


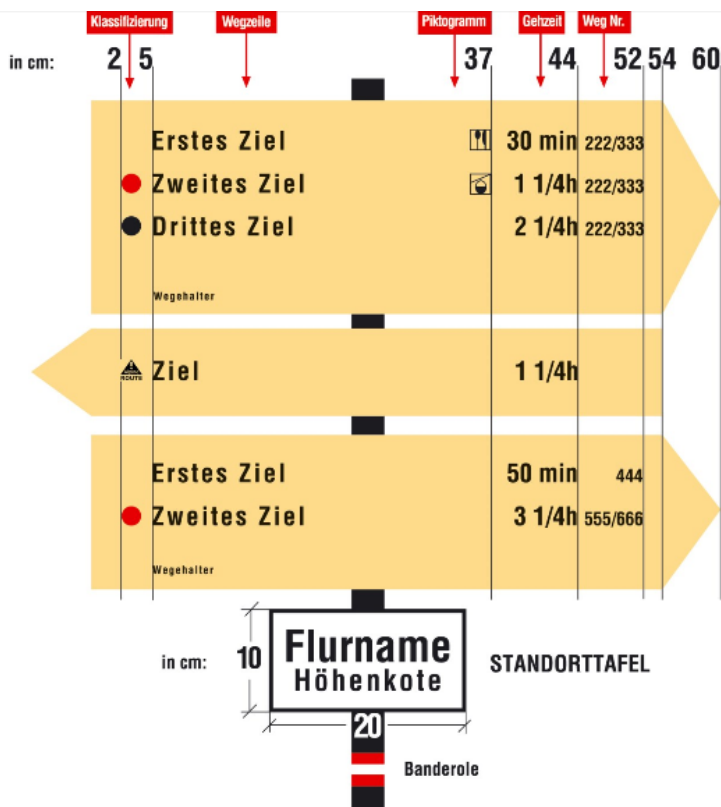
# The Guidepost JSON Specification for TWBK

<b>Authors:</b>	Florian Jurgeit, David Baumgartner
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<b>Abstract:</b>	This document describes how to define the content of guideposts based on the Tiroler Wander- und Bergwegekonzept (TWBK) in a standardized JSON-document.
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## 1 Introduction

Based on the the guidelines of Club Arc Alpin (<http://www.club-arc-alpin.eu>) many alpine countries/regions applied the well known yellow guidepost signs for hikers/mountaineers. The objective JSON-specification defines guideposts based on the "Tiroler Wander- und Bergwegekonzept" (shortcut: TWBK) provided by the government of tyrol (Austria).

Reference: <https://www.tirol.gv.at/sport/richtlinien-initiativen/sport-wanderwege-bergwege/>



### 1.1. Example

A guidepost JSON-document based on the TWBK (Tiroler Wander- und Bergwegekonzept):

```
$json = {  
  "type": "TWBK",  
  "locID": "LZ2345",
```

```
"locDesc" : "Westliches Ende Parkplatz Ströden",
"locRespons" : "DAV",
"locSign" : "Ströden",
"locAltitude" : 1269,
"locLatitude" : 48.2521123542661,
"locLongitude" : 14.6310424804688,
"ordered" : "12-02-2016",
"signs" : [
  {
    "signID" : 1,
    "sgnRespons" : "ÖAV Sektion Matrei",
    "signDirection" : 0,
    "signRow" : [
      {
        "rowID" : 1,
        "targetName" : "Clara Hütte",
        "subTarget" : "über Wasserschaupfad",
        "targetType" : [
          12,
          14
        ],
        "targetTime" : "00:55",
        "routeID" : [
          345,
          23
        ],
        "targetDifficulty" : 1
      },
      {
        "rowID" : 2,
        "targetName" : "Umbalfälle",
        "targetType" : [
          5
        ],
        "targetTime" : "00:05",
        "routeID" : [
          345
        ],
        "targetDifficulty" : 4
      }
    ]
  },
  {
```

```
"signID" : 2,
"signRespons" : "Tourismusverband",
"signDirection" : 1,
"signRow" : [
  {
    "rowID" : 1,
    "targetName" : "Bobojach",
    "subTarget" : "Rad- und Wanderweg",
    "targetType" : [
      26,
      12,
      11
    ],
    "targetTime" : "01:15",
    "targetDifficulty" : 3
  }
],
},
{
  "signID" : 3,
  "signRespons" : "DAV Sektion Essen",
  "signDirection" : 0,
  "signRow" : [
    {
      "rowID" : 1,
      "targetName" : "Simonysee",
      "targetType" : [
        12,
        22,
        11,
        25
      ],
      "targetTime" : "01:45",
      "routeID" : [
        345,
        23,
        35
      ],
      "targetDifficulty" : 2
    },
    {
      "rowID" : 2,
      "targetName" : "Türmljoch",
```

```

        "targetTime" : "02:45",
        "targetDifficulty" : 1
    },
    {
        "rowID" : 3,
        "targetName" : "Simonyspitze",
        "targetTime" : "01:30",
        "targetDifficulty" : 3
    }
]
}
}
}

```

## 1.2. Definitions

- JavaScript Object Notation (JSON), and the terms object, name, value, array, and number, are defined in [IETF RFC 4627](#).
- The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [IETF RFC 2119](#).
- A Guidepost-JSON document must be encoded in UTF-8.

## 2 TWBK JSON Objects

A TWBK-JSON-document normally consists one single object (guidepost-location). This object represents some metadata (e.g. coordinates of the location, description, ID,...) and all signs on that location. The key with the name "signs" can be empty (e.g. guidepost location with only a white location sign). In general each location is represented as a single document - it's also possible to summarize multiple guidepost-locations as a collection:

```

var collection = {
    "type": "GuidePostCollection",
    "features": [... GuidePosts ...]
}

```

### 2.1 Metadata objects

Object	Datatype	Requirement	Description	Example
type	String	REQUIRED	Describes the underlying regulation/standard - e.g. Tiroler Wander- und Bergwegekonzept (TWBK), Simplified etc. Necessary for parsing, validating and rendering the JSON-document against the right schema.	TWBK
locID	String	REQUIRED	Location-ID; This ID may be user-defined or derived from a database (e.g. PK).	AT123456
locDesc	String	OPTIONAL	This member allows to describe the location of the guidepost.	West-exit of parking area XXX near the big tree.
locRespons	String	OPTIONAL	Defines the maintenance responsibility for this guidepost-location (not the trail-responsibility!).	TVB Osttirol
locSign	String	OPTIONAL	In case the guidepost-location should be equipped with a white location-sign, the keys 'locSign' and 'locAltitude' must have values. This value defines the text on the location-sign.	Ströden
locAltitude	Number(m)	OPTIONAL	In case the guidepost-location should be equipped with a white location-sign, the keys 'locSign' and 'locAltitude' must have values. This value defines the altitude on the location-sign in meters.	1450

locLatitude	WGS84 decimal	REQUIRED	Defines the y-position (Latitude) of the guidepost location. The value is required and be defined in decimal-degrees (DD). The CRS has to be GCS-WGS84 (epsg:4326). In case of southern hemisphere negative Latitude-coordinates must be used.	42.123456
locLongitude	WGS84 decimal	REQUIRED	Defines the x-position (Longitude) of the guidepost location. The value is required and be defined in decimal-degrees (DD). The CRS has to be GCS-WGS84 (epsg:4326). In case of positions west of Greenwich negative Longitude-coordinates must be used.	12.468344
ordered	String (dd-mm-yyyy)	OPTIONAL	The value must be a string defining a date in the notation dd-mm-yyyy. 'ordered' defines the date the signs have been ordered or installed.	24-12-2015
signs	Array of Objects	OPTIONAL	The <b>array of objects defines the individual signs on the guidepost-location</b> . See "signs obejcts" (2.2)	[[...],[...]]

## 2.2 Signs objects

Signs are the fundamental elements of a guidepost. Each sign on a guidepost-location must at least have 1 target on it (with a maximum of 3 based on the rules of TWBK). Based on direction and track responsibility signs are separated. General information regarding a sign are the direction (left/right) and the track responsibility for the targets. All content is nested in a separate array of objects (-> signRow).

Object	Datatype	Requirement	Description	Example
signID	number (auto)	REQUIRED	Defines the position (order) of the sign on the guidepost - starting with 1 as the most top one.	1
signRespons	String	OPTIONAL	Trail-Responsibility for the targets on this sign.	OeAV Matrei
signDirection	Number ( 0   1 )	REQUIRED	Direction (arrow) of the sign in coded values.	0 = left, 1 = right
signRow	Array of Objects	REQUIRED	Nested objects <b>defining the dedicated targets of the sign</b> . Has to be at least one and at most three.	[[...],[...]]

### signRow (Array of objects):

Object	Datatype	Requirement	Description	Example
rowID	Number (0 < auto <= 3)	OPTIONAL	Defines the target's position on the sign. Starting with 1 as the most top one.	1-3
targetName	String	REQUIRED	Name of a target the dedicated sign is guiding to. This key must be defined, otherwise a guidepost-sign would not be necessary.	Clara Hütte
subTarget	String	OPTIONAL	Optional second line (smaller letters) with reference to the target.	über Fahrweg
targetType	Array of Numbers	OPTIONAL	Symbols ("Piktogramm") with reference to the target. E.g. cable-car, eat/drink, waterfall,... - valid target-types (symbols) based on TWBK are listed in the appendix. Each number defines a TargetType (symbol).	[12, 15, ...]
targetTime	String Format (hh:mm)	OPTIONAL	Time to reach the target. Format: hh:mm	02:30
routeID	Array of strings	OPTIONAL	Official numbers of the trail(s) to the dedicated target.	[345, 23a, ...]
targetDifficulty	Number ( 0   1   2   3   4 )	REQUIRED	Describes the hiker's requirements to reach the target based on the trail specifications described in TWBK. The TargetDifficulty must be defined and is coded in values ( 0 = low(WW), 1 = medium(RB), 2 = high(SB), 3 = extreme(AR), 4 = snow(SN) - Winterwanderweg/winter hiking trail).  0 = WW = Wanderweg ("normal simple hiking trail") 1 = RB = Roter Bergweg ("red categorized trail") 2 = SB = Schwarzer Bergweg ("black categorized trail") 3 = AR = Alpine Route (e.g. crossing glaciers with no dedicated track) 4 = SN = Winterwanderweg ("winter hiking trail")	0 = low(WW), 1 = medium(RB), 2 = high(SB), 3 = extreme(AR)  4 = snow(SN) - Winterwanderweg (winter hiking trail)

## 3 TWBK JSON as GeoJSON property

In some cases it is also valuable to nest Guidepost-JSON documents into a GeoJSON-Object (<http://geojson.org/>) - e.g. working with spatial

datatypes in MongoDB.

Guideposts are represented by the geometry-type "point" in GeoJSON.

### 3.1. Example

```
{
  "type" : "Feature",
  "properties" : {
    "locID" : "LZ2345",
    "locDesc" : "Ende Parkplatz Ströden",
    "locRespons" : "DAV Sektion xx",
    "locSign" : "Ströden",
    "locAltitude" : 1269,
    "locLatitude" : 48.2521123542661,
    "locLongitude" : 14.6310424804688,
    "ordered" : "12-02-2016",
    "signs" : [
      {
        "signID" : 1,
        "signRespons" : "ÖAV Sektion Matrei",
        "signDirection" : 0,
        "signRow" : [
          {
            "rowID" : 1,
            "targetName" : "Clara Hütte",
            "subTarget" : "über Wasserschaupfad",
            "targetType" : [
              12,
              14
            ],
            "targetTime" : "00:55",
            "routeID" : [
              345,
              23
            ],
            "targetDifficulty" : 1
          },
          {
            "rowID" : 2,
            "targetName" : "Umbalfälle",
            "targetType" : [
              5
            ],
            "targetTime" : "00:30",
```

```

        "routeID" : [
            345
        ],
        "targetDifficulty" : 4
    }
]
},
{
    "signID" : 2,
    "signRespons" : "TVB Osttirol",
    "signDirection" : 1,
    "signRow" : [
        {
            "rowID" : 1,
            "targetName" : "Gletscherhütte",
            "subTarget" : "über Wasserhütte",
            "targetType" : [
                26,
                12,
                11
            ],
            "targetTime" : "02:45",
            "targetDifficulty" : 3
        }
    ]
},
{
    "signID" : 3,
    "signRespons" : "DAV Sektion xx",
    "signDirection" : 0,
    "signRow" : [
        {
            "rowID" : 1,
            "targetName" : "Wanderhaus",
            "targetType" : [
                12,
                22,
                11,
                25
            ],
            "targetTime" : "01:45",
            "routeID" : [
                345,

```

```

        23,
        35
    ],
    "targetDifficulty" : 0
},
{
    "rowID" : 2,
    "targetName" : "Wanderhaus2",
    "targetTime" : "02:45",
    "targetDifficulty" : 1
},
{
    "rowID" : 3,
    "targetName" : "Wanderhaus3",
    "targetTime" : "01:30",
    "targetDifficulty" : 2
}
]
}
]
},
"geometry" : {
    "type" : "Point",
    "coordinates" : [
        14.6310424804688,
        48.2521123542661
    ]
}
}
}


```

## 4 Appendix



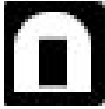












### Symbolset


Symbols ("Piktogramm") with reference to the target. E.g. cable-car, eat/drink, waterfall,... - valid target-types (symbols) based on TWBK are listed below. Each number defines a TargetType (symbol).

Sample-Symbols: The attached symbols are just examples and not obligatory!

targetType ID	german description	description	
01	Hütte m. ÜN	alpine lodge (with overnight)	



02	Essen/Trinken	eat/drink	
03	Jausenstation	simple eat/drink ("snack")	
04	Biwak	biwak	
05	Haltestelle	bus-stop	
06	Gondelbahn	cable-car	
07	Parkplatz	parking	
08	Taxizubringer	cab/shuttle	
09	Sessellift	chairlift	
11	Lehrweg	nature trail	
12	Info	information	
14	Besucherzentrum	visitor center	
15	Camping	camping	
21	Kirche	church	
22	Burg/Schloss	castle, ruin	
25	Mühle	mill	
26	Wasserfall	waterfall	

98	Winterwanderweg	winter hiking trail ("Difficulty Symbol")	
99	Alpine Route Symbol	Alpine Route	