



NLS
NATIONAL
LAND SURVEY
OF FINLAND



OGC API Features - Building blocks to create, modify, and query geospatial data on the Web

Workshop on Geodata Discoverability

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Real property



Maps and spatial data

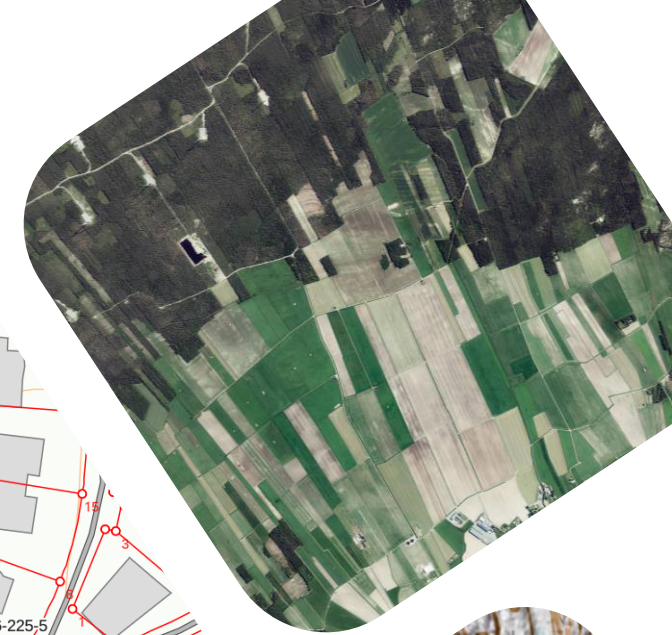


Research



Drivers for API development

- NLS Finland's data is extensive and constantly updated
- Timeliness is key for the user
- The user needs the data as part of their own process, in their own information system
- EU's Open Data Directive and HVD's (High Value Datasets)



Spatial Data on the Web Best Practices

- Use globally unique persistent HTTP URIs for Spatial Things
- Make your spatial data indexable by search engines
- Use spatial data encodings that match your target audience
- Expose spatial data through 'convenience APIs'
- Include spatial metadata in dataset metadata

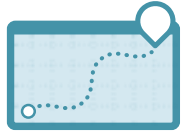
[Complete list at w3.org](https://www.w3.org/2019/02/spatial-data-on-the-web-best-practices/)



**OGC
APIs**

Building Blocks for Location

Being FAIR



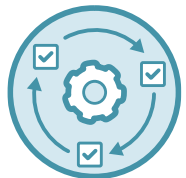
Findable – Catalogs and metadata



Accessible – Protocol is open and standardized



Interoperable – content encoding (GeoJSON, GML, HTML)



Reusable – license information, data product specifications

OGC API's




- These standards build upon the legacy of the OGC Web Service standards (WMS, WFS, WCS, WPS, etc.)
- These define resource-centric APIs that take advantage of modern web development practices
- Standards are being constructed as "building blocks"




```
–<wfs:FeatureCollection xsi:schemaLocation="http://www.schemas.opengis.net/wfs/1.1.0/wfs.xsd http://xml.nls">
  –<gml:featureMember>
    –<PlaceName gml:id="PN_42010286">
      <placeNameId>42010286</placeNameId>
      <placeNameVersionId>1</placeNameVersionId>
      <spelling>Ivalo flygplats</spelling>
      <language>swe</language>
```

Data, Maps and Metadata ...




"Download Service"

Features

Approved Standard 


OGC API - Features - Part 1: Core and Part 2: Coordinate Reference Systems by Reference are both publicly available.



"View Service"

Maps

OGC API - Maps offers a modern approach to the OGC Web Map Service (WMS) standard for provision map and raster content.



"Discovery Service"

Records

OGC API - Records updates OGC's Catalog Services for the Web by building on the simple access to content in OGC API - Features.

Processing, Coverages and Environmental data



Processes

OGC API - Processes allows for processing tools to be called and combined from many sources and applied to data in other OGC API resources through a simple API.



Coverages

OGC API - Coverages allows discovery, visualization and query of complex raster stacks and data cubes.



EDR

Environmental Data Retrieval (EDR) API provides a family of lightweight interfaces to access Environmental Data resources. Each resource addressed by an EDR API maps to a defined query pattern.

OGC API Features

User friendly – developer friendly

OpenAPI

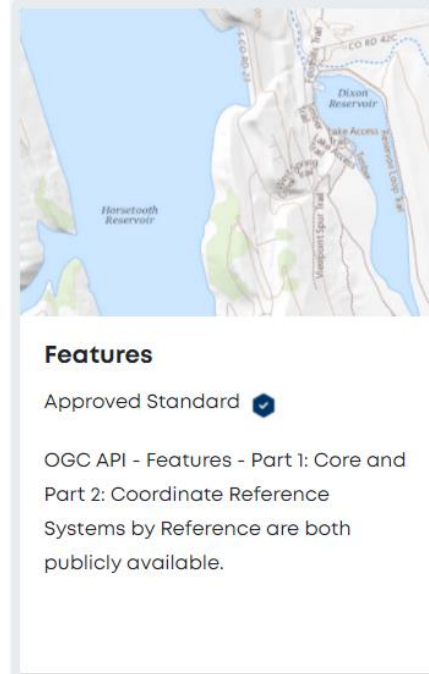
Modular (core + extensions)

Findable (indexing)

An example

WFS: `/ows?request=GetFeature&typename=buildings&featureid=5`

Features: `/api/collections/buildings/items/5`



Create – Replace - Update - Delete



- API also for changing items/features
- Using HTTP methods, eg.
 - Create new HTTP POST
 - Replace HTTP PUT
 - Update HTTP PATCH
 - Delete HTTP DELETE

```

Client
| POST /collections/oakland_buildings/items HTTP/1.1
| Content-Type: application/geo+json
|
| {
|   "type": "Feature",
|   "geometry": {
|     "type": "MultiPolygon",
|     "coordinates": [
|       [[[-122.2694982,37.79045922],[ -122.2693624, 37.79041125],
|         [-122.2693518,37.79042521],[ -122.26899, 37.7902858],
|         [-122.2690027,37.79027181],[ -122.2688602, 37.79021705],
|         [-122.2687222,37.790445],[ -122.2688582, 37.79049813],
|         [-122.2689084,37.79041634],[ -122.2689473, 37.79041058],
|         [-122.2691974,37.79051029],[ -122.2692367, 37.7906097],
|         [-122.2692201,37.79064271],[ -122.2693538, 37.79069243],
|         [-122.2694982,37.79045922]]]]]
|     },
|     "properties": {
|       "shape_len": 666.635209546,
|       "shape_area": 14016.0452102,
|       "bldgid3": "11 EMBARCADERO WEST_bldgG102",
|       "bldgid2": "11 EMBARCADERO WEST",
|       "bldgtype": "Commercial Building",
|       "final_apn": "0000042502000",
|       "apnid": 21,
|       "nostory": 2,
|       "bldgnum": "bldgG102",
|       "numbllds": 1,
|       "comname": "Portobello Office"
|     }
|   }
| }
|
|----->
| HTTP/1.1 201 Created
| Location: /collections/oakland_buildings/items/OB.2

```

```

Server
Client
| PUT /collections/oakland_buildings/items/OB.2 HTTP/1.1
| Content-Type: application/geo+json
|
| {
|   "type": "Feature",
|   "id": "OB.2",
|   "geometry": {
|     "type": "MultiPolygon",
|     "coordinates": [
|       [[[-122.2678831,37.80088484],[ -122.2679268, 37.80090136],
|         [-122.2680801,37.80065184],[ -122.2677726,37.8005301 ],
|         [-122.2676158,37.80078035],[ -122.2678831,37.80088484]]]]
|     ]
|   },
|   "properties": {
|     "shape_len": 402.19805753,
|     "shape_area": 10117.0666708,
|     "bldgid3": "258 11TH ST_bldg1",
|     "bldgid2": "258 11TH ST",
|     "bldgtype": "Store Building",
|     "final_apn": "002 006901000",
|     "apnid": 847,
|     "nostory": 1,
|     "bldgnum": "bldg1",
|     "numbllds": 1,
|     "comname": "John Sardell & Sons"
|   }
| }
|
|----->
| HTTP/1.1 204 OK

```

```

Client
| DELETE /collections/oakland_buildings/items/OB.2 HTTP/1.1
|
|----->
| HTTP/1.1 204 OK

```

NLS Finland – Open data

- Topographic database
- Raster maps
- Elevation models
- Aerial photos
- Laser scanning data
- Geographic names
- Addresses
- Property boundaries and identifiers



NLS Finland API's

Map API's

- Maps as background maps for applications and for combining with other data.

Spatial data API's

- The data include, among other things, place names, roads, buildings, addresses, water bodies and other terrain patterns, elevation ratios and administrative boundaries.

Real estate information API's

- Up-to-date real estate information directly from the registers of the National Land Survey of Finland.

Residential and Commercial Property Information API's

- Up-to-date apartment information



Examples - spatial information

Find cemeteries from Finland

<.../terrain/features/v1/collections/cemetery>

Cultivated land from this region

.../terrain/features/v1/collections/cultivated_land/items?limit=10000&bbox=336981,6971749,339757,6976463

One building

<.../features/v1/collections/buildings/items?limit=1>

```
{ "type": "FeatureCollection", "features": [ { "type": "Feature", "id": "459985d8-eb5e-488c-9f38-42ae8f1f778d:1", "geometry": { "type": "MultiPolygon", "coordinates": [ [ [ [ [ 27.9506429, 63.0952404 ], [ 27.9505738, 63.0952764 ], [ 27.9506372, 63.0953013 ], [ 27.9507062, 63.0952653 ], [ 27.9506429, 63.0952404 ] ] ] ] ] ], "properties": { "featureClass": "Building", "kmtkId": "459985d8-eb5e-488c-9f38-42ae8f1f778d", "version": 1, "VTJprt": null, "sourceId": "2101647874", "PNRplaceId": null, "startTime": "2022-02-20T10:40:13.822Z", "versionStartTime": "2022-02-20T10:40:13.822Z", "versionEndTime": null, "endTime": null, "dataSource": 1000, "sourceModificati
```

+ Maps

× For expert users

Topographic data and how to acquire it

[GeoPackage version of the National Topographic Database](#)

[Open data CC 4.0 licence](#)

[Product descriptions](#)

[Positioning services](#)

[Availability of GNSS signals](#)

Interface service or file download service?

Data is available in the interface service and the file download service. Are you thinking about when to use the interface service and when the file download service?

[Here are a few tips for selecting the correct service >](#)

Topographic data and how to acquire it

The National Land Survey maintains topographic data and produces maps, aerial photos and laser scanning data from the entire country.

Our datasets contain, for example, place names, roads, buildings, waterways, fields, topographic features and elevations as well as administrative boundaries.

Topographic data is available in a variety of different products.

- [See our product descriptions for more information >](#)
- [Product update times and estimated future update time](#) (pdf)

Topographic data is open data

You can download topographic data online through our website or by placing a separate order. You can also use our interface service.

Topographic data is free of charge and fall under the NLS's [open data licence](#). A handling and processing charge is collected for separate orders and using our interface service is subject to a maintenance fee.

Interface services

You can download data directly to your own application via our interface services. To use our interface services, you need an application that can request and download selected data from the NLS's server.

Using our interface services requires a contract. The datasets acquired through the service are free of charge. A maintenance fee is collected for the use of the service, but we offer a free trial period for the service. Some of our interface services are open access and free of charge.

Read more about interface services from our website in Finnish:

- [interface services for map data](#)
- [interface services for geodata](#)

More
information
at
www.nls.fi

Thank you!

 @JariReini

 <https://www.linkedin.com/in/reini/>



Advancing together

