

# PROOF-OF-CONCEPT SERVICE FOR GEOSPATIAL AND STATISTICAL DATA INTEGRATION



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# BACKGROUND

- **GEOSTAT4**

- Project aims at increasing the integration between geospatial and statistical information in Europe.
- Continues the work of the earlier GEOSTAT projects
  - GEOSTAT 1 (2010-2014), GEOSTAT 2 (2015-2016), GEOSTAT 3 (2017-2019)
- Project participants:
  - 9 European National Statistical Institutes
    - Austria, Finland, France, Germany, Norway, Poland, Portugal, Slovenia, Sweden
  - 4 subcontracting organizations including the **National Land Survey of Finland**.
- Some project's objectives
  - To complete the Global Statistical Geospatial Framework (GSGF) in Europe
  - To support the implementation of the GSGF Europe
    - To set up a **proof-of-concept service** that **combines geospatial and statistical information**.
- To plan is to set up poc of the draft version of the updated TJS standard
  - TJS implementation developed by the NLS-FI

# TJS 1.0.0

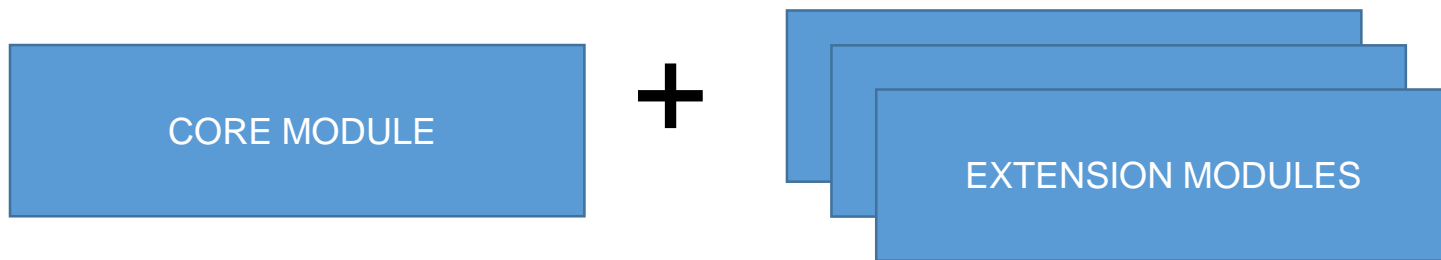
- Table Joining Service standard version 1.0.0 has been originally defined by the OGC in 2010
- Features:
  - Describing and exchanging tabular attribute data that relates to geographic objects
  - Describing metadata on spatial datasets
  - Joining the attribute data with different spatial datasets
  - The data joining is executed through common identifiers that are shared between the spatial and attribute datasets
  - Uses an XML-based GDAS format for describing the attribute data
  - Based on the idea of distributed data management and processing
    - Some TJS servers are providing attribute data in the GDAS format
    - Other TJS servers host spatial datasets and can join the GDAS data with them

# TJS UPDATE

- Currently, work is ongoing in the OGC for updating the TJS standard
- Draft version available in GitHub
  - <https://github.com/opengeospatial/tjs>
- Main changes:
  - RESTful service interface
  - OpenAPI specification recommended for interface description
  - Interaction with the service through HTTP operations (GET, POST, PUT, DELETE etc..)
  - JSON as main output format instead of GDAS (other formats also possible)
  - Support for CSV format for attribute data and GeoJSON format for spatial data

# TJS UPDATE – STRUCTURE

- New TJS standard version is defined with modular structure (core + extensions)



## Functionalities:

- Basic TJS functionalities
- Support for CSV and GeoJSON formats

## Possible extension modules:

- Support for additional data formats
- New functionalities
- etc...

# DISCOVERY OPERATIONS

- Common operations for all TJS implementations
  - **API landing page**
    - Contains links for navigating to other resources
  - **API definition document**
    - The API definition document (Open API)
  - **Service conformance information**
    - Information about the functionalities that the TJS implementation supports

# DATA JOINING OPERATIONS

- Joins attribute data from inputted attribute data files with spatial datasets on the server
- Functionalities:
  - **Viewing metadata** on:
    - All spatial datasets available on the server
    - Specific spatial dataset
    - Specific spatial dataset key fields,
    - Specific spatatial dataset key field keys,
    - Specific spatial dataset key field specific key
  - **Adding a spatial dataset** to the server from **GeoJSON** files
  - **Updating a spatial dataset** on the server from **GeoJSON** files
  - **Deleting a spatial dataset** from the server
  - **Joining** attribute data from **CSV** files with a spatial datasets on the server
    - Joining done via common key values that exist in both datasets that can be codes, names, etc...
    - Direct GeoJSON output
    - Join response document (multiple outputs formats for the joined data, creates a join resource)
      - Optional metadata on the successfulness of the join operation (matched, unmatched and additional keys)
  - **Updating a join** from a **CSV** files
  - **Deleting a join** from the server

# SPATIAL JOINING OPERATIONS

- Joins attribute data from the server with inputted spatial data files
- Functionalities
  - **Viewing metadata** on:
    - All attribute datasets available on the server
    - Specific attribute dataset
    - Attribute dataset key fields
    - Attribute dataset key field key values
    - Attribute dataset key field's specific key
  - **Adding** a new **attribute dataset** to the server from **CSV** files
  - **Updating** an **attribute dataset** on the server from **CSV** files
  - **Deleting** an **attribute dataset** from the server
  - **Joining attribute data** from the server with inputted **GeoJSON** files

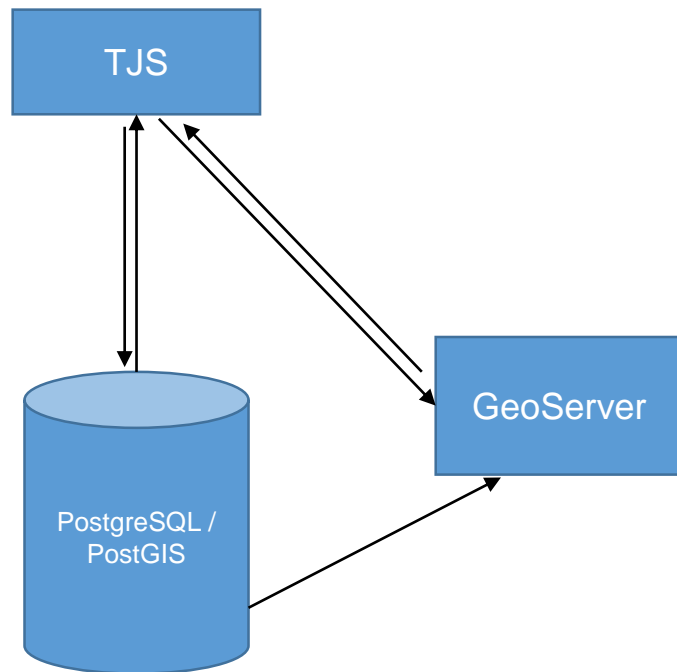


# FILE JOINING OPERATIONS

- Joins data from inputted attribute data files with inputted spatial data files
- Functionalities:
  - Joining attribute data from an inputted **CSV** files directly with an inputted **GeoJSON** file
    - Response is returned directly in the **GeoJSON** format containing the joined attributes

# DEMO IMPLEMENTATION

- NLS-FI has created a demo implementation of the new TJS standard draft
  - Implements all functionalities of the new draft version



- Depending on the operation, the attribute data are either joined with an inputted GeoJSON file or they are joined in the PostgreSQL/PostGIS database and published as a layer to the GeoServer
- Joined data outputs are available through GeoServer in all formats that it supports
  - WFS, WMS, GeoJSON, Shapefile, KML, OpenLayers client, etc...

# NEXT STEPS...

- The plan in the GEOSTAT4 project is to set up a proof-of-concept service of the new TJS standard draft implementation that has been created by the NLS-FI
  - United Nations Global Platform environment
- A user panel will be formed
  - Testing the service
  - Providing feedback on the service

# THANK YOU



**NLS**  
FINNISH GEOSPATIAL  
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