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Bike Boxen STA

v3.1, 11.08.2023

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Preliminary notes

STA is implementing a network of bike parking systems in South Tyrol, to be placed mainly just outside train stations. The idea is to foster intermodal sustainable trips by combining individual bikes to be parked in a secured way in these new parking facilities with trips carried out by train.

The technological system for the management of this infrastructure was assigned to Bicincittà (<https://www.bicincitta.com>), one of the most known companies at national level in relation to bike sharing systems and services, which has started to enter also the bike parking market.

Within the public tender STA has requested to Bicincittà the provide an API to the Open Data Hub for the retrieval of real-time information related to the bike parking availability of the different parking areas. Bicincittà has put at disposal an API which is used to share not only real-time information about all bike sharing and parking implementations, but also to carry out more complex functionalities like booking or payment.

Bicincittà end-point description

The end-point is available at the following URL: <https://stapro.dnsalias.com>

The access credentials have been made available separately by Bicincittà. The requests to the API need to have a valid token.

The API implemented by Bicincittà supports different use cases, including booking. For the Open Data Hub, only the method `/resources` is relevant. More specifically, the following services have to be considered:

- **/resources/locations:** this API call allows to retrieve the cities where the parking service is present (not only South Tyrol)
- **/resources/stations:** this API call allows to retrieve the list of stations present in the specified city and its overall real-time state.
- **/resources/station:** this API call allows to retrieve the list of parking slots associated to a station and its real-time state.

Specification of the modalities of integration in the Open Data Hub

All the data of Bicincittà should be imported (i.e. for all available cities), not only for South Tyrolean cities. The Data Collector should therefore first make a request to the method `/resources/locations`, get the codes of all available stations, and then make a separate call for each location to the method `/resources/stations` to get the details of all associated stations. Each location should also be considered as a station in the Open Data Hub, since certain bike parking stations are represented separately in the API but are actually part of the same parking facility (e.g., a station as veloHub and a station as bike boxen group).

Please note that the web-service provides names in different languages; all this information should be properly stored (one language for the “default” station name in the Open Data Hub; all other languages available in the metadata data structure).

METADATA – BIKE PARKING LOCATION STATION

The following proposed mapping takes as reference the fields provided the method `/resources/locations`. All fields marked as “METADATA” indicate the necessity to have a linked record in the metadata table in which these values have to be stored.

| Web-service fields | Open Data Hub parameters |
|--------------------------------|--------------------------|
| locationID | stationcode |
| name (languageID = it) | name |
| name (languageID = de) | METADATA |
| name (languageID = lld) | METADATA |
| name (languageID = en) | METADATA |

Table 1: Mapping between main web-service and Open Data Hub fields (reference: “station” table- bike parking location station).

The following specifications have to be also considered:

- the Open Data Hub field **origin** is to set as **bicincittà**.
- the Open Data Hub field **pointprojection** has to be set as the mean between the coordinates of all stations that are linked to this location
- the Open Data Hub field **stationtype** is to set as **BikeParkingLocation**

METADATA – BIKE PARKING STATION

The following proposed mapping takes as reference the fields provided the method /resources/stations. All fields marked as “METADATA” indicate the necessity to have a linked record in the metadata table in which these values have to be stored. Please note that some fields provided by the method stations are measurements and are not to be considered among the metadata.

| Web-service fields | Open Data Hub parameters |
|--------------------------------|--|
| stationID | stationcode |
| locationID | Not to be stored (just store the reference to the BikeParkingLocation) |
| locationName | Not to be stored (just store the reference to the BikeParkingLocation) |
| name (languageID = it) | name |
| name (languageID = de) | METADATA |
| name (languageID = lld) | METADATA |
| name (languageID = en) | METADATA |
| address | METADATA |
| latitude, longitude | pointprojection |
| type | METADATA. Store directly the associated mapping (4 = veloHub, 5 = bixeBoxGroup) Note that this metadata is provided through the method /resources/locations |
| totalPlaces | METADATA |

Table 2: Mapping between main web-service and Open Data Hub fields (reference: “station” table- bike parking station).

The following specifications have to be also considered:

- the Open Data Hub field **origin** is to set as **bicincitta**.
- the Open Data Hub field **stationtype** is to set as **BikeParking**
- the stations should have a reference to the **parent station** “bike parking location”

METADATA – BIKE PARKING BAY

Important note: the method /resources/station provides the information for each bay, similarly to the Data Collector “Bike Chargers”. For this reason, it is proposed to save each bay a station in the “station” table, and the use the field “parent_id” to store the hierarchy of the stations. The reference mapping has to be considered. Please note that certain attributes made available through this station refer to the bike parking station and not the bay, so they are stored only for the above type of station.

| Web-service fields | Open Data Hub parameters |
|---------------------|--|
| places/position | stationcode |
| places/position | name |
| latitude, longitude | pointprojection |
| stationPlaces/type | METADATA. Store directly the associated mapping (1=withoutRefill, 2=withRefill). |
| stationPlaces/level | METADATA |

Table 3: Mapping between main web-service and Open Data Hub fields (reference: “station” table- bike parking bay).

The following specifications have to be also considered:

- the Open Data Hub fields **stationcode** and **name** have to be saved with the following convention: “stationcode or name of the reference BikeParking parent station”/”value in the field places/position (web-service field)”
- the Open Data Hub field **stationtype** is to set as **BikeParkingBay**
- the stations should have a reference to the **parent station** “bike parking station”

DATA

The associated real-time state for the two types of stations is provided through certain fields in the above mentioned methods. Where possible, existing types already available in the Open Data Hub should be reused. The following measurements have to be stored, with reference the type of data and the associated station.

| Web-service fields (/stations) | Measurement type |
|---|--|
| state | Existing type , usage state ‘. Reference mapping to be stored (1=in service, 2= out of service) Table: measurementstring |
| countFreePlacesAvailable_MuscularBikes | New type , Free parking spots (regular bikes) ‘. Table: measurement |
| countFreePlacesAvailable_AssistedBikes | New type , Free parking spots (electric bikes) ‘. Table: measurement |
| countFreePlacesAvailable | Existing type , free ‘. Table: measurement |

Table 4: Measurements to be stored for a bike parking station.

| Web-service fields (/station) | Measurement type |
|-------------------------------|--|
| state | Existing type , usageState ‘. Reference mapping to be stored (1=in service, 2= occupied – in service; 3 = out of service) Table: measurementstring |

Table 5: Measurements to be stored for a bike parking bay.

In case of a bike parking location station, only one measurement should be stored, i.e. the type “free”, calculated as the sum of the free available parking slots of all associated stations.