST respond with `400 Bad Request`.

A full example of request and response that makes usage of this feature can be found at the end of the section [Message Body](#), where the CLIENT request for media object resources and for the inclusion of the resource available in the relationship `copyrightOwner`.

## 3.5. Endpoints

The **AlpineBits® DestinationData** API defines a set of endpoints for SERVERS to implement.

### 3.5.1. Base Endpoint

In order to retrieve the versions of **AlpineBits® DestinationData** implemented by the SERVER, the CLIENT MAY perform a GET request to the SERVER at the base endpoint `/`, as in the example below.

```
GET https://example.com/ HTTP/1.1
Accept: application/vnd.api+json
```

The SERVER MUST respond to requests to the base endpoint `/` with links to the implemented versions, as in the example below. In this response, the `data` field MUST be set to `null`.

```
HTTP/1.1 200 OK
Content-Type: application/vnd.api+json

{
  "links": {
    "self": "https://example.com/",
    "1.0": "https://example.com/1.0/"
  },
  "data": null
}
```

### 3.5.2. Version Endpoints

In order to retrieve the endpoints implemented by the SERVER, the CLIENT MAY perform a GET request to the SERVER at the endpoint of the desired version (e.g., `/1.0/`), as in the example below.

```
GET https://example.com/1.0/ HTTP/1.1
Accept: application/vnd.api+json
```

The SERVER MUST respond to requests to a version endpoint (e.g., `/1.0/`) with a message body as described below:

```
HTTP/1.1 200 OK
Content-Type: application/vnd.api+json

{
  "links": {
    "self": "https://example.com/1.0/",
    "events": "https://example.com/1.0/events",
    "eventSeries": "https://example.com/1.0/eventSeries",
    "lifts": "https://example.com/1.0/lifts",
    "trails": "https://example.com/1.0/trails",
    "snowparks": "https://example.com/1.0/snowparks",
    "mountainAreas": "https://example.com/1.0/mountainAreas"
  },
  "data": null
}
```

In such responses, the data field MUST be set to null.

### 3.5.3. Resource Endpoints

To provide access to resources, a SERVER MUST listen to HTTPS requests in the following endpoints:

- /1.0/agents
- /1.0/agents/:id
- /1.0/agents/:id/multimediaDescriptions
- /1.0/events
- /1.0/events/:id
- /1.0/events/:id/contributors
- /1.0/events/:id/multimediaDescriptions
- /1.0/events/:id/organizers
- /1.0/events/:id/publisher
- /1.0/events/:id/series
- /1.0/events/:id/sponsors
- /1.0/events/:id/subEvents
- /1.0/events/:id/venues
- /1.0/eventSeries
- /1.0/eventSeries/:id
- /1.0/eventSeries/:id/editions
- /1.0/eventSeries/:id/multimediaDescriptions
- /1.0/lifts
- /1.0/lifts/:id
- /1.0/lifts/:id/connections
- /1.0/lifts/:id/multimediaDescriptions
- /1.0/mediaObjects
- /1.0/mediaObjects/:id
- /1.0/mediaObjects/:id/copyrightOwner
- /1.0/mountainAreas
- /1.0/mountainAreas/:id
- /1.0/mountainAreas/:id/areaOwner

- /1.0/mountainAreas/:id/connections
- /1.0/mountainAreas/:id/lifts
- /1.0/mountainAreas/:id/multimediaDescriptions
- /1.0/mountainAreas/:id/snowparks
- /1.0/mountainAreas/:id/subAreas
- /1.0/mountainAreas/:id/trails
- /1.0/snowparks
- /1.0/snowparks/:id
- /1.0/snowparks/:id/connections
- /1.0/snowparks/:id/multimediaDescriptions
- /1.0/trails
- /1.0/trails/:id
- /1.0/trails/:id/connections
- /1.0/trails/:id/multimediaDescriptions
- /1.0/venues
- /1.0/venues/:id
- /1.0/venues/:id/multimediaDescriptions

The aforementioned endpoints are structured according to the following patterns:

- /<version>/<resourceType>
- /<version>/<resourceType>/<resourceId>
- /<version>/<resourceType>/<resourceId>/<relationship>

Where:

- <version> is a number code representing the version of the standard implemented. The current version of the standard is 1.0.
- <resourceType> is a standard-defined resource type (e.g., events, mountainAreas, and venues). See [Resources](#).
- <resourceId>: an ID that uniquely identifies a resource that is an instance of the <resourceType>.
- <relationship>: field name of a resource's relationship. Allows access to a resource's related resources, such as an event's organizer.

Every SERVER MUST answer requests with actual data in at least one of the following endpoints: /1.0/events, /1.0/mountainAreas, /1.0/lifts, /1.0/trails, /1.0/snowparks

Every SERVER MUST respond to requests to non-implemented endpoints with a 404 Not Found status code.

## 4. Datatypes

### 4.1. address

An address is represented as an object containing the following fields:

- **street**: a [text](#) object containing the street name and number.  
For example: { "ita": "Via Bolzano 63/A", "deu": "Bozner Straße 63/A" }
- **city**: a [text](#) object containing the city name.  
For example: { "ita": "Appiano sulla Strada del Vino", "deu": "Eppan an der Weinstraße" }
- **region**: a [text](#) object containing the administrative unit in which the city is located (e.g. province, region, state). For example: { "ita": "Bolzano", "deu": "Bozen" }
- **country**: a string containing a 2-letter code that identifies the country as defined in the [ISO 3166-1](#).  
For example: "IT" identifies Italy.
- **zipcode**: a string containing the zip code. For example: "39057"
- **complement**: a [text](#) object containing additional information about the address, such as the building name, the floor, and/or the room number. For example: { "ita": "2 piano, sala 1.10", "deu": "2 etage, raum 1.10" }
- **categories**: an array of [category](#) strings containing the types of the address. For example, "example/billing". The standard does not standardize types of addresses.

Every address object **MUST** have defined values for at least the **city** and **country** fields.

Here is an example of a minimum address object:

```
{
  "street": null,
  "city": {
    "ita": "Appiano sulla Strada del Vino",
    "deu": "Eppan an der Weinstraße"
  },
  "region": null,
  "country": "IT",
  "zipcode": null,
  "complement": null,
  "categories": null
}
```

And here is an example of a complete address object:

```

{
  "street": {
    "ita": "Via Bolzano 63/A",
    "deu": "Bozner Straße 63/A"
  },
  "city": {
    "ita": "Appiano sulla Strada del Vino",
    "deu": "Eppan an der Weinstraße"
  },
  "region": {
    "ita": "Bolzano",
    "deu": "Bozen"
  },
  "country": "IT",
  "zipcode": "39057",
  "complement": {
    "ita": "2 piano, sala 1.10",
    "deu": "2 etage, raum 1.10"
  },
  "categories": [ "example/billing" ]
}

```

## 4.2. contact point

A contact point contains data that one can use to contact an [Agent](#). It is described by an object containing the following fields:

- **email**: an [email](#) defined for the contact point. Nullable.  
For example, "[info@alpinebits.org](mailto:info@alpinebits.org)".
- **telephone**: a string containing a telephone, including the country code and without spaces, defined for the contact point. Nullable.  
For example: "+390000000000000".
- **address**: an [address](#) defined for the contact point. Nullable.
- **availableHours**: an array of [hours specification](#) objects identifying the hours in which the [Agent](#) can be contacted through the means defined in the contact point. Nullable.

Every contact point object **MUST** define at least one of the following fields: email, telephone, address.

The three objects below illustrate the minimum information that may be defined within a contact point:

*Contact point containing only an email address:*

```

{
  "email": "info@alpinebits.org",
  "telephone": null,
  "address": null,
  "availableHours": null
}

```

*Contact point containing only a telephone:*

```

{
  "email": null,
  "telephone": "+390000000000000",
  "address": null,
  "availableHours": null
}

```

Contact point containing only an address:

```
{
  "email": null,
  "telephone": null,
  "address": {
    "street": null,
    "city": {
      "ita": "Appiano sulla Strada del Vino",
      "deu": "Eppan an der Weinstraße"
    },
    "region": null,
    "country": "IT",
    "zipcode": null
  },
  "availableHours": null
}
```

The object below illustrates the usage of all fields of a contact point object:

```

{
  "email": "info@alpinebits.org",
  "telephone": "+39 0471 066 600",
  "address": {
    "street": {
      "ita": "Via Bolzano 63/A",
      "deu": "Bozner Straße 63/A"
    },
    "city": {
      "ita": "Appiano sulla Strada del Vino",
      "deu": "Eppan an der Weinstraße"
    },
    "region": {
      "ita": "Bolzano",
      "deu": "Bozen"
    },
    "country": "IT",
    "zipcode": "39057"
  },
  "availableHours": {
    "dailySchedules": null,
    "weeklySchedules": [
      {
        "validFrom": "2020-01-01",
        "validTo": "2020-12-31",
        "monday": [
          { "opens": "08:00:00", "closes": "12:00:00" },
          { "opens": "14:00:00", "closes": "18:00:00" }
        ],
        "tuesday": [
          { "opens": "08:00:00", "closes": "12:00:00" },
          { "opens": "14:00:00", "closes": "18:00:00" }
        ],
        "wednesday": [
          { "opens": "08:00:00", "closes": "12:00:00" },
          { "opens": "14:00:00", "closes": "18:00:00" }
        ],
        "thursday": [
          { "opens": "08:00:00", "closes": "12:00:00" },
          { "opens": "14:00:00", "closes": "18:00:00" }
        ],
        "friday": [
          { "opens": "08:00:00", "closes": "12:00:00" },
          { "opens": "14:00:00", "closes": "18:00:00" }
        ],
        "saturday": null,
        "sunday": null
      }
    ]
  }
}

```

Note that the standard does not allow multiple emails, telephones, and addresses to be defined in a single contact point object. To exchange such data, multiple contact objects should be used.

### 4.3. date

A string that contains a year, a month, and a day, formatted as YYYY-MM-DD. Corresponds to *full-date* in [RFC 3339](#).

Here is an example:

```
"2020-04-01"
```

## 4.4. date-time

A string that contains a date, a time, and a time offset (to account for time zones) and formatted as YYYY-MM-DDThh:mm:ss+hh:mm (or YYYY-MM-DDThh:mm:ss-hh:mm). Corresponds to *date-time* in [RFC 3339](#).

The date-time that refers to April 1st, 2020 at 23 hours, 59 minutes, and 59 seconds according to the Central European Time is:

```
"2020-04-01T23:59:59+04:00"
```

## 4.5. email

A string containing a valid internet email address, as defined in [RFC 5322, section 3.4.1](#).

Here is an example of a valid email:

```
info@alpinebits.org
```

## 4.6. geometry

The representation of geographic data structures in this standard is borrowed from the [GeoJSON](#) standard specification.

In particular, this standard adopts GeoJSON's definition of [Geometry Object](#), which represents points, curves, and surfaces in coordinate space.

A generic geometry object contains the following fields:

- **type**: a string identifying the geometry type, whose possible values are "Point", "MultiPoint", "LineString", "MultiLineString", "Polygon", and "MultiPolygon". Non-nullable.
- **coordinates**: an array containing the coordinates of the geometry. The structure of the members of this array is determined by the type of geometry. Non-nullable.

Definitions for each geometry type are given in the subsequent sections, being directly extracted from the [GeoJSON](#) standard specification.

### 4.6.1. point

For type Point, the `coordinates` member is a single position.

An example of a geometry object of type Point is provided below:

```
{
  "type": "Point",
  "coordinates": [
    11.358447074890137,
    46.49667880447103
  ]
}
```

### 4.6.2. multi-point

For type MultiPoint, the `coordinates` member is an array of positions.

An example of a geometry object of type MultiPoint is provided below:

```
{
  "type": "MultiPoint",
  "coordinates": [
    [
      11.358447074890137,
      46.49667880447103
    ],
    [
      11.119945049285889,
      46.07315619530213
    ]
  ]
}
```

### 4.6.3. line-string

For type `LineString`, the `coordinates` member is an array of two or more positions.

An example of a geometry object of type `LineString` is provided below:

```
{
  "type": "LineString",
  "coordinates": [
    [
      11.358447074890137,
      46.49667880447103
    ],
    [
      11.119945049285889,
      46.07315619530213
    ]
  ]
}
```

### 4.6.4. multi-line-string

For type `MultiLineString`, the `coordinates` member is an array of `LineString` coordinate arrays.

An example of a geometry object of type `MultiLineString` is provided below:

```

{
  "type": "MultiLineString",
  "coordinates": [
    [
      [
        11.358447074890137,
        46.49667880447103
      ],
      [
        11.119945049285889,
        46.07315619530213
      ]
    ],
    [
      [
        11.149181127548218,
        46.673201221323815
      ],
      [
        11.40104055404663,
        47.263329885918694
      ]
    ]
  ]
}

```

#### 4.6.5. polygon

To specify a constraint specific to the Polygon type, it is useful to introduce the concept of a linear ring:

- A linear ring is a closed LineString with four or more positions.
- The first and last positions are equivalent, and they MUST contain identical values; their representation SHOULD also be identical.
- A linear ring is the boundary of a surface or the boundary of a hole in a surface.
- A linear ring MUST follow the right-hand rule with respect to the area it bounds, i.e., exterior rings are counterclockwise, and holes are clockwise.

Though a linear ring is not explicitly represented as a GeoJSON geometry type, it leads to a canonical formulation of the Polygon geometry type definition as follows:

- For type Polygon, the coordinates member MUST be an array of linear ring coordinate arrays.
- For Polygons with more than one of these rings, the first MUST be the exterior ring, and any others MUST be interior rings. The exterior ring bounds the surface, and the interior rings (if present) bound holes within the surface.

An example of a geometry object of type Polygon is provided below:

```
{
  "type": "Polygon",
  "coordinates": [
    [
      [
        11.349220275878906,
        46.49902740460012
      ],
      [
        11.349080801010132,
        46.497631550714374
      ],
      [
        11.350893974304197,
        46.49759462287638
      ],
      [
        11.351033449172974,
        46.49890185307167
      ],
      [
        11.349220275878906,
        46.49902740460012
      ]
    ]
  ]
}
```

#### 4.6.6. multi-polygon

For type MultiPolygon, the coordinates member is an array of Polygon coordinate arrays.

An example of a geometry object of type MultiPolygon is provided below:

```

{
  "type": "MultiPolygon",
  "coordinates": [
    [
      [
        [
          11.349220275878906,
          46.49902740460012
        ],
        [
          11.349080801010132,
          46.497631550714374
        ],
        [
          11.350893974304197,
          46.49759462287638
        ],
        [
          11.351033449172974,
          46.49890185307167
        ],
        [
          11.349220275878906,
          46.49902740460012
        ]
      ]
    ],
    [
      [
        [
          11.352425515651703,
          46.49758354452009
        ],
        [
          11.352377235889433,
          46.49728812085311
        ],
        [
          11.352744698524473,
          46.49723642154639
        ],
        [
          11.352425515651703,
          46.49758354452009
        ]
      ]
    ]
  ]
}

```

## 4.7. hours specification

An hours specification object allows the representations of schedules over periods of time. They can be used to specify when a person or organization can be contacted, when a place is open, or when a recurrent event will occur. Hours specification objects may contain daily and weekly schedules, which in turn contain arrays of opening and closing hours for a given day.

Each opening/closing interval is represented by an object containing an `opens` and a `closes` [time](#) strings. For example, the interval from 9am to 5pm may be represented as `{ "opens": "09:00:00", "closes": "17:00:00" }`. For a single day, an array of these objects represents the daily opening schedule. For example, the working hours of an office may be represented by an array with two object spaced by a lunch break, as in the following case:

```
[
  { "opens": "09:00:00", "closes": "12:00:00" },
  { "opens": "14:00:00", "closes": "17:00:00" }
]
```

The hours specification object represents daily and weekly schedules by using the aforementioned arrays to describe the schedules of each date. For that, the hours specification object **MUST** contain two nullable fields, `dailySchedules` and `weeklySchedules` that respectively contain daily and weekly schedules.

The `dailySchedules` field is a nullable non-empty object whose fields are `date` strings and represent the schedule for the listed dates. Each date field is a nullable non-empty array of opening interval objects. Each date set to `null` represents that no opening interval exists for the given date (i.e., represents a closed date). For example, a 5-days conference containing a skipped date between satellite and main events maybe be represented as follows:

```
{
  "dailySchedules": {
    "2020-04-06": [ { "opens": "08:00:00", "closes": "18:00:00" } ],
    "2020-04-07": [ { "opens": "08:00:00", "closes": "18:00:00" } ],
    "2020-04-08": null,
    "2020-04-09": [ { "opens": "08:00:00", "closes": "18:00:00" } ],
    "2020-04-10": [ { "opens": "08:00:00", "closes": "18:00:00" } ],
  },
  "weeklySchedules": null
}
```

The `weeklySchedules` field is a nullable non-empty array of objects representing recurrent weekly schedules over defined periods of time. Each object within the `weeklySchedules` array **MUST** contain the following fields:

- `validFrom`: a non-nullable `date` string that represents the first valid day of the weekly schedule.
- `validTo`: a non-nullable `date` string that represents the last valid day of the weekly schedule.
- `sunday`: a nullable non-empty array of opening interval objects that represents the schedule for every Sunday within the validity of the weekly schedule.
- `monday`: a nullable non-empty array of opening interval objects that represents the schedule for every Monday within the validity of the weekly schedule.
- `tuesday`: a nullable non-empty array of opening interval objects that represents the schedule for every Tuesday within the validity of the weekly schedule.
- `wednesday`: a nullable non-empty array of opening interval objects that represents the schedule for every Wednesday within the validity of the weekly schedule.
- `thursday`: a nullable non-empty array of opening interval objects that represents the schedule for every Thursday within the validity of the weekly schedule.
- `friday`: a nullable non-empty array of opening interval objects that represents the schedule for every Friday within the validity of the weekly schedule.
- `saturday`: a nullable non-empty array of opening interval objects that represents the schedule for every Saturday within the validity of the weekly schedule.

The `weeklySchedules` may represent, for example, a shopping mall that opens beyond regular hours on Saturdays but closes on Sundays, as follows:

```

{
  "dailySchedules": null,
  "weeklySchedules": [
    {
      "validFrom": "2020-01-01",
      "validTo": "2020-12-31",
      "monday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "tuesday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "wednesday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "thursday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "friday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "saturday": [ { "opens": "08:00:00", "closes": "22:00:00" } ],
      "sunday": null
    }
  ],
}

```

The following constraints apply to hours specification objects:

- within a single date, opening interval objects MUST NOT overlap
- within the weeklySchedules array, the validity window (between validFrom to validTo) of any two objects MUST NOT overlap
- schedules within dailySchedules have precedence over schedules within weeklySchedules for the same date
- the closing time of an opening interval object MAY go beyond midnight into the following day

In order to exemplify the combination daily and weekly schedules, we can exceptions to the shopping mall example, adding that it could be closed in during the first week of the year and that it includes exceptional schedules during the holidays.

```

{
  "dailySchedules": {
    "2020-12-24": [ { "opens": "08:00:00", "closes": "02:00:00" } ],
    "2020-12-25": [ { "opens": "08:00:00", "closes": "16:00:00" } ],
    "2020-12-26": null,
  },
  "weeklySchedules": [
    {
      "validFrom": "2020-01-01",
      "validTo": "2020-01-07",
      "monday": null,
      "tuesday": null,
      "wednesday": null,
      "thursday": null,
      "friday": null,
      "saturday": null,
      "sunday": null
    },
    {
      "validFrom": "2020-01-08",
      "validTo": "2020-12-31",
      "monday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "tuesday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "wednesday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "thursday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "friday": [ { "opens": "08:00:00", "closes": "20:00:00" } ],
      "saturday": [ { "opens": "08:00:00", "closes": "22:00:00" } ],
      "sunday": null
    }
  ],
}

```

## 4.8. snow condition

A snow condition object allows the representation of the conditions of a trail, snowpark, or a mountain area at a given moment in time.

The object is described by the following fields:

- **baseSnow**: a number representing the depth of base snow in a location. Measured in centimeters. Non-nullable.
- **baseSnowRange**: an object that identifies the variation in the depth of snow in a location. Nullable. This object contains two fields:
  - **lower**: a number that identifies the smallest depth of snow found in a location. Measured in centimeters. Non-nullable.
  - **upper**: a number that identifies the biggest depth of snow found in a location. Measured in centimeters. Non-nullable.
- **groomed**: a boolean flag indicating whether or not the snow in a location has been groomed. Nullable.
- **latestStorm**: a number representing the amount of snow from the latest storm cycle in a location. Measured in centimeters. Nullable.
- **obtainedIn**: a [date](#) or [date-time](#) string that identifies when the data contained in the snow condition objects was obtained. Nullable.
- **primarySurface**: a [category](#) string that indicates the primary type of snow found in a location. Non-nullable. It is RECOMMENDED the usage of [snow types](#) defined in MTN.XML, which are identified by the `mtnxml` namespace: `"mtnxml/packed-powder"`, `"mtnxml/powder"`, `"mtnxml/hard-pack"`, `"mtnxml/loose-granular"`, `"mtnxml/frozen-granular"`, `"mtnxml/wet-packed"`, `"mtnxml/wet-granular"`, `"mtnxml/wet-snow"`, `"mtnxml/spring-conditions"`, `"mtnxml/windblown"`, `"mtnxml/corn-snow"`, `"mtnxml/icy"`, `"mtnxml/variable"`
- **secondarySurface**: a [category](#) string that indicates the secondary type of snow found in a location. Nullable. Its recommended values are those listed for `primarySurface`.
- **snowMaking**: a boolean flag indicating whether or not the snow in a location has been artificially produced. Nullable.
- **snowOverNight**: a number representing the amount of snow accumulated in a location throughout the night before the measurement. Measured in centimeters. Nullable.

The following example illustrates the minimal information required for a snow condition object:

```
{
  "obtainedIn": null,
  "primarySurface": "mtnxml/powder",
  "secondarySurface": null,
  "baseSnow": 50,
  "baseSnowRange": null,
  "latestStorm": null,
  "snowOverNight": null,
  "groomed": null,
  "snowMaking": null
}
```

The following example illustrates all fields of snow condition object:

```

{
  "obtainedIn": "2020-01-18T08:00:00+04:00",
  "primarySurface": "mtnxml/powder",
  "secondarySurface": "mtnxml/packed-powder",
  "baseSnow": 50,
  "baseSnowRange": {
    "lower": 40,
    "upper": 60
  },
  "latestStorm": 40,
  "snowOverNight": 5,
  "groomed": true,
  "snowMaking": false
}

```

## 4.9. text

Every field used to exchange textual data (e.g. name, description) supports the use of multiple languages. Such fields have, like their values, objects containing language codes as keys (e.g. eng, ita, deu), and the actual text in each language as values.

The example below illustrates how to represent the field name in German, English, and Italian.

```

{
  ...
  "name": {
    "deu": "Mein name",
    "eng": "My Name",
    "ita": "Il mio nome"
  },
  ...
}

```

The language codes used in the aforementioned objects are those defined in ISO 639-3, which can be found at [https://iso639-3.sil.org/code\\_tables/639/](https://iso639-3.sil.org/code_tables/639/).

The table below contains some examples of languages and their respective ISO 639-3 codes:

Language	ISO-639-3
German	deu
English	eng
Italian	ita
Ladin	lld
French	fra
Chinese	zho
Spanish	spa

Note that a language-specific field should only be added if there is available data. For instance, if only the English version of a resource's name is available, it should be represented as:

```

{
  ...
  "name": {
    "eng": "My Name"
  },
  ...
}

```

## 4.10. time

A string that contains hours, minutes, and seconds, formatted as hh:mm:ss. Corresponds to *full-time* in [RFC 3339](#).

Here is an example:

```
"23:59:59"
```

## 4.11. category string

A string that refers to a category that a given resource instantiates. It consists of a namespace and a category name, formatted as "<namespace>/<categoryname>".

Category strings should validate against the following regular expression:

```
^([a-z]|[A-Z]|[0-9])+\/([a-z]|[A-Z]|[0-9])+$
```

The standard may define a set of categories for a resource type. In such a case, the chosen namespace is `alpinebits`. For example, some types of [Lifts](#) are "alpinebits/chairlift", "alpinebits/skilift", and "alpinebits/gondola".

A SERVER SHALL NOT use `alpinebits` as the namespace of a category it defines.

A SERVER SHOULD adopt a single namespace for all categories it defines.

An example of a non-standardized category is "unibz/academic", which could represent a category defined by the Free University of Bozen-Bolzano (acting as a SERVER) that classifies events that its students can attend.

## 4.12. url

A string containing a valid universal resource identifier (URI), as defined in [RFC 3986](#).

Here are some valid examples provided in the RFC 3986:

```
ftp://ftp.is.co.za/rfc/rfc1808.txt
http://www.ietf.org/rfc/rfc2396.txt
ldap://[2001:db8::7]/c=GB?objectClass=one
mailto:John.Doe@example.com
news:comp.infosystems.www.servers.unix
tel:+1-816-555-1212
telnet://192.0.2.16:80/
urn:oasis:names:specification:docbook:dtd:xml:4.1.2
```

# 5. Resources

## 5.1. Basic resource schema

### 5.1.1. Basic Fields

Every resource MUST have the following fields:

- **type**: a string that identifies the resource's type within an enumeration of possible values. Non-nullable. Enumeration.  
Its possible values are "agents", "events", "eventSeries", "lifts", "mediaObjects", "mountainAreas", "snowparks", "trails", and "venues".
- **id**: a string that uniquely and persistently identifies the resource within a SERVER. Non-nullable. Non-empty. Unique.
- **meta**: an object containing metadata of the resource (e.g., the URL representing the resource's data provider or a [date-time](#) string of the instant of the resource's last update).
- **attributes**: an object containing the resource's data that does not refer to other resources (e.g. the name of an event, the length of a trail).
- **relationships**: an object containing the resource's data referring to other resources (e.g. the organizers of an event, the trails within a mountain area).
- **links**: an object containing the links related to access related resources (e.g., a link to the agent resources representing organizers and sponsors of an event, a link to the media object resources representing multimedia descriptions of a mountain area resource, or a link to the resource itself, also referred to as `self`).

For example, an event resource (i.e. a resource of type `events`) might be represented as follows:

```
{
  "type": "events",
  "id": "1",
  "meta": {
    "lastUpdate": "2019-11-05T08:15:30-05:00",
    ...
  },
  "attributes": {
    "name": {
      "eng": "My event",
      "ita": "Il mio evento"
    },
    "startDate": "2020-04-01T09:30:00+00:00",
    ...
  },
  "relationships": {
    "organizers": {
      "data": [
        {
          "type": "agents",
          "id": "1"
        }
      ],
      "links": {
        "related": "https://example.com/1.0/events/1/organizer"
      }
    },
    ...
  },
  "links": {
    "self": "https://example.com/1.0/events/1"
  }
}
```

Note that each reference to another resource within the data in the relationships object consists only of a type and an id. The relationships object SHALL NOT contain the actual data of these resources, but only their references. We refer to the Section [Relationships Object](#) for the mechanisms on how to access the actual referenced resource.

Each resource type defines a set of fields that must be present in each of these objects. However, a specific SERVER, when implementing the AlpineBits® DestinationData, MAY include additional fields, but it MUST comply to the [JSON:API v1.0](#) standard (e.g., additional metadata fields within the meta object, or additional resource's attributes within the attributes object). It is also RECOMMENDED that the SERVER follow the style of the AlpineBits® DestinationData standard when including additional fields.

### 5.1.2. Meta Object

A meta object MUST contain the following fields:

- `lastUpdate`: a [date-time](#) that identifies when a resource was last modified in the SERVER. If no modifications were made after the resource's creation, the value in this field will be the creation date. Nullable.
- `dataProvider`: a [url](#) that identifies the organization responsible for the data about a resource and who can be contacted in case of questions or issues regarding it. Nullable.  
For example, the URL "<http://tourism.opendatahub.bz.it/>" would be used to represent that a resource has been modified by the OpenDataHub platform.

An example of meta object is presented below:

```
{
  "dataProvider": "http://tourism.opendatahub.bz.it/",
  "lastUpdate": "2019-05-01T08:15:30-05:00"
}
```

### 5.1.3. Attributes Object

The attributes object of every resource in this specification MUST contain the following fields:

- `abstract`: a [text](#) object containing a short textual description of the resource. The size of an abstract in any given language SHOULD be at most 200 characters long. This field SHOULD NOT contain the same data as in the description field. Nullable.
- `categories`: an array of [category](#) strings identifying the types instantiated by the resource. The values proposed by the standard for each resource type are listed in each resource section.
- `description`: a [text](#) object containing the complete textual description of the resource. If `abstract` is not null, this field MUST NOT be null.
- `shortName`: a [text](#) object containing a short name of the resource. The size of a short name in any given language SHOULD be at most 36 characters long. This field SHOULD NOT contain the same data as in the name field. Nullable.
- `name`: a [text](#) object containing the complete name of the resource. This field MUST NOT be null if `shortName` is not null or if otherwise specified for by a particular resource type.
- `url`: a [url](#) string or a multilingual url object containing language-specific [url](#) strings. Nullable if not otherwise specified.

An example of a URL string:

```
"https://www.alpinebits.org/events/1"
```

An example of a multilingual URL object:

```

{
  "deu": "https://www.alpinebits.org/de/events/1",
  "eng": "https://www.alpinebits.org/en/events/1",
  "ita": "https://www.alpinebits.org/it/events/1"
}

```

The following object exemplifies the use of the basic attributes defined above for an event resource:

```

{
  "type": "events",
  "id": "1",
  "meta": { ... },
  "attributes": {
    "abstract": {
      "eng": "An event for those who want to implement AlpineBits at their companies.",
      "ita": "Un evento per coloro che vogliono implementare AlpineBits nelle loro aziende."
    },
    "description": {
      "eng": "A 1-day workshop in which we present and explain the standard, give implementation suggestions...",
      "ita": "Un workshop da 1 giorno in cui presentiamo e spieghiamo lo standard, facciamo suggerimenti di implementazione..."
    },
    "name": {
      "eng": "AlpineBits DestinationData workshop for newcomers",
      "ita": "AlpineBits DestinationData workshop per i nuovi membri"
    },
    "shortName": {
      "eng": "DestinationData Workshop",
      "ita": "DestinationData Workshop"
    },
    "url": "https://www.alpinebits.org/events/1",
    "categories": [ "schema/BusinessEvent" ]
    ...
  },
  "relationships": { ... },
  "links": { ... }
}

```

The object below exemplifies an event which only has a name in English and no short name:

```

{
  "type": "events",
  "id": "1",
  "meta": { ... },
  "attributes": {
    "name": {
      "eng": "AlpineBits DestinationData workshop for newcomers."
    },
    "shortName": null,
    ...
  },
  "relationships": { ... },
  "links": { ... }
}

```

### 5.1.4. Relationships Object

The relationships object contains reference objects to [one](#) or [many](#) resources in every field allowing for resources to be connected through domain relationship in a modular way (see [Relationship in JSON:API v1.0](#)). Every relationship (i.e., relationship field) within the relationships object MUST contain either a reference object or `null`. Every resource type MUST define the relationships within the relationships object as either [Reference to One](#) objects or [Reference to Many](#) objects depending on

the semantic of the relationship.

## Reference to One

A reference object to one resource MUST contain the following fields:

- `data`: an object containing the `type` string and the `id` string of the referred resource.
- `links`: an object containing the `related` field with a string representing the endpoint on which the referred resource is available.  
In case the resource does not support the endpoint of the related resource, the presence of the field `related` is OPTIONAL.

For example, the [Media Objects](#) resource type defines a relationship `copyrightOwner` (see [Relationships](#)) to the agent resource representing the media object's owner:

```
{
  "type": "mediaObjects",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": {
    "copyrightOwner": {
      "data": {
        "type": "agents",
        "id": "1"
      },
      "links": {
        "related": "https://example.com/1.0/mediaObjects/1/copyrightOwner"
      }
    }
  },
  "links": { ... }
}
```

In case a resource has no related resource, the reference can be set to `null` according to the requirements defined in its resource type. For example, a media object resource that does not refer to an agent resource as its copyright owner can be presented as follows:

```
{
  "type": "mediaObjects",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": {
    "copyrightOwner": null
  },
  "links": { ... }
}
```

## Reference to Many

A reference object to many resources MUST contain the following fields:

- `data`: an array of objects containing the `type` string and the `id` string of each referred resource.
- `links`: an object containing the `related` field with a string representing the endpoint on which the referred resources are available.  
In case the resource does not support the endpoint of the related resource, the presence of the field `related` is OPTIONAL.

For example, the [event](#) resource type defines a relationship `organizers` (see [Relationships](#)) to the agent resources representing the event's owner:

```

{
  "type": "events",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": {
    "organizers": {
      "data": [
        {
          "type": "agents",
          "id": "4"
        },
        {
          "type": "agents",
          "id": "1"
        },
        {
          "type": "agents",
          "id": "9"
        }
      ],
      "links": {
        "related": "https://example.com/1.0/mediaObjects/1/copyrightOwner"
      }
    },
    ...
  },
  "links": { ... }
}

```

In case a resource has no related resource, the reference can be set to `null` according to the requirements defined in its resource type. For example, a media object resource that does not refer to an agent resource as its copyright owner can be presented as follows:

```

{
  "type": "events",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": {
    "organizers": null,
    ...
  },
  "links": { ... }
}

```

Every resource, with the exception of instances of [media objects](#) resource type, MUST contain the following [Reference to Many](#) within the `relationships` object:

- `multimediaDescriptions`: a non-empty array of references to [media objects](#) that describe or illustrate a resource. Media objects may represent images, videos, audio, data documents (e.g. csv, json), textual documents (e.g. doc, pdf), html documents, and so on.

Here is an example of how to use the `multimediaDescriptions` relationship:

```

{
  "type": "events",
  "id": "1",
  "attributes": { ... },
  "relationships": {
    "multimediaDescriptions": {
      "data": [
        {
          "type": "mediaObjects",
          "id": "1"
        },
        {
          "type": "mediaObjects",
          "id": "2"
        },
        {
          "type": "mediaObjects",
          "id": "3"
        }
      ],
      "links": {
        "related": "https://example.com/1.0/events/1/multimediaDescriptions"
      }
    }
  },
  ...
},
"links": { ... }
}

```

### 5.1.5. Links Object

The links object of instances of every resource type MUST contain the following fields:

- `self`: a string representing the endpoint on which the container resource is available. For example, an [event](#) resource may be presented as follows:

```

{
  "type": "events",
  "id": "1",
  "attributes": { ... },
  "relationships": { ... },
  "links": {
    "self": "https://example.com/1.0/events/1"
  }
}

```

## 5.2. Resource schemas

### 5.2.1. Agents

A resource that implements the concept of [Agent](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource MUST contain the following fields:

- `type`: the constant "agents" that identifies the resource as being of the type agent.
- `id`: a string that uniquely and persistently identifies the agent within a SERVER. See the definition in [Basic Fields](#).
- `attributes`: an object containing the attributes of the agent.
- `relationships`: an object containing the relationships of the agent to other resources.
- `links`: an object containing the links related to the agent.

Agent resources are structured in the following way:

```

{
  "type": "agents",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}

```

## Meta

See the definition of the meta object in [Meta Object](#).

## Attributes

The attributes object of the agent resource MUST contain the following fields:

- **abstract**: a [text](#) object containing a brief description for the agent. Nullable. See the definition in [Attributes Object](#).
- **categories**: an array of [category](#) strings identifying the types instantiated by the agent. Nullable. Non-empty. See the definition in [Attributes Object](#).  
The standard defines the following disjoint types of agent:
  - "alpinebits/person": an agent resource representing a particular person. For instance, an artist who sings at a concert or a photographer who owns the copyright of a photo.
  - "alpinebits/organization": an agent resource representing a public or a private organization. For instance, a company organizing an event or the owner of a mountain area.
- **contactPoints**: an array of [contact point](#) objects. Nullable. Non-empty.
- **description**: a [text](#) object containing a description of the agent. Nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **name**: a [text](#) object containing the complete name of the agent. Non-nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **shortName**: a [text](#) object containing a short name of the agent. Nullable. See the definition in [Attributes Object](#).
- **url**: a [url](#) describing the agent, such as a website or a Wikipedia page. Nullable. See the definition in [Attributes Object](#).

A summary of the attributes is presented in the table below:

Field	Type	Constraints
abstract	<a href="#">text</a>	Nullable
categories	Array of <a href="#">category string</a>	Nullable, Non-empty
contactPoints	Array of <a href="#">contact point</a>	Nullable, Non-empty
description	<a href="#">text</a>	Nullable, Conditional Assignment
name	<a href="#">url</a>	Non-nullable, Conditional Assignment
shortName	<a href="#">text</a>	Nullable
url	<a href="#">url</a>	Nullable

## Relationships

The relationships object of the agent resource MUST contain the following fields:

- **multimediaDescriptions**: a [Reference to Many](#) media object resources (see [Media Objects](#)) that are related to the agent. See Section [multimediaDescriptions](#). Nullable. Non-empty.

A summary of the relationships is presented in the table below:

Field	Type	Constraints
multimediaDescriptions	<a href="#">Reference to Many object to Media Objects</a>	Nullable, Non-empty

## Links

See the definition of the `links` object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return agent resources:

- <https://example.com/1.0/agents>: returns a collection of agents.
- <https://example.com/1.0/agents/:id>: returns the agent identified by the `:id` parameter.
- <https://example.com/1.0/events/:id/organizer>: returns the agent who is the organizer of the event.
- <https://example.com/1.0/events/:id/publisher>: returns the agent who is the publisher of the event.
- <https://example.com/1.0/events/:id/sponsors>: returns a collection of agents that are sponsors of the event.
- <https://example.com/1.0/events/:id/contributor>: returns the agent who is the contributor of the event.
- <https://example.com/1.0/mediaObject/:id/copyrightOwner>: returns the agent who is the copyright owner of the media object.
- <https://example.com/1.0/mountainAreas/:id/areaOwner>: returns the agent who is the owner of the mountain area.

## Examples

The following example presents an object containing the minimal information required of an agent resource:

```
{
  "type": "agents",
  "id": "1",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "abstract": null,
    "categories": null,
    "contactPoints": null,
    "description": null,
    "name": {
      "eng": "Free University of Bozen-Bolzano"
    },
    "shortName": null,
    "url": null
  },
  "relationships": {
    "multimediaDescriptions": null
  },
  "links": {
    "self": "https://example.com/1.0/agents/1"
  }
}
```

The following example presents an object representing an agent resource:

```
{
  "type": "agents",
  "id": "1",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "abstract": {
      "ita": "La Libera Università di Bolzano sorge in una delle più attraenti regioni europee...",
      "deu": "Die Freie Universität Bozen befindet sich in einer der attraktivsten Regionen Europas...",
      "eng": "The Free University of Bozen-Bolzano is located in one of the most fascinating European regions..."
    },
    "categories": [
      "alpinebits/organization"
    ],
    "contactPoints": [
      {
        "email": "info@noi.bz.it",
        "telephone": "+39 0471 066 600",
        "address": {
          "street": {
            "ita": "Piazza Università 1"
          },
          "city": {
            "ita": "Bolzano"
          },
          "region": {
            "ita": "Trentino-Alto Adige"
          },
          "country": "IT",
          "zipcode": "39100",
          "complement": {
            "ita": "Ufficio 3.07"
          }
        },
        "categories": [
          "example/main"
        ]
      }
    ],
    "availableHours": {
      "dailySchedules": {
        "2020-12-23": [
          {
            "opens": "08:00:00",
            "closes": "12:00:00"
          }
        ],
        "2020-12-25": null
      },
      "weeklySchedules": [
        {
          "validFrom": "2020-01-01",
          "validTo": "2020-12-31",
          "monday": [
            {
              "opens": "08:00:00+01:00",
              "closes": "12:00:00+01:00"
            },
            {
              "opens": "14:00:00+01:00",
              "closes": "18:00:00+01:00"
            }
          ]
        }
      ]
    }
  }
}
```

```

    ],
    "tuesday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "12:00:00+01:00"
      },
      {
        "opens": "14:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "wednesday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "12:00:00+01:00"
      },
      {
        "opens": "14:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "thursday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "12:00:00+01:00"
      },
      {
        "opens": "14:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "friday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "12:00:00+01:00"
      },
      {
        "opens": "14:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "saturday": null,
    "sunday": null
  }
}
]
},
],
"description": {
  "ita": "La Libera Università di Bolzano sorge in una delle più attraenti regioni europee, al crocevia tra il mondo economico e culturale tedesco e italiano.",
  "deu": "Die Freie Universität Bozen befindet sich in einer der attraktivsten Regionen Europas an der Schnittstelle zwischen dem deutschsprachigen und italienischen Kultur- und Wirtschaftsraum.",
  "eng": "The Free University of Bozen-Bolzano is located in one of the most fascinating European regions, at the crossroads between the German-speaking and Italian economies and cultures."
},
"name": {
  "ita": "Libera Univeristà di Bolzano",
  "deu": "Freie Universität Bozen",
  "eng": "Free University of Bozen-Bolzano"
},
"shortName": {
  "eng": "Unibz"
},
"url": "https://www.unibz.it"
},
"relationships": {
  "multimediaDescriptions": {

```

```

    "data": [
      {
        "type": "mediaObjects",
        "id": "1"
      }
    ],
    "links": {
      "related": "https://example.com/1.0/agents/1/multimediaDescriptions"
    }
  },
  "links": {
    "self": "https://example.com/1.0/agents/1"
  }
}

```

asciidoc/examples/agent.full.json

## 5.2.2. Events

A resource that implements the concept of [Event](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource **MUST** contain the following fields:

- **type**: the constant "events" that identifies the resource as being of the type event.
- **id**: a string that uniquely and persistently identifies the event within a SERVER. See the definition in [Basic Fields](#).
- **attributes**: an object containing the attributes of the event.
- **relationships**: an object containing the relationships of the event to other resources.
- **links**: an object containing the links related to the event.

An event resource is structured as follows:

```

{
  "type": "events",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}

```

### Meta

See the definition of the meta object in [Meta Object](#).

### Attributes

The attributes object of an event resource **MUST** contain the following fields:

- **abstract**: a [text](#) object containing a brief description of the event. Nullable. See the definition in [Attributes Object](#).
- **capacity**: an integer representing the total number of individuals that can attend the event. Nullable. Positive integer.
- **categories**: an array of [category](#) strings identifying the types instantiated by the event. Nullable. Non-empty. See the definition in [Attributes Object](#).  
The standard recommends the use of [event types](#) defined in Schema.org, which are identified by the schema namespace: "schema/BusinessEvent", "schema/ChildrensEvent", "schema/ComedyEvent", "schema/CourseInstance", "schema/DanceEvent", "schema/DeliveryEvent", "schema/EducationEvent", "schema/EventSeries",

- "schema/ExhibitionEvent", "schema/Festival", "schema/FoodEvent",  
 "schema/Hackathon", "schema/LiteraryEvent", "schema/MusicEvent",  
 "schema/PublicationEvent", "schema/SaleEvent", "schema/ScreeningEvent",  
 "schema/SocialEvent", "schema/SportsEvent", "schema/TheaterEvent",  
 "schema/VisualArtsEvent"
- **description**: a [text](#) object containing a description of the event. Nullable. Conditional Assignment. See the definition in [Attributes Object](#).
  - **endDate**: a string, formatted as [date](#) or [date-time](#), representing when the event is planned to end. This field can only be null if startDate is defined.
  - **name**: a [text](#) object containing the complete name of the event. Non-nullable. Conditional Assignment. See the definition in [Attributes Object](#).
  - **shortName**: a [text](#) object containing a short name of the event. Nullable. See the definition in [Attributes Object](#).
  - **startDate**: a string, formatted as [date](#) or [date-time](#), representing when the event is planned to start. This field can only be null if endDate is defined.
  - **status**: a string representing the current status of the event. Nullable. The possible values for this field are the following enumerated values:
    - **published**: the event has been published. It may or may not have happened.
    - **canceled**: the event has been canceled. Events can only be canceled before they have started.
  - **url**: a [url](#) describing the event, such as a website or a Wikipedia page. Nullable. See the definition in [Attributes Object](#).

A summary of the attributes is presented in the table below:

Field	Type	Constraints
abstract	<a href="#">text</a>	Nullable
capacity	integer	Nullable, Greater than Zero
categories	Array of <a href="#">category string</a>	Nullable, Non-empty
description	<a href="#">text</a>	Nullable
endDate	<a href="#">date</a> or <a href="#">date-time</a>	Nullable, Conditional Assignment
name	<a href="#">text</a>	Non-Nullable
shortName	<a href="#">text</a>	Nullable
startDate	<a href="#">date</a> or <a href="#">date-time</a>	Nullable, Conditional Assignment
status	string	Nullable, Enumeration
url	<a href="#">url</a>	Nullable

## Relationships

The relationships object of an event resource MUST contain the following fields:

- **contributors**: a [Reference to Many](#) agent resources (see [Agents](#)), which identifies the agents expected to participate in the event, such as a speaker who will give a talk or a musician who will perform at a concert. Contributors do not include those attending the event. Nullable. Non-empty.
- **multimediaDescriptions**: a [Reference to Many](#) media object resources (see [Media Objects](#)) that are related to the event. See Section [multimediaDescriptions](#). Nullable. Non-empty.
- **organizers**: a [Reference to Many](#) agent resources (see [Agents](#)) identifying the persons or organizations responsible for organizing the event. Non-nullable. Non-empty.
- **publisher**: a [Reference to One](#) agent resource (see [Agents](#)) who originally provided the data about the event. The publisher is not the organization who manages the system where the data was originally inserted, but the organization actually provided the data. Non-nullable.

- **series**: a [Reference to One](#) event series resource (see [Event Series](#)) of which the event is an edition of. For instance, the Südtirol Jazz Festival 2020 is an edition of the Südtirol Jazz Festival. Nullable.
- **sponsors**: a [Reference to Many](#) agent resources (see [Agents](#)) identifying the persons or organizations who are sponsoring the event. Nullable. Non-empty.
- **subEvents**: a [Reference to Many](#) event resources (see [Events](#)) identifying the parts of the event. For instance, a festival may consist of several concerts and a conference may consist of several presentations and a keynote. Nullable. Non-empty.

There SHALL NOT be a circular composition of events. For instance, if X is a sub-event of Y, and Y is a sub-event of Z, Z SHALL NOT be a sub-event of X.

Note that sub-events are not restricted to the temporal boundaries of their parent events. For instance, a conference that starts on 15/03/2020 and ends on 20/03/2020 may have, as a sub-event, a pre-conference meeting that is scheduled for the 14/03/2020.

- **venues**: a [Reference to Many](#) venue resources (see [Venues](#)) identifying where the event will happen. Non-nullable. Non-empty.

A summary of the relationships is presented in the table below:

Field	Type	Constraints
contributors	<a href="#">Reference to Many</a> object to <a href="#">Agents</a>	Nullable, Non-empty
multimediaDescriptions	<a href="#">Reference to Many</a> object to <a href="#">Media Objects</a>	Nullable, Non-empty
organizers	<a href="#">Reference to Many</a> object to <a href="#">Agents</a>	Non-Nullable, Non-empty
publisher	<a href="#">Reference to One</a> object to <a href="#">Agents</a>	Non-Nullable
series	<a href="#">Reference to One</a> object to <a href="#">Event Series</a>	Nullable
sponsors	<a href="#">Reference to Many</a> object to <a href="#">Agents</a>	Nullable, Non-empty
subEvents	<a href="#">Reference to Many</a> object to <a href="#">Events</a>	Nullable, Non-empty
venues	<a href="#">Reference to Many</a> object to <a href="#">Venues</a>	Non-Nullable, Non-empty

## Links

See the definition of the `links` object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return event resources:

- <https://example.com/1.0/events>: returns a collection of events.
- <https://example.com/1.0/events/:id>: returns the event identified by the `:id` parameter.
- <https://example.com/1.0/events/:id/subEvents>: returns a collection of events that are part of the event.
- <https://example.com/1.0/eventSeries/:id/editions>: returns a collection of events that are editions of the event series.

## Examples

The following example contains the minimal information required for an event resource:

```
{
  "type": "events",
  "id": "1",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "name": {
      "eng": "Südtirol Jazz Festival 2018"
    },
    "shortName": null,
    "description": null,
    "abstract": null,
    "startDate": "2018-06-29T00:00:00+00:00",
    "endDate": null,
    "url": null,
    "categories": null,
    "status": null,
    "capacity": null
  },
  "relationships": {
    "series": null,
    "publisher": {
      "data": {
        "type": "agents",
        "id": "1"
      }
    },
    "links": {
      "related": "https://example.com/1.0/events/1/publisher"
    }
  },
  "organizers": {
    "data": [
      {
        "type": "agents",
        "id": "2"
      }
    ],
    "links": {
      "related": "https://example.com/1.0/events/1/organizers"
    }
  },
  "sponsors": null,
  "contributors": null,
  "multimediaDescriptions": null,
  "venues": {
    "data": [
      {
        "type": "venues",
        "id": "1"
      }
    ],
    "links": {
      "related": "https://example.com/1.0/events/1/venues"
    }
  },
  "subEvents": null
},
"links": {
  "self": "https://example.com/1.0/events/1"
}
}
```

The following example illustrates the fields defined for event resources:

```
{
  "type": "events",
  "id": "1",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "name": {
      "eng": "Südtirol Jazz Festival 2020",
      "deu": "Südtirol Jazz Festival 2020",
      "ita": "Südtirol Jazz Festival 2020"
    },
    "shortName": {
      "eng": "Südtirol Jazz Festival 2020"
    },
    "description": {
      "deu": "Beim Südtirol Jazzfestival Alto Adige wagen sich Solisten und Ensembles nicht nur in schwindelerregende musikalische „Höhen“ vor, sondern besteigen, mit ihren Instrumenten im Gepäck, sogar „echte“ Berge und bespielen dabei eine atemberaubende alpine Landschaft. Das Festival selbst beschreitet oft ganz neue Wege: selbstbewusst und sich mitunter über zerklüftete Spalten herantastend, versucht es in neue Klanglandschaften vorzudringen. Mainstream und Konzertsäle sind beim Südtirol Jazzfestival Alto Adige vom Aussterben bedroht...."
    },
    "abstract": {
      "deu": "Das Südtirol Jazzfestival Alto Adige ist ein in Südtirol stattfindendes Musikfestival für Jazz und experimentelle Musik."
    },
    "startDate": "2020-06-26T21:00:00+00:00",
    "endDate": "2020-07-07T23:30:00+00:00",
    "url": "https://www.suedtiroljazzfestival.com/",
    "categories": [
      "schema/MusicEvent"
    ],
    "status": "published",
    "capacity": 1000
  },
  "relationships": {
    "series": {
      "data": {
        "type": "eventSeries",
        "id": "1"
      },
      "links": {
        "related": "https://example.com/1.0/events/1/eventSeries"
      }
    },
    "publisher": {
      "data": {
        "type": "agents",
        "id": "1"
      },
      "links": {
        "related": "https://example.com/1.0/events/1/publisher"
      }
    },
    "organizers": {
      "data": [
        {
          "type": "agents",
          "id": "2"
        }
      ],
      "links": {
```

```

    "related": "https://example.com/1.0/events/1/organizers"
  }
},
"sponsors": {
  "data": [
    {
      "type": "agents",
      "id": "3"
    },
    {
      "type": "agents",
      "id": "4"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/events/1/sponsors"
  }
},
"contributors": {
  "data": [
    {
      "type": "agents",
      "id": "5"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/events/1/contributors"
  }
},
"multimediaDescriptions": {
  "data": [
    {
      "type": "mediaObjects",
      "id": "1"
    },
    {
      "type": "mediaObjects",
      "id": "2"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/events/1/multimediaDescriptions"
  }
},
"venues": {
  "data": [
    {
      "type": "venues",
      "id": "1"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/events/1/venues"
  }
},
"subEvents": {
  "data": [
    {
      "type": "events",
      "id": "2"
    },
    {
      "type": "events",
      "id": "3"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/events/1/subEvents"
  }
}
}

```

```
},
"links": {
  "self": "https://example.com/1.0/events/1"
}
}
```

examples/event.full.json

### 5.2.3. Event Series

A resource that implements the concept of [Event Series](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource **MUST** contain the following fields:

- **type**: the constant "eventSeries" that identifies the resource as being of the type event series.
- **id**: a string that uniquely and persistently identifies the event series within a SERVER. See the definition in [Basic Fields](#).
- **attributes**: an object containing the attributes of the event series.
- **relationships**: an object containing the relationships of the event series to other resources.
- **links**: an object containing the links related to the event series.

Event series resources are structured in the following way:

```
{
  "type": "eventSeries",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}
```

#### Meta

See the definition of the meta object in [Meta Object](#).

#### Attributes

The **attributes** object of the event resource **MUST** contain the following fields:

- **abstract**: a [text](#) object containing a brief description for the event series. Nullable. See the definition in [Attributes Object](#).
- **categories**: an array of [category](#) strings identifying the types instantiated by the event series. Nullable. Non-empty. See the definition in [Attributes Object](#). No type is pre-defined by the standard.
- **description**: a [text](#) object containing a description of the event series. Nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **frequency**: a string representing how often editions of the event series are organized according to an enumeration of possible values. Nullable. Enumeration.  
For example, event series with the **frequency** field set to "weekly" may include street markets and guided city tours, while event series with the **frequency** field set to "yearly" may include Südtirol Jazz Festival or Flower Festival.  
If set, the **frequency** field **MUST** be assigned one of the following values:
  - **daily**: when editions of the event series are organized **every day**, such as the daily street market of Bolzano.
  - **weekly**: when editions of the event series are organized **every week**, such as the weekly

farmers' market of Bolzano.

- **monthly**: when editions of the event series are organized **every month**, such as a flea market organized every month.
- **bimonthly**: when editions of the event series are organized **every two months**.
- **quarterly**: when editions of the event series are organized **every three months**.
- **annual**: when editions of the event series are organized **every year**, such as the Südtirol Jazz Festival or Bolzano's Christmas Market.
- **biennial**: when editions of the event series are organized **every two years**.
- **triennial**: when editions of the event series are organized **every three years**.
- **name**: a [text](#) object containing the complete name of the event series. Non-nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **shortName**: a [text](#) object containing a short name of the event series. Nullable. See the definition in [Attributes Object](#).
- **url**: a [url](#) describing the event series, such as a website or a Wikipedia page. Nullable. See the definition in [Attributes Object](#).

A summary of the attributes is presented in the table below:

Field	Type	Constraints
abstract	<a href="#">text</a>	Nullable
categories	Array of <a href="#">category string</a>	Nullable, Non-empty
description	<a href="#">text</a>	Nullable, Conditional Assignment
frequency	string	Nullable, Enumeration
name	<a href="#">url</a>	Non-nullable, Conditional Assignment
shortName	<a href="#">text</a>	Nullable
url	<a href="#">url</a>	Nullable

## Relationships

The relationships object of an event series resource MUST contain the following fields:

- **editions**: a [Reference to Many](#) event resources (see [Events](#)) that are editions of the event series. Nullable. Non-empty.
- **multimediaDescriptions**: a [Reference to Many](#) media object resources (see [Media Objects](#)) that are related to the event series. See Section [multimediaDescriptions](#). Nullable. Non-empty.

A summary of the relationships is presented in the table below:

Field	Type	Constraints
editions	<a href="#">Reference to Many</a> object to <a href="#">Events</a>	Nullable, Non-empty
multimediaDescriptions	<a href="#">Reference to Many</a> object to <a href="#">Media Objects</a>	Nullable, Non-empty

## Links

See the definition of the [links](#) object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return event series resources:

- <https://example.com/1.0/eventSeries>: returns a collection of events series.

- <https://example.com/1.0/eventSeries/:id>: returns the event series identified by the `:id` parameter.
- <https://example.com/1.0/events/:id/eventSeries>: returns the event series of which the event is an edition.

## Examples

The following example presents an object containing the minimal information required of an event series resource:

```
{
  "type": "eventSeries",
  "id": "1",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "abstract": null,
    "categories": null,
    "description": null,
    "frequency": null,
    "name": {
      "eng": "Südtirol Jazz Festival"
    },
    "shortName": null,
    "url": null
  },
  "relationships": {
    "multimediaDescriptions": null,
    "editions": null
  },
  "links": {
    "self": "https://example.com/1.0/eventSeries/1"
  }
}
```

`asciidoc/examples/eventseries.min.json`

The following example presents an object representing an event series resource:

```

{
  "type": "eventSeries",
  "id": "1",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "abstract": {
      "eng": "The Südtirol Jazzfestival Alto Adige was held for the first time in 1982
under the name of "Jazz Summer"..."
    },
    "categories": [
      "example/festival"
    ],
    "description": {
      "eng": "The Südtirol Jazzfestival Alto Adige was held for the first time in 1982
under the name of "Jazz Summer", which went on to become "Jazz & Other". While in the
early years the concerts were played only in Bolzano itself, today the festival stretches
throughout the whole of South Tyrol and beyond."
    },
    "frequency": "annual",
    "name": {
      "eng": "Südtirol Jazz Festival",
      "ita": "Südtirol Jazz Festival",
      "deu": "Südtirol Jazz Festival"
    },
    "shortName": {
      "eng": "Südtirol Jazz Festival"
    }
  },
  "url": "https://www.suedtiroljazzfestival.com/"
},
"relationships": {
  "multimediaDescriptions": {
    "data": [
      {
        "type": "mediaObjects",
        "id": "1"
      }
    ],
    "links": {
      "related": "https://example.com/1.0/eventSeries/1/multimediaDescriptions"
    }
  },
  "editions": {
    "data": [
      {
        "type": "events",
        "id": "1"
      },
      {
        "type": "events",
        "id": "2"
      }
    ],
    "links": {
      "related": "https://example.com/1.0/eventSeries/1/editions"
    }
  }
},
"links": {
  "self": "https://example.com/1.0/eventSeries/1"
}
}

```

**asciidoc/examples/eventseries.full.json**

## 5.2.4. Lifts

A resource that implements the concept of [Lift](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource MUST contain the following fields:

- **type**: the constant "lifts" that identifies the resource as being a lift.
- **id**: a string that uniquely and persistently identifies the lift within a SERVER. See the definition in [Basic Fields](#).
- **attributes**: an object containing the attributes of the lift.
- **relationships**: an object containing the relationships of the lift to other resources.
- **links**: an object containing the links related to the lift.

A lift resource is structured as follows:

```
{
  "type": "lifts",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}
```

### Meta

See the definition of the meta object in [Meta Object](#).

### Attributes

The attributes object of a lift resource MUST contain the following fields:

- **abstract**: a [text](#) object containing a brief description for the lift. Nullable. See the definition in [Attributes Object](#).
- **address**: an [address](#) object representing the address of the lift. The address should only be set if the lift is directly accessible from a public road. In such cases, the address should be that of the base station. Nullable.
- **capacity**: a number representing how many persons the lift can transport hourly on average. Nullable. Positive value.
- **categories**: an array of [category](#) strings identifying the types instantiated by the lift. Nullable. Non-empty. See the definition in [Attributes Object](#).  
The standard recommends the following lift types: "alpinebits/chairlift", "alpinebits/gondola", "alpinebits/skilift", "alpinebits/cablecar", "alpinebits/funicular", "alpinebits/magic-carpet", "alpinebits/skibus", "alpinebits/train"
- **description**: a [text](#) object containing a description of the lift. Nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **geometries**: an array of [geometry](#) objects each of which represents the location of the lift in terms of GPS coordinates. There should be at most one geometry object of each type (e.g. Point, LineString). Nullable. Non-empty.
- **howToArrive**: a [text](#) object containing instructions on how to arrive at the lift. Nullable.
- **length**: a number representing the length of the lift in meters. Nullable.
- **maxAltitude**: a number representing the highest elevation point of the lift in meters above sea level. Nullable.
- **minAltitude**: a number representing the lowest elevation point of the lift in meters above sea level. Nullable.

- **name**: a [text](#) object containing the complete name of the lift. Non-nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **openingHours**: an [hours specification](#) object representing the hours in which the lift is open to the public. Nullable.
- **personsPerChair**: an integer representing the number of persons that fit in a single chair/cabin of a lift. Nullable. Positive value.
- **shortName**: a [text](#) object containing a short name of the lift. Nullable. See the definition in [Attributes Object](#).
- **url**: a [url](#) describing the lift, such as a website or a Wikipedia page. Nullable. See the definition in [Attributes Object](#).

A summary of the attributes is presented in the table below:

Field	Type	Constraints
abstract	<a href="#">text</a>	Nullable
address	<a href="#">address</a>	Nullable
capacity	number	Nullable, Greater than Zero
categories	Array of <a href="#">category string</a>	Nullable, Non-empty
description	<a href="#">text</a>	Nullable, Conditional Assignment
geometries	Array of <a href="#">geometry</a>	Nullable, Non-empty
howToArrive	<a href="#">text</a>	Nullable
length	number	Nullable, Unit of Measure, Greater than Zero
maxAltitude	number	Nullable, Unit of Measure
minAltitude	number	Nullable, Unit of Measure
name	<a href="#">url</a>	Non-nullable, Conditional Assignment
openingHours	<a href="#">hours specification</a>	Nullable
personsPerChair	integer	Nullable, Greater than Zero
shortName	<a href="#">text</a>	Nullable
url	<a href="#">url</a>	Nullable

## Relationships

The relationships object of a lift resource MUST contain the following fields:

- **connections**: a [Reference to Many](#) place resources that identify the places that are physically accessible from the lift, which may include [Mountain Areas](#), other [Lifts](#), [Snowparks](#), and [Trails](#). Nullable. Non-empty.
- **multimediaDescriptions**: a [Reference to Many](#) media object resources (see [Media Objects](#)) that are related to the lift. See Section [multimediaDescriptions](#). Nullable. Non-empty.

A summary of the relationships is presented in the table below:

Field	Type	Constraints
connections	<a href="#">Reference to Many</a> object to <a href="#">Mountain Areas</a> , <a href="#">Trails</a> , <a href="#">Lifts</a> , and <a href="#">Snowparks</a>	Nullable, Non-empty
multimediaDescriptions	<a href="#">Reference to Many</a> object to <a href="#">Media Objects</a>	Nullable, Non-empty

## Links

See the definition of the `links` object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return lift resources:

- <https://example.com/1.0/lifts>: returns a collection of lifts.
- <https://example.com/1.0/lifts/:id>: returns the lift identified by the `:id` parameter.
- <https://example.com/1.0/lifts/:id/connections>: returns a collection of resources that may include lifts.
- <https://example.com/1.0/mountainAreas/:id/lifts>: returns a collection of lifts.
- <https://example.com/1.0/mountainAreas/:id/connections>: returns a collection of resources that may include lifts.
- <https://example.com/1.0/snowparks/:id/connections>: returns a collection of resources that may include lifts.
- <https://example.com/1.0/trails/:id/connections>: returns a collection of resources that may include lifts.

## Examples

The following example contains the minimal information required for a lift resource:

```

{
  "type": "lifts",
  "id": "merano2000-l1",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "name": {
      "eng": "Ropeway Merano 2000"
    },
    "shortName": null,
    "description": null,
    "abstract": null,
    "url": null,
    "categories": null,
    "length": null,
    "minAltitude": null,
    "maxAltitude": null,
    "capacity": null,
    "personsPerChair": null,
    "openingHours": null,
    "address": {
      "street": null,
      "city": {
        "eng": "Merano"
      },
      "region": null,
      "country": "IT",
      "zipcode": null,
      "categories": null,
      "complement": null
    },
    "geometries": null,
    "howToArrive": null
  },
  "relationships": {
    "connections": null,
    "multimediaDescriptions": null
  },
  "links": {
    "self": "https://example.com/1.0/lifts/1"
  }
}

```

**asciidoc/examples/lift.min.json**

The following example illustrates the fields defined for lift resources:

```

{
  "type": "lifts",
  "id": "1",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "name": {
      "deu": "Bergbahn Meran 2000",
      "eng": "Ropeway Merano 2000",
      "ita": "Funivia Merano 2000"
    },
    "shortName": {
      "deu": "Meran 2000",
      "eng": "Merano 2000",
      "ita": "Merano 2000"
    }
  },

```

```

"description": {
  "ita": "Situata a pochi minuti dalla città di Merano, la Funivia conduce all'area
sciistica ed escursionistica Merano 2000, un luogo ideale in cui passare una vacanza
all'insegna del movimento e della buona cucina con tutta la famiglia. Grazie al suo clima
mite, l'area offre infinite possibilità per il tempo libero in ogni stagione: impianti di
risalita, sentieri escursionistici facili e numerosi rifugi in cui sostare per assaporare
l'ottima cucina locale in un paesaggio ricco e dominato dalla tranquillità."
},
"abstract": {
  "ita": "Situata a pochi minuti dalla città di Merano, la Funivia conduce all'area
sciistica ed escursionistica Merano 2000, un luogo ideale in cui passare una vacanza
all'insegna del movimento e della buona cucina con tutta la famiglia..."
},
"url": "https://example.com",
"categories": [
  "alpinebits/cablecar"
],
"length": 3650,
"minAltitude": 1000,
"maxAltitude": 2350,
"capacity": 200,
"personsPerChair": 10,
"openingHours": {
  "dailySchedules": {
    "2020-12-25": null
  },
  "weeklySchedules": [
    {
      "validFrom": "2020-01-01",
      "validTo": "2020-12-31",
      "monday": [
        {
          "opens": "08:00:00+01:00",
          "closes": "18:00:00+01:00"
        }
      ],
      "tuesday": [
        {
          "opens": "08:00:00+01:00",
          "closes": "18:00:00+01:00"
        }
      ],
      "wednesday": [
        {
          "opens": "08:00:00+01:00",
          "closes": "18:00:00+01:00"
        }
      ],
      "thursday": [
        {
          "opens": "08:00:00+01:00",
          "closes": "18:00:00+01:00"
        }
      ],
      "friday": [
        {
          "opens": "08:00:00+01:00",
          "closes": "18:00:00+01:00"
        }
      ],
      "saturday": [
        {
          "opens": "08:00:00+01:00",
          "closes": "18:00:00+01:00"
        }
      ],
      "sunday": [
        {
          "opens": "08:00:00+01:00",
          "closes": "18:00:00+01:00"
        }
      ]
    }
  ]
}

```

```

    }
  ]
}
],
"address": {
  "street": {
    "deu": "Naifweg 37",
    "eng": "37 Val di Nova Street",
    "ita": "Via Val di Nova, 37"
  },
  "city": {
    "deu": "Meran",
    "eng": "Merano",
    "ita": "Merano"
  },
  "region": {
    "deu": "Trentino-Südtirol",
    "eng": "Trentino-Alto Adige",
    "ita": "Trentino-Alto Adige"
  },
  "country": "IT",
  "zipcode": "39012",
  "categories": null,
  "complement": null
},
"geometries": [
  {
    "type": "LineString",
    "coordinates": [
      [
        11.305682659149168,
        46.66705018437341
      ],
      [
        11.30692720413208,
        46.667182709603225
      ],
      [
        11.308064460754393,
        46.667491933875965
      ]
    ]
  }
],
"howToArrive": {
  "ita": "Fino alla stazione a valle della Funivia Merano 2000: dalla stazione ferroviaria di Merano si raggiunge in pochi minuti la stazione a valle Val di Nova con la linea urbana 1A. Da Scena c'è il bus vacanze che porta fino alla Val di Nova.",
  "deu": "Zur Talstation der Bergbahn Meran 2000: vom Zugbahnhof Meran erreicht man in wenigen Minuten die Talstation Naif mit der Buslinie 1A. Von Schenna aus fährt der Gästebus bis zur Talstation Naif."
},
"relationships": {
  "connections": {
    "data": [
      {
        "type": "trails",
        "id": "1"
      },
      {
        "type": "trails",
        "id": "2"
      }
    ]
  },
  "links": {
    "related": "https://example.com/1.0/lifts/1/connections/"
  }
},

```

```

    "multimediaDescriptions": {
      "data": [
        {
          "type": "mediaObjects",
          "id": "1"
        }
      ],
      "links": {
        "related": "https://example.com/1.0/mountainAreas/1/multimediaDescriptions/"
      }
    }
  },
  "links": {
    "self": "https://example.com/1.0/lifts/1"
  }
}

```

asciidoc/examples/lift.full.json

## 5.2.5. Media Objects

A resource that implements the concept of [Media Object](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource MUST contain the following fields: \* `type`: the constant `"mediaObjects"` that identifies the resource as being of the type media object.

- `id`: a string that uniquely and persistently identifies the media object within a SERVER. See the definition in [Basic Fields](#).
- `attributes`: an object containing the attributes of the media object.
- `relationships`: an object containing the relationships of the media object to other resources.
- `links`: an object containing the links related to the media object.

A media object resource is structured as follows:

```

{
  "type": "mediaObjects",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}

```

### Meta

See the definition of the meta object in [Meta Object](#).

### Attributes

The attributes object of the media object resource MUST contain the following fields:

- `abstract`: a [text](#) object containing a brief description of the media object. Nullable. See the definition in [Attributes Object](#).
- `categories`: an array of [category](#) strings identifying the types instantiated by the media object. Nullable. Non-empty. See the definition in [Attributes Object](#). No type is pre-defined by the standard.
- `contentType`: a string that represents the media type (formerly known as MIME type) of the media object. Non-nullable. Regular Expression. For example, possible values of `contentType` include yet are not limited to: `"video/mp4"`, for videos, `"image/png"`, for images, and `"audio/mpeg3"`, for audio.

The allowed media types are defined by [IANA](#). The following regular expression constraints the valid pattern for the contentType string.

```
"^(application|audio|font|example|image|message|model|multipart|text|video)/[a-zA-Z0-9-
.+]+ $"
```

- **description**: a [text](#) object containing a description of the media object. Nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **duration**: a number representing the duration of an audio or a video in seconds. Nullable. Positive value.  
If the media object is neither an audio or a video object, i.e., contentType contains a substring following the pattern `"^(application|font|example|image|message|model|multipart|text)"`, duration MUST be set to null.  
For example, a short video shared in social platforms may have its duration set to 45 seconds, while a documentary of an event may have its duration set to 5774 seconds (i.e., 1 hour, 36 minutes and 14 seconds).
- **height**: a number representing the height of an image or a video in pixels. Nullable. Positive value.  
If the media object is neither an image or a video, i.e. contentType contains a substring following the pattern `"^(application|audio|font|example|message|model|multipart|text)"`, height MUST be set to null.  
For example, the height of a Full-HD video is expected to be 1080 pixels, while the height of a 4K video is expected to be 2160 pixels.
- **license**: a string that represents the license applied to the media object. The value of this field SHOULD be a valid license identifier as defined in [SPDX License List](#) (e.g. CC-BY-4.0, FreedImage). Nullable.
- **name**: a [text](#) object containing the complete name of the media object. Non-nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **shortName**: a [text](#) object containing a short name of the media object. Nullable. See the definition in [Attributes Object](#).
- **url**: a [url](#) string representing the media object's source. Non-nullable. See the definition in [Attributes Object](#).  
The url string may be used for the exchange of HTML data with the condition that whenever this HTML data contains some textual description of another resource (i.e., abstract, description, name, or shortName), the resource MUST have the equivalent text field assigned with non-HTML (sanitized) data.  
In case the url field is used with this purpose, contentType MUST be set to "text/html" and the URI must be properly encoded. For example:

- HTML data:

```
<div>This is the solution for sending HTML we were looking for!</div>
```

- Encoded string:

```
"url":  
"data:text/html;charset=utf8,%3Cdiv%3EThis%20is%20the%20solution%20for%20sending%20HTML%20we%20were%20looking%20for%21%3Cdiv%2F%3E"
```

- **width**: a number representing the width of an image or a video in pixels. Nullable. Positive value.  
If the media object is neither an image or a video, i.e., if contentType contains a substring following the pattern `"^(application|audio|font|example|message|model|multipart|text)"`, width MUST be set to null.  
For example, the width of a Full-HD video is expected to be 1920 pixels, while the width of a 4K

video is expected to be 3840 pixels.

A summary of the `attributes` object is presented in the table below:

Field	Type	Constraints
<code>abstract</code>	<a href="#">text</a>	Nullable
<code>categories</code>	Array of <a href="#">category string</a>	Nullable, Non-empty
<code>contentType</code>	string	Non-nullable, Regular Expression
<code>description</code>	<a href="#">text</a>	Nullable, Conditional Assignment
<code>duration</code>	number	Nullable, Conditional Assignment, Unit of Measure, Greater than Zero
<code>height</code>	number	Nullable, Conditional Assignment, Unit of Measure, Greater than Zero
<code>license</code>	string	Nullable
<code>name</code>	<a href="#">text</a>	Nullable, Conditional Assignment
<code>shortName</code>	<a href="#">text</a>	Nullable
<code>url</code>	<a href="#">url</a>	Non-nullable
<code>width</code>	number	Nullable, Conditional Assignment, Unit of Measure, Greater than Zero

## Relationships

The `relationships` object of a media object resource MUST contain the following fields:

- `copyrightOwner`: a [Reference to One](#) agent resource (see [agent](#)) who owns the rights over the media object. Nullable.

A summary of the `relationships` object is presented in the table below:

Field	Type	Constraints
<code>copyrightOwner</code>	<a href="#">Reference to One</a> object to <a href="#">Agents</a>	Nullable

## Links

See the definition of the `links` object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return media object resources:

- <https://example.com/1.0/mediaObjects>: returns a collection of media objects.
- <https://example.com/1.0/mediaObjects/:id>: returns the media object identified by the `:id` parameter.
- <https://example.com/1.0/events/:id/multimediaDescriptions>: returns a collection of media objects.
- <https://example.com/1.0/venues/:id/multimediaDescriptions>: returns a collection of media objects.
- <https://example.com/1.0/eventSeries/:id/multimediaDescriptions>: returns a collection of media objects.
- <https://example.com/1.0/mountainAreas/:id/multimediaDescriptions>: returns a collection of media objects.

- <https://example.com/1.0/trails/:id/multimediaDescriptions>: returns a collection of media objects.
- <https://example.com/1.0/snowparks/:id/multimediaDescriptions>: returns a collection of media objects.
- <https://example.com/1.0/lifts/:id/multimediaDescriptions>: returns a collection of media objects.
- <https://example.com/1.0/agents/:id/multimediaDescriptions>: returns a collection of media objects.

## Examples

The following example presents an object containing the minimal information required of a media object resource:

```
{
  "type": "media0bjects",
  "id": "1",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "abstract": null,
    "categories": null,
    "contentType": "audio/mpeg3",
    "description": null,
    "duration": null,
    "height": null,
    "license": null,
    "name": null,
    "shortName": null,
    "url": "https://example.com/audio.mp3",
    "width": null
  },
  "relationships": {
    "copyrightOwner": null
  },
  "links": {
    "self": "https://example.com/1.0/media0bjects/1"
  }
}
```

**asciidoc/examples/mediaobject.min.json**

The following example presents an object representing a media object resource:

```

{
  "type": "mediaObjects",
  "id": "1",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "abstract": {
      "eng": "My first image sent as an example for the API."
    },
    "categories": [
      "example/panoramic-photo"
    ],
    "contentType": "image/png",
    "description": {
      "eng": "My first image sent as an example for the API."
    },
    "duration": null,
    "height": 300,
    "license": "FreeImage",
    "name": {
      "ita": "La mia immagine",
      "deu": "Mein bild",
      "eng": "My image"
    },
    "shortName": {
      "eng": "My image"
    },
    "url": "https://example.com/image.png",
    "width": 400
  },
  "relationships": {
    "copyrightOwner": {
      "data": {
        "type": "agents",
        "id": "0"
      },
      "links": {
        "related": "https://example.com/1.0/mediaObjects/1/copyrgihtOwner/"
      }
    }
  },
  "links": {
    "self": "https://example.com/1.0/mediaObjects/1"
  }
}

```

`asciidoc/examples/mediaobject.full.json`

## 5.2.6. Mountain Areas

A resource that implements the concept of [Mountain Area](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource **MUST** contain the following fields:

- `type`: the constant `"mountainAreas"` that identifies the resource as being a mountain area.
- `id`: a string that uniquely and persistently identifies the mountain area within a SERVER. See the definition in [Basic Fields](#).
- `attributes`: an object containing the attributes of the mountain area.
- `relationships`: an object containing the relationships of the mountain area to other resources.
- `links`: an object containing the links related to the mountain area.

A mountain area resource is structured as follows:

```
{
  "type": "mountainAreas",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}
```

## Meta

See the definition of the meta object in [Meta Object](#).

## Attributes

The `attributes` object of a mountain area resource **MUST** contain the following fields:

- `abstract`: a [text](#) object containing a brief description of the mountain area. Nullable. See the definition in [Attributes Object](#).
- `area`: a number representing the total area, in square meters, of the mountain area. Nullable.
- `categories`: an array of [category](#) strings identifying the types instantiated by the mountain area. Nullable. Non-empty. See the definition in [Attributes Object](#). No type is pre-defined by the standard.
- `description`: \* `description`: a [text](#) object containing a description of the mountain area. Nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- `geometries`: an array of [geometry](#) objects each of which represents the location of the mountain area in terms of GPS coordinates. There should be at most one geometry object of each type (e.g. Point, LineString). Nullable. Non-empty.
- `howToArrive`: a [text](#) object containing instructions on how to arrive at the mountain area. Nullable.
- `maxAltitude`: a number representing the highest elevation point of the mountain area in meters above sea level. Nullable.
- `minAltitude`: a number representing the lowest elevation point of the mountain area in meters above sea level. Nullable.
- `name`: a [text](#) object containing the complete name of the mountain area. Non-nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- `openingHours`: an [hours specification](#) object representing the hours in which the mountain area is open to the public. Nullable.
- `shortName`: a [text](#) object containing a short name of the mountain area. Nullable. See the definition in [Attributes Object](#).
- `snowCondition`: a [snow condition](#) object containing the latest reported condition of the snow in the mountain area. Nullable.
- `totalParkLength`: an integer representing the total length, in meters, of all snowparks located within the mountain area. Nullable.
- `totalTrailLength`: an integer representing the total length, in meters, of all trails located within the mountain area. Nullable.
- `url`: a [url](#) describing the mountain area, such as a website or a Wikipedia page. Nullable. See the definition in [Attributes Object](#).

A summary of the `attributes` object is presented in the table below:

Field	Type	Constraints
<code>abstract</code>	<a href="#">text</a>	Nullable

Field	Type	Constraints
area	number	Nullable, Unit of Measure, Greater than Zero
categories	Array of <a href="#">category string</a>	Nullable, Non-empty
description	<a href="#">text</a>	Nullable
geometries	Array of <a href="#">geometry</a>	Nullable, Non-empty
howToArrive	<a href="#">text</a>	Nullable
maxAltitude	number	Nullable, Unit of Measure
minAltitude	number	Nullable, Unit of Measure
name	<a href="#">url</a>	Non-nullable
openingHours	<a href="#">hours specification</a>	Nullable
shortName	<a href="#">text</a>	Nullable
snowCondition	<a href="#">snow condition</a>	Nullable
totalParkArea	number	Nullable, Unit of Measure, Greater than Zero
totalTrailLength	number	Nullable, Unit of Measure, Greater than Zero
url	<a href="#">url</a>	Nullable

## Relationships

The relationships object of a mountain area resource MUST contain the following fields:

- **areaOwner**: a [Reference to One](#) agent resource (see [Agents](#)) who owns the mountain area. Nullable.
- **connections**: a [Reference to Many](#) place resources that identify the places that are physically accessible from the mountain area, which may include other [Mountain Areas](#), [Lifts](#), [Snowparks](#), and [Trails](#). Nullable. Non-empty.
- **lifts**: a [Reference to Many](#) lift resources (see [Lifts](#)) that identify the lifts located within the mountain area. Nullable. Non-empty.
- **multimediaDescriptions**: a [Reference to Many](#) media object resources (see [Media Objects](#)) that are related to the mountain area. See Section [multimediaDescriptions](#). Nullable. Non-empty.
- **snowparks**: a [Reference to Many](#) snowpark resources (see [Snowparks](#)) that identify the snowparks located within the mountain area. Nullable. Non-empty.
- **subAreas**: a [Reference to Many](#) mountain area resources (see [Mountain Areas](#)) that identify the mountain areas located within the mountain area. Nullable. Non-empty.
- **trails**: a [Reference to Many](#) trail resources (see [Trails](#)) that identify the trails located within the mountain area. Nullable. Non-empty.

A summary of the relationships is presented in the table below:

Field	Type	Constraints
areaOwner	<a href="#">Reference to One</a> object to <a href="#">Agents</a>	Nullable, Non-empty
connections	<a href="#">Reference to Many</a> object to <a href="#">Mountain Areas</a> , <a href="#">Trails</a> , <a href="#">Lifts</a> , and <a href="#">Snowparks</a>	Nullable, Non-empty
lifts	<a href="#">Reference to Many</a> object to <a href="#">Lifts</a>	Nullable, Non-empty
multimediaDescriptions	<a href="#">Reference to Many</a> object to <a href="#">Media Objects</a>	Nullable, Non-empty

Field	Type	Constraints
snowparks	Reference to Many object to Snowparks	Nullable, Non-empty
subAreas	Reference to Many object to Mountain Areas	Nullable, Non-empty
trails	Reference to Many object to Trails	Nullable, Non-empty

## Links

See the definition of the Links object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return mountain area resources:

- <https://example.com/1.0/mountainAreas>: returns a collection of mountain areas.
- <https://example.com/1.0/mountainAreas/:id>: returns the mountain area identified by the :id parameter.
- <https://example.com/1.0/mountainAreas/:id/subAreas>: returns a collection of mountain areas.
- <https://example.com/1.0/mountainAreas/:id/connections>: returns a collection of resources that may include mountain areas.
- <https://example.com/1.0/lifts/:id/connections>: returns a collection of resources that may include mountain areas.
- <https://example.com/1.0/snowparks/:id/connections>: returns a collection of resources that may include mountain areas.
- <https://example.com/1.0/trails/:id/connections>: returns a collection of resources that may include mountain areas.

## Examples

The following example contains the minimal information required for a mountain area resource:

```

{
  "id": "1",
  "type": "mountainAreas",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "name": {
      "eng": "Meran 2000"
    },
    "categories": null,
    "shortName": null,
    "description": null,
    "abstract": null,
    "url": null,
    "geometries": null,
    "howToArrive": null,
    "openingHours": null,
    "area": null,
    "minAltitude": null,
    "maxAltitude": null,
    "totalTrailLength": null,
    "totalParkArea": null,
    "totalParkLength": null,
    "snowCondition": null
  },
  "relationships": {
    "areaOwner": null,
    "connections": null,
    "multimediaDescriptions": null,
    "lifts": null,
    "trails": null,
    "snowparks": null,
    "subAreas": null
  },
  "links": {
    "self": "https://example.com/1.0/mountainAreas/1"
  }
}

```

**asciidoc/examples/mountain.min.json**

The following example illustrates the fields defined for mountain area resources:

```

{
  "id": "1",
  "type": "mountainAreas",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "name": {
      "ita": "Merano 2000",
      "deu": "Meran 2000",
      "eng": "Meran 2000"
    },
    "categories": [
      "example/skiarea"
    ],
    "shortName": {
      "eng": "Meran 2000"
    },
    "description": {
      "deu": "Das Skigebiet Meran 2000 liegt unter dem Berg Ifinger im Burggrafenamt auf einem Hochplateau oberhalb Meran am Tschöggelberg in Südtirol. Es hat 45 km Alpin-Pisten"
    }
  }
}

```

und reicht von 1670 bis 2300 m Höhe. Von Meran aus ist das Gebiet direkt über die Ifinger-Seilbahn ab Naif oder durch eine Umlaufseilbahn ab Falzeben erreichbar. Das Skigebiet erstreckt sich hauptsächlich auf dem Gemeindegebiet von Hafling, berührt aber auch zu den Gemeinden Schenna und Sarntal gehörende Flächen."

},

"abstract": {

"deu": "Das Skigebiet Meran 2000 liegt unter dem Berg Ifinger im Burggrafenamt auf einem Hochplateau oberhalb Meran am Tschöggberg in Südtirol. Es hat 45 km Alpin-Pisten und reicht von 1670 bis 2300 m Höhe."

},

"url": "https://www.meran2000.com",

"geometries": [

{

"type": "Polygon",

"coordinates": [

[

[

11.310853958129883,  
46.66958283253642

],

[

11.304588317871094,  
46.668817160723044

],

[

11.301412582397461,  
46.666696782172096

],

[

11.305532455444336,  
46.66457632044435

],

[

11.31265640258789,  
46.66646117942096

],

[

11.314373016357422,  
46.66869936409677

],

[

11.310853958129883,  
46.66958283253642

]

]

]

}

},

"howToArrive": {

"ita": "L'area sciistica ed escursionistica di Merano è situata ai piedi della montagna Picco Ivigna ed è raggiungibile in pochi minuti dalle destinazioni di Merano, Avelengo, Scena e Tirolo. La cima di Merano 2000 è raggiungibile con due impianti di risalita diversi e ha dunque due stazioni a valle, una presso Merano con la Funivia e una ad Avelengo con la Cabinovia Falzeben.",

"deu": "Die Sonnenterrasse Merans liegt am Fuße des Ifingers und ist von den Ferienorten Meran, Hafling, Schenna und Dorf Tirol in wenigen Minuten leicht erreichbar. Die Bergstation von Meran 2000 kann man mit zwei verschiedenen Aufstiegsanlagen erreichen: von Meran aus mit der Bergbahn und von Hafling aus mit der Umlaufbahn Falzeben.",

"eng": "The skiing and hiking area of Merano 2000 is best located next to the biggest vacation hotspots of South Tyrol and so reachable within few minutes from Merano, Avelengo, Scena and Tirolo. Two lifts can bring you to the mountain station of Merano 2000: the Ropeway in Merano or the Gondola Falzeben in Avelengo."

},

"openingHours": {

"dailySchedules": {

"2020-12-25": null

},

"weeklySchedules": [

{

"validFrom": "2020-01-01",

```

    "validTo": "2020-12-31",
    "monday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "tuesday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "wednesday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "thursday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "friday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "saturday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "sunday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ]
  ]
},
"area": 36000,
"minAltitude": 1200,
"maxAltitude": 2000,
"totalTrailLength": 4000,
"totalParkArea": 20000,
"totalParkLength": 1000,
"snowCondition": {
  "primarySurface": "mtnxml/powder",
  "secondarySurface": "mtnxml/packed-powder",
  "baseSnow": 50,
  "baseSnowRange": {
    "lower": 40,
    "upper": 60
  }
},
"latestStorm": 40,
"obtainedIn": "2019-12-20",
"snowOverNight": 5,
"groomed": true,
"snowMaking": false
},
"relationships": {
  "areaOwner": {
    "data": {

```

```

    "type": "agents",
    "id": "1"
  },
  "links": {
    "related": "https://example.com/1.0/mountainAreas/1/areaOwner/"
  }
},
"connections": {
  "data": [
    {
      "type": "lifts",
      "id": "1"
    },
    {
      "type": "trails",
      "id": "1"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/mountainAreas/1/connections/"
  }
},
"multimediaDescriptions": {
  "data": [
    {
      "type": "mediaObjects",
      "id": "1"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/mountainAreas/1/multimediaDescriptions/"
  }
},
"lifts": {
  "data": [
    {
      "type": "lifts",
      "id": "1"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/mountainAreas/1/lifts/"
  }
},
"trails": {
  "data": [
    {
      "type": "trails",
      "id": "1"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/mountainAreas/1/trails/"
  }
},
"snowparks": {
  "data": [
    {
      "type": "snowparks",
      "id": "1"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/mountainAreas/1/snowparks/"
  }
},
"subAreas": {
  "data": [
    {
      "type": "mountainAreas",

```

```

        "id": "2"
      },
      {
        "type": "mountainAreas",
        "id": "3"
      }
    ],
    "links": {
      "related": "https://example.com/1.0/mountainAreas/1/subAreas/"
    }
  },
  "links": {
    "self": "https://example.com/1.0/mountainAreas/1"
  }
}

```

asciidoc/examples/mountain.full.json

### 5.2.7. Snowparks

A resource that implements the concept of [Snowpark](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource **MUST** contain the following fields:

- **type**: the constant "snowparks" that identifies the resource as being of the type snowpark.
- **id**: a string that uniquely and persistently identifies the snowpark within a SERVER. See the definition in [Basic Fields](#).
- **attributes**: an object containing the attributes of the snowpark.
- **relationships**: an object containing the relationships of the snowpark to other resources.
- **links**: an object containing the links related to the snowpark.

A snowpark resource is structured as follows:

```

{
  "type": "snowparks",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}

```

#### Meta

See the definition of the meta object in [Meta Object](#).

#### Attributes

The attributes object of a snowpark resource **MUST** contain the following fields:

- **abstract**: a [text](#) object containing a brief description for the snowpark. Nullable. See the definition in [Attributes Object](#).
- **address**: an [address](#) object representing the address of the snowpark. The address should only be set if the trail is directly accessible from a public road. Nullable.
- **categories**: an array of [category](#) strings identifying the types instantiated by the snowpark. Nullable. Non-empty. See the definition in [Attributes Object](#). No type is pre-defined by the standard.
- **description**: a [text](#) object containing a description of the snowpark. Nullable. Conditional

Assignment. See the definition in [Attributes Object](#).

- **difficulty**: a string describing the difficulty level of a snowpark according to the following enumerated values:
  - "beginner"
  - "intermediate"
  - "advanced"
  - "expert"
- **features**: an array of [category](#) strings that informs the types of features available within the snowpark, such as a jump or a rail. Nullable. Non-empty.
- **geometries**: an array of [geometry](#) objects each of which represents the location of the snowpark in terms of GPS coordinates. There should be at most one geometry object of each type (e.g. Point, LineString). Nullable. Non-empty.
- **howToArrive**: a [text](#) object containing instructions on how to arrive at the snowpark. Nullable.
- **length**: a number representing the total length of the snowpark in meters. The computation of the length (in the case of branching paths, for instance) is determined by the data provider. Nullable.
- **maxAltitude**: a number representing the highest elevation point of the snowpark in meters above sea level. Nullable.
- **minAltitude**: a number representing the lowest elevation point of the snowpark in meters above sea level. Nullable.
- **name**: a [text](#) object containing the complete name of the snowpark. Non-nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **openingHours**: an [hours specification](#) object representing the hours in which the snowpark is open to the public. Nullable.
- **shortName**: a [text](#) object containing a short name of the snowpark. Nullable. See the definition in [Attributes Object](#).
- **snowCondition**: a [snow condition](#) object containing the latest reported condition of the snow in the snowpark.
- **url**: a [url](#) describing the snowpark, such as a website or a Wikipedia page. Nullable. See the definition in [Attributes Object](#).

A summary of the attributes is presented in the table below:

Field	Type	Constraints
abstract	<a href="#">text</a>	Nullable
address	<a href="#">address</a>	Nullable
categories	Array of <a href="#">category string</a>	Nullable, Non-empty
description	<a href="#">text</a>	Nullable, Conditional Assignment
difficulty	string	Enumeration, Nullable
features	Array of <a href="#">category string</a>	Nullable, Non-empty
geometries	Array of <a href="#">geometry</a>	Nullable, Non-empty
howToArrive	string	Nullable
length	number	Nullable, Unit of Measure, Greater than Zero
maxAltitude	number	Nullable, Unit of Measure
minAltitude	number	Nullable, Unit of Measure
name	<a href="#">text</a>	Non-nullable, Conditional Assignment
openingHours	<a href="#">hours specification</a>	Nullable

Field	Type	Constraints
shortName	text	Nullable
snowCondition	snow condition	Nullable
url	url	Nullable

## Relationships

The relationships object of a snowpark resource MUST contain the following fields:

- **connections**: a [Reference to Many](#) place resources that identify the places that are physically accessible from the mountain area, which may include other [Snowparks](#), [Lifts](#), [Mountain Areas](#), and [Trails](#). Nullable. Non-empty.
- **multimediaDescriptions**: a [Reference to Many](#) media object resources (see [Media Objects](#)) that are related to the snowpark. See Section [multimediaDescriptions](#). Nullable. Non-empty.

A summary of the relationships is presented in the table below:

Field	Type	Constraints
connections	<a href="#">Reference to Many</a> object to <a href="#">Mountain Areas</a> , <a href="#">Trails</a> , <a href="#">Lifts</a> , and <a href="#">Snowparks</a>	Nullable, Non-empty
multimediaDescriptions	<a href="#">Reference to Many</a> object to <a href="#">Media Objects</a>	Nullable, Non-empty

## Links

See the definition of the links object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return snowpark resources:

- <https://example.com/1.0/snowparks>: returns a collection of snowparks.
- <https://example.com/1.0/snowparks/:id>: returns the snowpark identified by the `:id` parameter.
- <https://example.com/1.0/snowparks/:id/connections>: returns a collection of resources that may include snowparks.
- <https://example.com/1.0/lifts/:id/connections>: returns a collection of resources that may include snowparks.
- <https://example.com/1.0/mountainAreas/:id/snowparks>: returns a collection of snowparks.
- <https://example.com/1.0/mountainAreas/:id/connections>: returns a collection of resources that may include snowparks.
- <https://example.com/1.0/trails/:id/connections>: returns a collection of resources that may include snowparks.

## Examples

The following example contains the minimal information required for a snowpark resource:

```

{
  "type": "snowparks",
  "id": "1",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "name": {
      "eng": "Snowpark Merano 2000"
    },
    "shortName": null,
    "description": null,
    "abstract": null,
    "url": null,
    "categories": null,
    "length": null,
    "minAltitude": null,
    "maxAltitude": null,
    "address": {
      "street": null,
      "city": {
        "eng": "Merano"
      },
      "region": null,
      "country": "IT",
      "zipcode": null,
      "categories": null,
      "complement": null
    },
    "howToArrive": null,
    "difficulty": null,
    "features": null,
    "geometries": null,
    "openingHours": null,
    "snowCondition": null
  },
  "relationships": {
    "connections": null,
    "multimediaDescriptions": null
  },
  "links": {
    "self": "https://example.com/1.0/snowparks/1"
  }
}

```

#### asciidoc/examples/snowpark.min.json

The following example illustrates the fields defined for snowpark resources:

```

{
  "type": "snowparks",
  "id": "1",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "name": {
      "ita": "Snowpark Merano 2000",
      "deu": "Snowpark Merano 2000",
      "eng": "Snowpark Merano 2000"
    },
    "shortName": {
      "eng": "Snowpark Merano 2000"
    },
    "description": {

```

```

"eng": "Located in the rear part of the skiing area on the Oswald-Slope, close to
the Waidmann Alpine Cottage, the SNOWPARK MERANO 2000 awaits brave Snowboarders and
Freestylers. An ambitious project with many kicks, rails, tubes and boxes for newcomers
and pros alike. You can reach the Jump Zone from the mountain station of the Ropeway by
using the chairlift Piffing."
},
"abstract": {
  "eng": "Located in the rear part of the skiing area on the Oswald-Slope, close to
the Waidmann Alpine Cottage, the SNOWPARK MERANO 2000 awaits brave Snowboarders and
Freestylers..."
},
"url": "https://example.com",
"categories": [
  "example/free-style"
],
"length": 1300,
"minAltitude": 1500,
"maxAltitude": 2500,
"address": {
  "street": null,
  "city": {
    "eng": "Merano"
  },
  "region": null,
  "country": "IT",
  "zipcode": null,
  "categories": null,
  "complement": null
},
"howToArrive": null,
"difficulty": "intermediate",
"features": [
  "example/jib",
  "example/pipe"
],
"geometries": [
  {
    "type": "LineString",
    "coordinates": [
      [
        11.305682659149168,
        46.66705018437341
      ],
      [
        11.30692720413208,
        46.667182709603225
      ],
      [
        11.308064460754393,
        46.667491933875965
      ]
    ]
  }
],
"openingHours": {
  "dailySchedules": {
    "2020-12-25": null
  },
  "weeklySchedules": [
    {
      "validFrom": "2020-01-01",
      "validTo": "2020-12-31",
      "monday": [
        {
          "opens": "08:00:00+01:00",
          "closes": "18:00:00+01:00"
        }
      ],
      "tuesday": [
        {

```

```

        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
    }
],
"wednesday": [
    {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
    }
],
"thursday": [
    {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
    }
],
"friday": [
    {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
    }
],
"saturday": [
    {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
    }
],
"sunday": [
    {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
    }
]
]
}
],
"snowCondition": {
    "primarySurface": "mtnxml/frozen-granular",
    "secondarySurface": "mtnxml/packed-powder",
    "baseSnow": 30,
    "baseSnowRange": {
        "lower": 25,
        "upper": 40
    },
    "latestStorm": 5,
    "obtainedIn": "2020-01-14",
    "snowOverNight": 0,
    "groomed": true,
    "snowMaking": false
}
},
"relationships": {
    "connections": {
        "data": [
            {
                "type": "trails",
                "id": "2"
            },
            {
                "type": "trails",
                "id": "3"
            }
        ]
    },
    "links": {
        "related": "https://example.com/1.0/mountainAreas/1/connections/"
    }
}
},
"multimediaDescriptions": {
    "data": [

```

```

    {
      "type": "mediaObjects",
      "id": "2"
    }
  ],
  "links": {
    "related": "https://example.com/1.0/mountainAreas/1/multimediaDescriptions/"
  }
}
},
"links": {
  "self": "https://example.com/1.0/snowparks/1"
}
}

```

asciidoc/examples/snowpark.full.json

## 5.2.8. Trails

A resource that implements the concept of [Trail](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource MUST contain the following fields:

- **type**: the constant "trails" that identifies the resource as being of the type trail.
- **id**: a string that uniquely and persistently identifies the trail within a SERVER. See the definition in [Basic Fields](#).
- **attributes**: an object containing the attributes of the trail.
- **relationships**: an object containing the relationships of the trail to other resources.
- **links**: an object containing the links related to the trail.

A trail resource is structured as follows:

```

{
  "type": "trails",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}

```

### Meta

See the definition of the meta object in [Meta Object](#).

### Attributes

The attributes object of a trail resource MUST contain the following fields:

- **abstract**: a [text](#) object containing a brief description for the trail. Nullable. See the definition in [Attributes Object](#).
- **address**: an [address](#) object representing the main address of the trail. The address should only be set if the trail is directly accessible from a public road. Nullable.
- **categories**: an array of [category](#) strings identifying the types instantiated by the trail. Nullable. Non-empty. See the definition in [Attributes Object](#).  
The standard recommends the following trail types: "alpinebits/ski-slope", "alpinebits/sledge-slope", "alpinebits/cross-country", "alpinebits/hiking", "alpinebits/mountain-bike", "alpinebits/climbing"
- **description**: a [text](#) object containing a description of the trail. Nullable. Conditional Assignment. See the definition in [Attributes Object](#).

- **difficulty**: an object containing the difficulty level of a ski slope, as in { "eu": "novice", "us": "beginner" }. Nullable.

The "eu" field refers to the European classification of ski slopes. Its possible values are "novice", "beginner", "intermediate", and "expert". The "us" field refers to the North American classification of ski slopes. Its possible values are "beginner", "beginner-intermediate", "intermediate", "intermediate-advanced", and "expert".

Every such object MUST contain both fields and at least one of them MUST NOT be null. The field itself, however, is nullable.

- **geometries**: an array of [geometry](#) objects each of which represents the location of the trail in terms of GPS coordinates. There should be at most one geometry object of each type (e.g. Point, LineString). Nullable. Non-empty.
- **howToArrive**: a [text](#) object containing instructions on how to arrive at the trail. Nullable.
- **length**: a number representing the total length of the trail in meters. The computation of the length (in the case of branching paths, for instance) is determined by the data provider. Nullable.
- **maxAltitude**: a number representing the highest elevation point of the trail in meters above sea level. Nullable.
- **minAltitude**: a number representing the lowest elevation point of the trail in meters above sea level. Nullable.
- **name**: a [text](#) object containing the complete name of the trail. Non-nullable. See the definition in [Attributes Object](#).
- **openingHours**: an [hours specification](#) object representing the hours in which the trail is open to the public. Nullable.
- **shortName**: a [text](#) object containing a short name of the trail. Nullable. See the definition in [Attributes Object](#).
- **snowCondition**: a [snow condition](#) object containing the latest reported condition of the snow in the trail.
- **url**: a [url](#) describing the trail, such as a website or a Wikipedia page. Nullable. See the definition in [Attributes Object](#).

A summary of the attributes is presented in the table below:

Field	Type	Constraints
abstract	<a href="#">text</a>	Nullable
address	<a href="#">address</a>	Nullable
categories	Array of <a href="#">category string</a>	Nullable, Non-empty
difficulty	object	Nullable
description	<a href="#">text</a>	Nullable, Conditional Assignment
geometries	Array of <a href="#">geometry</a>	Nullable, Non-empty
howToArrive	<a href="#">text</a>	Nullable
length	number	Nullable, Unit of Measure, Greater than Zero
maxAltitude	number	Nullable, Unit of Measure
minAltitude	number	Nullable, Unit of Measure
name	<a href="#">text</a>	Non-nullable, Conditional Assignment
openingHours	<a href="#">hours specification</a>	Nullable
shortName	<a href="#">text</a>	Nullable

Field	Type	Constraints
snowCondition	<a href="#">snow condition</a>	Nullable
url	<a href="#">url</a>	Nullable

## Relationships

The relationships object of a trail resource MUST contain the following fields:

- **connections**: a [Reference to Many](#) place resources that identify the places that are physically accessible from the mountain area, which may include other [Trails](#), [Lifts](#), [Snowparks](#), and [Mountain Areas](#). Nullable. Non-empty.
- **multimediaDescriptions**: a [Reference to Many](#) media object resources (see [Media Objects](#)) that are related to the trail. See Section [multimediaDescriptions](#). Nullable. Non-empty.

A summary of the relationships is presented in the table below:

Field	Type	Constraints
connections	<a href="#">Reference to Many</a> object to <a href="#">Mountain Areas</a> , <a href="#">Trails</a> , <a href="#">Lifts</a> , and <a href="#">Snowparks</a>	Nullable, Non-empty
multimediaDescriptions	<a href="#">Reference to Many</a> object to <a href="#">Media Objects</a>	Nullable, Non-empty

## Links

See the definition of the links object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return trail resources:

- <https://example.com/1.0/trails>: returns a collection of trails.
- <https://example.com/1.0/trails/:id>: returns the trail identified by the `:id` parameter.
- <https://example.com/1.0/trails/:id/connections>: returns a collection of resources that may include trails.
- <https://example.com/1.0/lifts/:id/connections>: returns a collection of resources that may include trails.
- <https://example.com/1.0/mountainAreas/:id/trails>: returns a collection of trails.
- <https://example.com/1.0/mountainAreas/:id/connections>: returns a collection of resources that may include trails.
- <https://example.com/1.0/snowparks/:id/connections>: returns a collection of resources that may include trails.

## Examples

The following example contains the minimal information required for a trail resource:

```

{
  "type": "trails",
  "id": "1",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "name": {
      "eng": "Falzeben I"
    },
    "shortName": null,
    "description": null,
    "abstract": null,
    "url": null,
    "categories": null,
    "length": null,
    "minAltitude": null,
    "maxAltitude": null,
    "difficulty": null,
    "address": {
      "street": null,
      "city": {
        "eng": "Merano"
      },
      "region": null,
      "country": "IT",
      "zipcode": null,
      "categories": null,
      "complement": null
    },
    "geometries": null,
    "howToArrive": null,
    "openingHours": null,
    "snowCondition": null
  },
  "relationships": {
    "connections": null,
    "multimediaDescriptions": null
  },
  "links": {
    "self": "https://example.com/1.0/trails/1"
  }
}

```

**asciidoc/examples/trail.min.json**

The following example illustrates the fields defined for trail resources:

```

{
  "type": "trails",
  "id": "1",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "name": {
      "ita": "Falzeben I",
      "deu": "Falzeben I",
      "eng": "Falzeben I"
    },
    "shortName": {
      "eng": "Falzeben I"
    },
    "description": {
      "ita": "Falzeben I - Discesa tra i boschi facile, immersa in un panorama da sogno"
    }
  }
}

```

```

ed ideale per bambini e principianti. Altezza/Lunghezza: 1900 altezza, 3500 m."
  },
  "abstract": {
    "ita": "Falzeben I - Discesa tra i boschi facile, immersa in un panorama da sogno
ed ideale per bambini e principianti."
  },
  "url": "https://example.com",
  "categories": [
    "alpinebits/ski-slope"
  ],
  "length": 2000,
  "minAltitude": 1500,
  "maxAltitude": 2500,
  "difficulty": {
    "eu": "novice",
    "us": "beginner"
  },
  "address": {
    "street": null,
    "city": {
      "eng": "Merano"
    },
    "region": null,
    "country": "IT",
    "zipcode": null,
    "categories": null,
    "complement": null
  },
  "howToArrive": {
    "ita": " Le fermate più vicine a Falzeben sono: Falzeben è a 41 metri di distanza a
piedi e ci si arriva in 1 minuti di cammino; Villa Schäfer è a 808 metri di distanza a
piedi e ci si arriva in 11 minuti di cammino."
  },
  "geometries": [
    {
      "type": "LineString",
      "coordinates": [
        [
          11.305682659149168,
          46.66705018437341
        ],
        [
          11.30692720413208,
          46.667182709603225
        ],
        [
          11.308064460754393,
          46.667491933875965
        ]
      ]
    }
  ],
  "openingHours": {
    "dailySchedules": {
      "2020-12-25": null
    },
    "weeklySchedules": [
      {
        "validFrom": "2020-01-01",
        "validTo": "2020-12-31",
        "monday": [
          {
            "opens": "08:00:00+01:00",
            "closes": "18:00:00+01:00"
          }
        ],
        "tuesday": [
          {
            "opens": "08:00:00+01:00",
            "closes": "18:00:00+01:00"
          }
        ]
      }
    ]
  }
}

```

```

    },
    "wednesday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "thursday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "friday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "saturday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ],
    "sunday": [
      {
        "opens": "08:00:00+01:00",
        "closes": "18:00:00+01:00"
      }
    ]
  ]
},
"snowCondition": {
  "primarySurface": "mtnxml/powder",
  "secondarySurface": "mtnxml/packed-powder",
  "baseSnow": 50,
  "baseSnowRange": {
    "lower": 40,
    "upper": 60
  },
  "latestStorm": 40,
  "obtainedIn": "2020-02-01",
  "snowOverNight": 5,
  "groomed": true,
  "snowMaking": false
},
"relationships": {
  "connections": {
    "data": [
      {
        "type": "trails",
        "id": "2"
      },
      {
        "type": "trails",
        "id": "3"
      },
      {
        "type": "trails",
        "id": "4"
      },
      {
        "type": "lifts",
        "id": "1"
      }
    ]
  }
},

```

```

    "links": {
      "related": "https://example.com/1.0/mountainAreas/1/connections/"
    }
  },
  "multimediaDescriptions": {
    "data": [
      {
        "type": "mediaObjects",
        "id": "2"
      }
    ],
    "links": {
      "related": "https://example.com/1.0/mountainAreas/1/multimediaDescriptions/"
    }
  }
},
"links": {
  "self": "https://example.com/1.0/trails/1"
}
}

```

```
asciidoc/examples/trail.full.json
```

## 5.2.9. Venues

A resource that implements the concept of [Venue](#) defined in the **AlpineBits® DestinationData Ontology**.

A JSON object representing such a resource MUST contain the following fields:

- **type**: the constant "venues" that identifies the resource as being of the type venue.
- **id**: a string that uniquely and persistently identifies the venue within a SERVER. See the definition in [Basic Fields](#).
- **attributes**: an object containing the attributes of the venue.
- **relationships**: an object containing the relationships of the venue to other resources.
- **links**: an object containing the links related to the venue.

Venue resources are structured in the following way:

```

{
  "type": "venues",
  "id": "1",
  "meta": { ... },
  "attributes": { ... },
  "relationships": { ... },
  "links": { ... }
}

```

### Meta

See the definition of the meta object in [Meta Object](#).

### Attributes

The attributes object of the venue resource MUST contain the following fields:

- **abstract**: a [text](#) object containing a brief description of the venue. Nullable. See the definition in [Attributes Object](#).
- **address**: an [address](#) object containing the address of the venue. Nullable.
- **categories**: an array of [category](#) strings identifying the types instantiated by the venue. Nullable. Non-empty. See the definition in [Attributes Object](#).

No type is pre-defined by the standard.

- **description**: a [text](#) object containing a description of the venue. Nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **geometries**: an array of [geometry](#) objects each of which represents the location of the venue in terms of GPS coordinates. There should be at most one geometry object of each type (e.g. Point, LineString). Nullable. Non-empty.
- **howToArrive**: a [text](#) object containing instructions on how to arrive at the venue. Nullable.
- **name**: a [text](#) object containing the complete name of the venue. Non-nullable. Conditional Assignment. See the definition in [Attributes Object](#).
- **shortName**: a [text](#) object containing a short name of the venue. Nullable. See the definition in [Attributes Object](#).
- **url**: a [url](#) describing the venue, such as a website or a Wikipedia page. Nullable. See the definition in [Attributes Object](#).

A summary of the `attributes` object is presented in the table below:

Field	Type	Constraints
abstract	<a href="#">text</a>	Nullable
address	<a href="#">address</a>	Nullable
categories	Array of <a href="#">category string</a>	Nullable, Non-empty
description	<a href="#">text</a>	Nullable, Conditional Assignment
geometries	Array of <a href="#">geometry</a>	Nullable, Non-empty
howToArrive	string	Nullable
name	<a href="#">text</a>	Non-nullable, Conditional Assignment
shortName	<a href="#">text</a>	Nullable
url	<a href="#">url</a>	Nullable

## Relationships

The `relationships` object of a mountain area resource **MUST** contain the following fields:

- **multimediaDescriptions**: a [Reference to Many](#) media object resources (see [Media Objects](#)) that are related to the venue. See Section [multimediaDescriptions](#). Nullable. Non-empty.

A summary of the `relationships` is presented in the table below:

Field	Type	Constraints
multimediaDescriptions	<a href="#">Reference to Many</a> object to <a href="#">Media Objects</a>	Nullable, Non-empty

## Links

See the definition of the `links` object in [Links Object](#).

## Endpoints

The following endpoints in this API specification return venue resources:

- <https://example.com/1.0/venues>: returns a collection of venues.
- <https://example.com/1.0/venues/:id>: returns the venue identified by the `:id` parameter.
- <https://example.com/1.0/events/:id/venues>: returns a collection of venues of an event.

## Examples

The following example presents an object containing the minimal information required of a venue resource:

```
{
  "type": "venues",
  "id": "1",
  "meta": {
    "dataProvider": null,
    "lastUpdate": null
  },
  "attributes": {
    "abstract": null,
    "address": null,
    "area": null,
    "categories": null,
    "description": null,
    "geometries": null,
    "howToArrive": null,
    "name": {
      "eng": "Auditorium 1"
    },
    "shortName": null,
    "url": null
  },
  "relationships": {
    "multimediaDescriptions": null
  },
  "links": {
    "self": "https://example.com/1.0/venues/1"
  }
}
```

`asciidoc/examples/venue.min.json`

The following example presents an object representing a venue resource:

```
{
  "type": "venues",
  "id": "1",
  "meta": {
    "dataProvider": "https://example.com",
    "lastUpdate": "2020-04-01T08:00:00+02:00"
  },
  "attributes": {
    "abstract": {
      "eng": "The Auditorium 1 of the Free University of Bozen-Bolzano provides a great space for keynotes, lectures and presentations."
    },
    "address": {
      "street": {
        "ita": "Piazza Università, 1",
        "deu": "Universitätsplatz 1"
      },
      "city": {
        "deu": "Bozen"
      },
      "region": {
        "deu": "Trentino-Südtirol"
      },
      "country": "IT",
      "zipcode": "39100",
      "complement": {
        "deu": "Hauptgebäude"
      }
    },
    "categories": [
```

```

    "example/building"
  ]
},
"area": 150,
"categories": [
  "example/auditorium"
],
"description": {
  "eng": "The Auditorium 1 of the Free University of Bozen-Bolzano provides a great space for keynotes, lectures and presentations, being available to host events related academic, provincial and cultural topics."
},
"geometries": [
  {
    "type": "Point",
    "coordinates": [
      11.35087251663208,
      46.49873937419277
    ]
  }
],
"howToArrive": {
  "eng": "From the train station, the Free University of Bozen-Bolzano is accessible in a 5 minutes walk into the historical city center."
},
"name": {
  "eng": "Auditorium 1 - Free University of Bozen-Bolzano"
},
"shortName": {
  "eng": "Auditorium 1"
},
"url": "https://example.com/auditorium-1"
},
"relationships": {
  "multimediaDescriptions": {
    "data": [
      {
        "type": "mediaObjects",
        "id": "1"
      }
    ],
    "links": {
      "related": "https://example.com/1.0/venues/1/multimediaDescriptions"
    }
  }
},
"links": {
  "self": "https://example.com/1.0/venues/1"
}
}

```

**asciidoc/examples/venue.full.json**

## Appendix A: AlpineBits® DestinationData developer resources

The AlpineBits® DestinationData development home page is at <https://www.alpinebits.org/developers/>. There are resources linked from that page that help test one's implementation.

Public repositories with schema files and example code snippets are available online at <https://gitlab.com/alpinebits/destinationdata>. Contributions are welcome (any programming language).