INSPIRE datasets in Lithuania
A story of implementation: Cadastral Parcels and other data

Presentation at INSPIRE KEN webinar
2021-10-07

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State Enterprise "GIS-Centras"
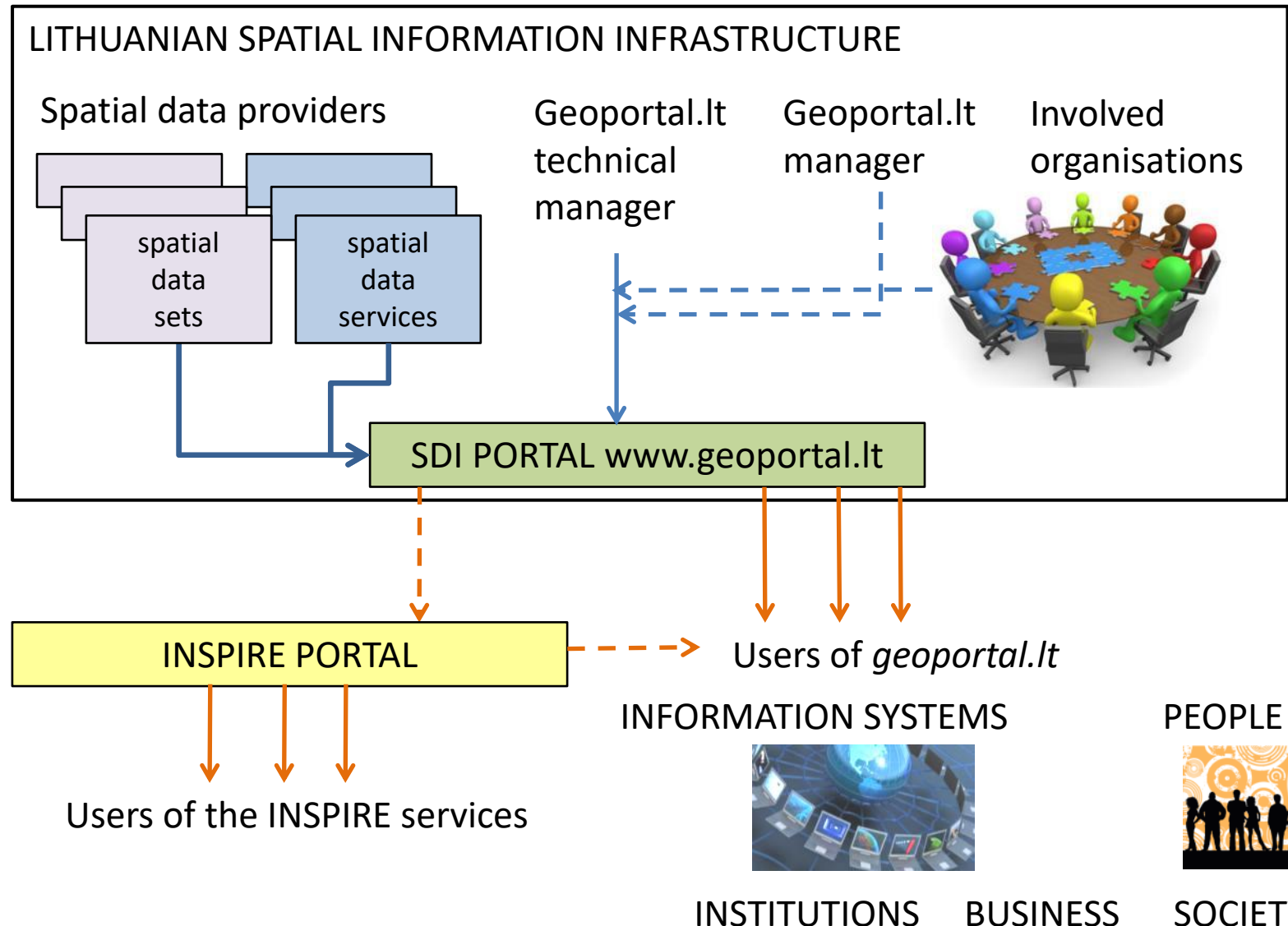*www.geoportal.lt*

GIS-Centras

GIS-CENTRAS

National Centre of Remote Sensing and Geoinformatics

- State enterprise

- Operates since 14 April, 1992

- Supervised by the Ministry of Agriculture

- Headquarters in Vilnius, branch office in Kaunas

- Responsible for technical implementation of EU INSPIRE Directive

- NOT a NMCA ☺

Lithuanian Spatial Information Infrastructure

GEOPORTAL.LT

- National SDI portal
- Operates since 2009
- State information system
- Web GIS and the official NSDI portal
- Consolidation of national spatial data resources
- Diverse services and interfaces
- English interface

ge⊗portal.lt

home   maps   e-services   search   communities   miscellaneous   methodological information   my portal   help

MAP

View spatial data and create your own maps using the map browser
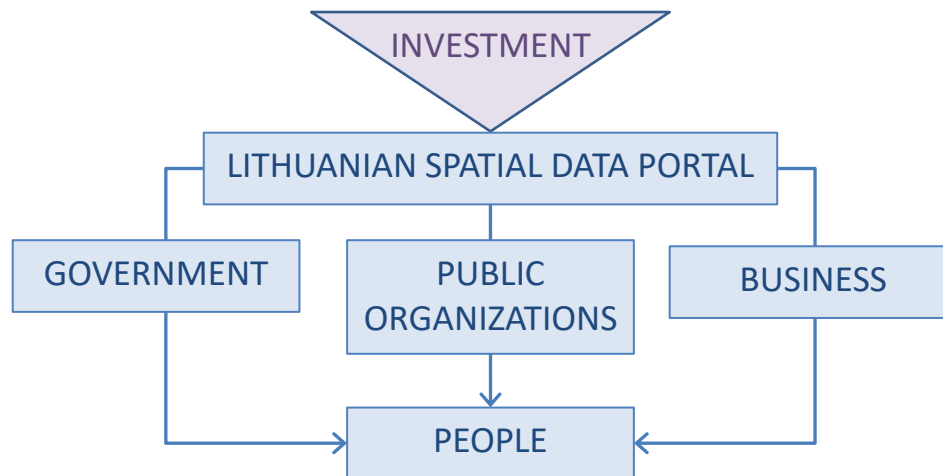
DATA

Get spatial data

SEARCH

Search for data sets, maps and spatial data services

Geoportal.lt – aims and value

- Single access place to national spatial data and services

- Integration node of registers and cadastres

- Optimized national investment into hardware, software and staff

- Place for spatial data exchange & geospatial platform

- **Technological platform for implementation of the INSPIRE directive**

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                     \    INVESTMENT     /
                      \                 /
                       _____/
                              │
               ┌──────────────────────────────┐
               │ LITHUANIAN SPATIAL DATA PORTAL │
               └──────────────────────────────┘
          ┌──────────────┐  ┌──────────────┐  ┌──────────────┐
          │  GOVERNMENT  │  │    PUBLIC    │  │   BUSINESS   │
          │              │  │ ORGANIZATIONS│  │              │
          └──────────────┘  └──────────────┘  └──────────────┘
                            ┌──────────────┐
                            │    PEOPLE    │
                            └──────────────┘
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GEOPORTAL.LT

>25 000

registered users (August 2021)

4,5

million services per year (2020)

360

unique spatial data sets (August 2021)
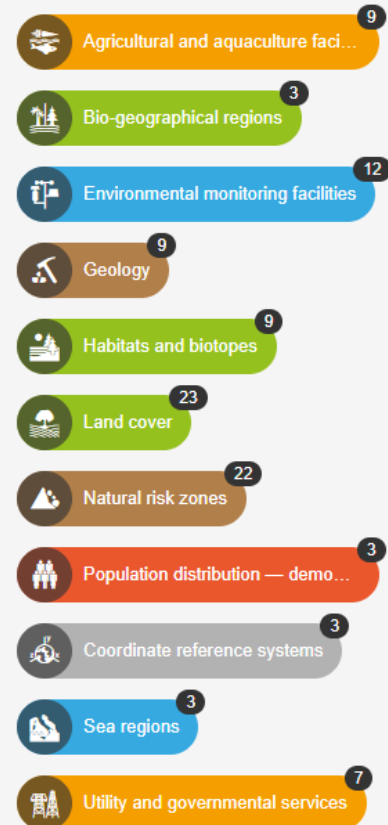
59

data providers (August 2021)

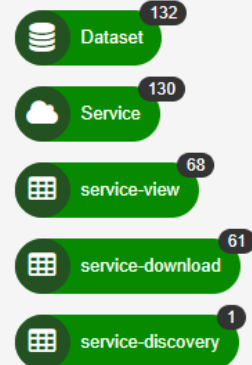# INSPIRE catalog / Geonetwork / Cadastral Parcels

A **single** national dataset

Organisations, roles, responsibilities

Data owner – Republic of Lithuania

Data manager and provider – Centre of Registers

Technical manager – SE "GIS-Centras"

Centre of Registers provides two datasets to national SDI

- Addresses (actual paid data + open data/1 year update + view service)
- Cadastral Parcels (CP)   (paid data + view service)

Software solutions – Moving to open source

Workflow in 2005 (still applied to some datasets)

Raw data → intermediate ArcGIS gdb → FME transformation → ArcGIS for INSPIRE

Since 2015 – moving from ArcGIS to Open Source software

Started with replacement of OracleDB and introduction of PostGIS and Geoserver

Main workflow since 2018

Intermediate ArcGIS gdb → PostGIS DB → HALE Studio → Geoserver → Geonetwork

Assessment of advantages and drawbacks

Advantages

- Cost saving – software license does not cost, given the technical knowledge of it, installation and initial preparation can be simple;

- Protection against single supplier solutions;

- Security – I see, I can check what I use;

- Extensibility – the possibility to expand the functionality, modify it, if necessary;

- Often a much faster cycle of updates, bug fixes.

Problems

- Specific competences needed

Hale Studio
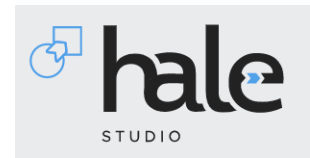
- Open source spatial data transformation software

- Perform data linking, attribute data conversion, re/classification functions

- Perform spatial data transformation functions

- Integrated browser for viewing transformed data maps

- Develop non-standard transformation algorithms using Groovy scripts
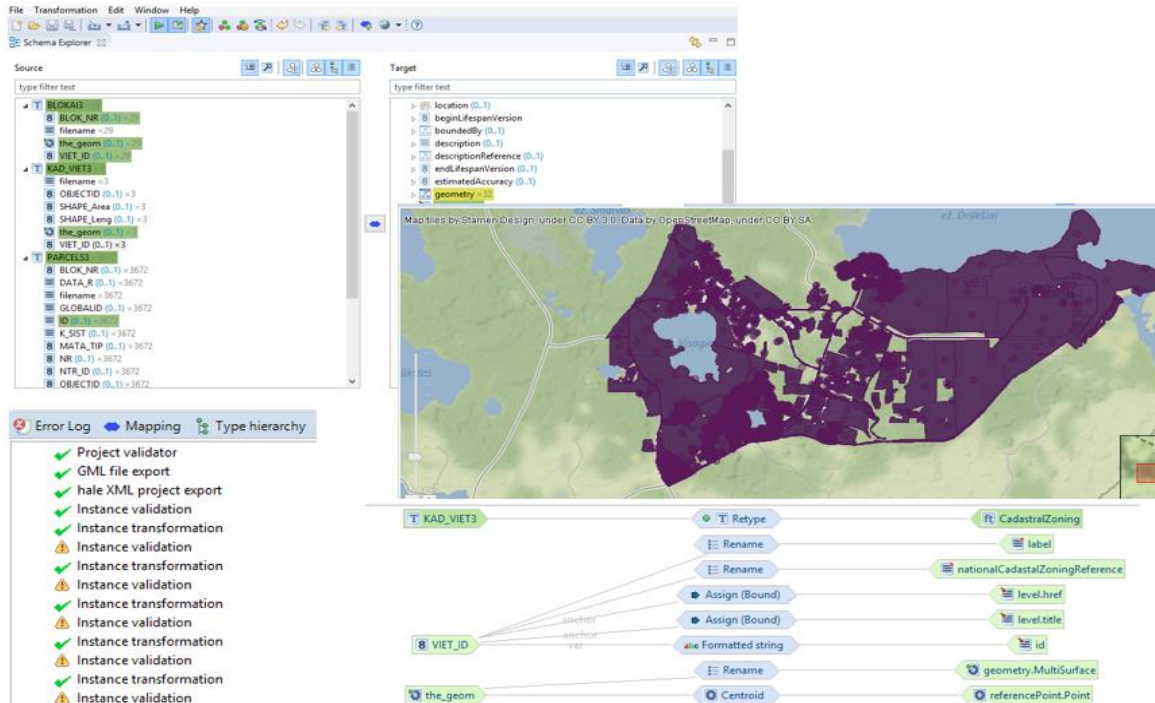
- INSPIRE transformation schemes

- Available INSPIRE codelists

- Initial validation tools

- Easy data transfer to GML file as required by INSPIRE

Geoserver

- Open source GIS server software for processing and publishing spatial data
- Publish data as sources using a set of vector and raster spatial data formats (GeoPackage, Shapefile) and DB connections (standard PostGIS)
- Publish data as OGC-approved service types

Service Capabilities

WCS
1.0.0
1.1.0
1.1.1
1.1
2.0.1

WFS
1.0.0
1.1.0
2.0.0

WMS
1.1.1
1.3.0

TMS
1.0.0

WMS-C
1.1.1

WMTS
1.0.0

New data source

Choose the type of data source you wish to configure

Vector Data Sources

Application Schema DataAccess - Application Schema DataStore allows mapping of FeatureTypes to externally defined Output Schemas
Directory of spatial files (shapefiles) - Takes a directory of shapefiles and exposes it as a data store
GeoPackage - GeoPackage
PostGIS - PostGIS Database
PostGIS (JNDI) - PostGIS Database (JNDI)
Properties - Allows access to Java Property files containing Feature information
Shapefile - ESRI(tm) Shapefiles (*.shp)
Web Feature Server (NG) - Provides access to the Features published a Web Feature Service, and the ability to perform transactions on the server (when supported / allowed).

Raster Data Sources

ArcGrid - ARC/INFO ASCII GRID Coverage Format
GeoPackage (mosaic) - GeoPackage mosaic plugin
GeoTIFF - Tagged Image File Format with Geographic information
ImageMosaic - Image mosaicking plugin
WorldImage - A raster file accompanied by a spatial data file

Other Data Sources

WMS - Cascades a remote Web Map Service
WMTS - Cascades a remote Web Map Tile Service

GeoNetwork

- Open source spatial data management portal

used in projects such as Dutch National Georegistry, Swiss Geographic Catalog, Spatial Data Directory (Finnish geoportal), INSPIRE Portal of the Grand-Dutchy of Luxembourg, FAO data portal and many others.

- A portal that provides an extremely wide range of metadata creation and search functionality, as well map browser functionality for viewing various types of spatial data services

- Adapted to INSPIRE
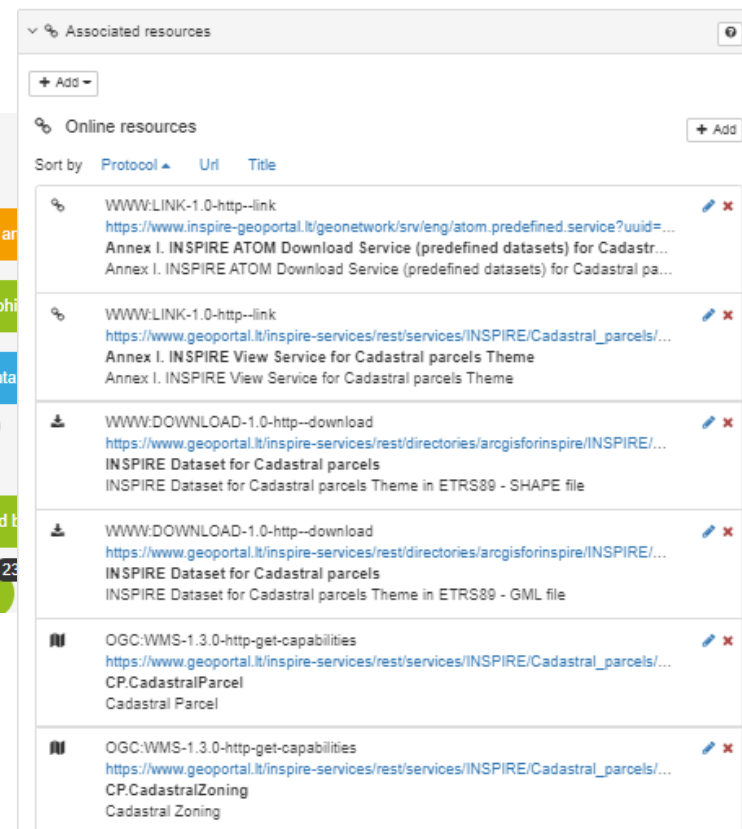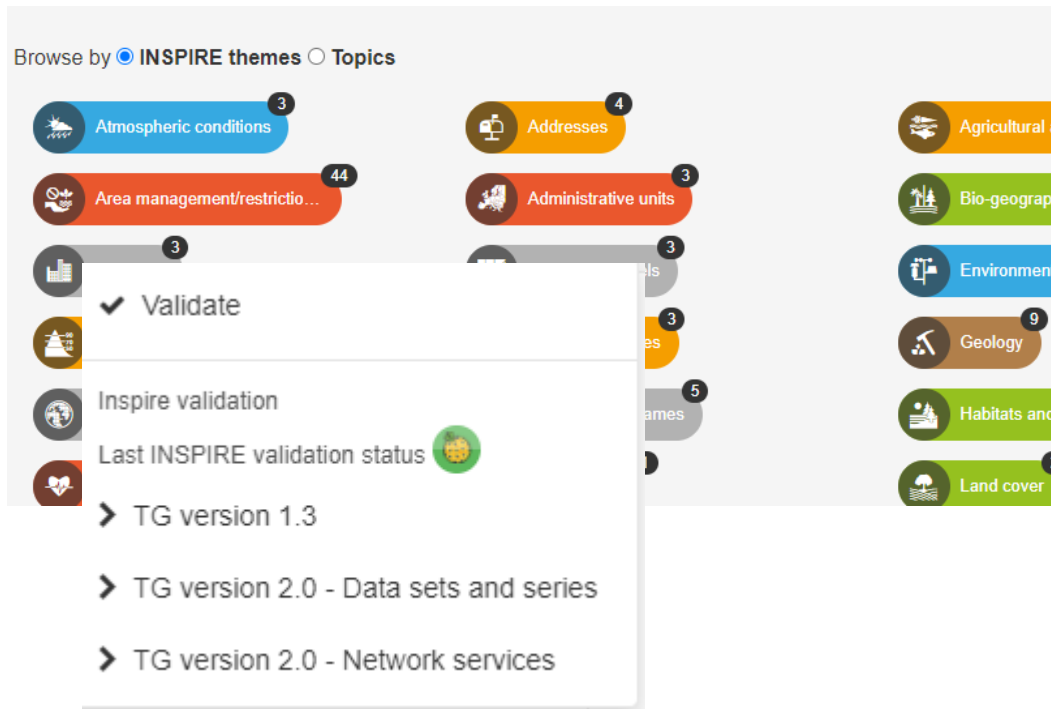
Lifecycle of INSPIRE data updates

Cadastral Parcels

- Actual data and sample data were provided by Centre of Registers.

- Transformation model created.

- GML file was not updated since the transformation, because it is just an example of the dataset and data structure remains unchanged.

- View service created from actual data, updated twice a year (unless we receive instructions from the Centre of Registers concerning more frequent updates)

Same sample data have been transformed to INSPIRE GML using open source workflow.

Not yet published.

Search for a place

4290253
811200030000
4400261325 0026132598
811200030023
0026132598
44004446250644 40005133346
811200030022 1200030022
288200
0028820097
440045247288
1200030022
4400234822 60
8112000300
811200030023
811200030022 8112000300
022 171
40002217156 440021802117
440006304963
44004694302
811200020
4400006518
698502
440003937622 4400261325
440026132598 440028353248
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440023297709
0026353246 440005036233 4400007695
058985 440023297709 440026132598 440010148351 440005036233
440003937622
440005696790
440023297430
Paliepė
440029963773
440005898502
1200030161440026191757
440003646502
238470
8112000201 440015873060
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44002442467
238470 4400242467 44002495 0370
440024246646
811200020133
44002495 0370 811200020170 4400045930

Choice of view and download services

- WMS view service
- ATOM download service

View service – map of cadastral parcels and cadastral zoning of entire territory of Lithuania.

Download service – cadastral parcels and cadastral zoning sample data of one municipality are available

The data were transformed according to INSPIRE requirements and only the sample can be downloaded in GML and SHP formats.

According to the new methodology, we only create GML files and don't provide SHP files.

Still, the user is not allowed to use the data for any other purpose than reference. Original data must be purchased.

From providers we get original data as WFS, SHP, XML, CSV, XLS.

Use of CP data - statistics

In Lithuania, original CP data (dataset and national view services) are massively used as primary reference data by surveyors, planners and various environmental/land management purposes

- CP view service at geoportal.lt – 79500 requests in 24 hours

- CP services at the Centre of Registers – no information

- INSPIRE dataset – no information

Use of CP data – other issues

Users would like to get data all free of the charge

- System-to-system CP data transfer – 0.07 Eur per unit – rather cheap – for institutions only
- Offline package – 2–3 Eur per unit (expensive!)

Data imperfections

- cadastral zoning data are not provided for INSPIRE purposes
- result – estimated geometry of zones, without thematic attributes
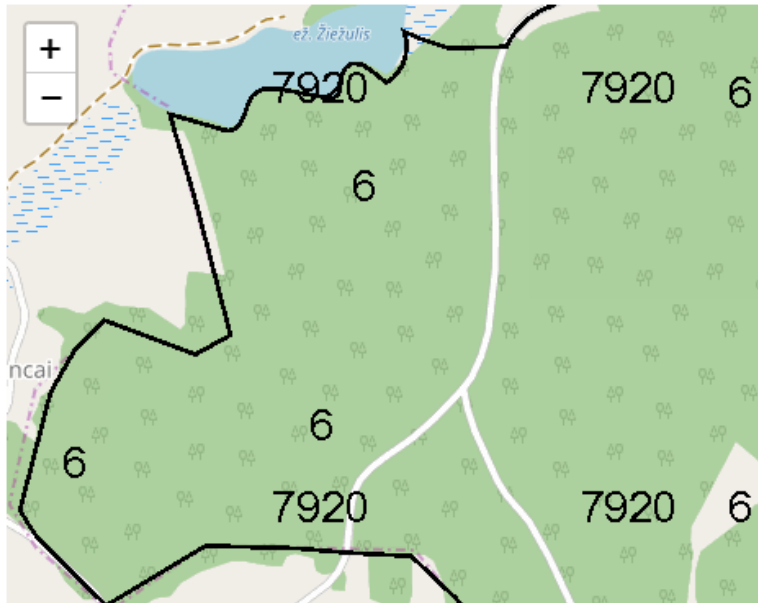
Use of CP data – alternative systems

Geoportal.lt – national geoportal

- Public availability
- Provides INSPIRE data
- Depends on original data provision by Centre of Registers
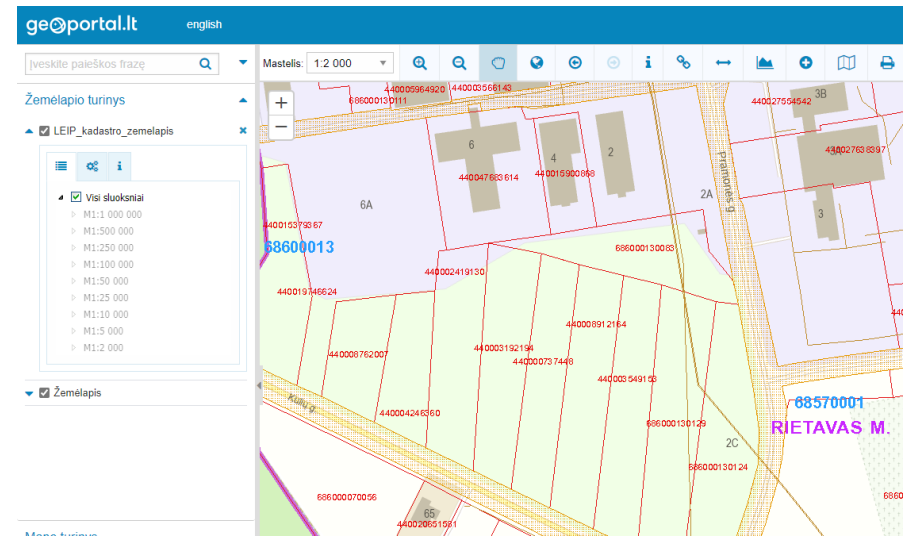
Regia.lt – official portal of the Centre of Registers

- Limited alternative of national geoportal for CP users
- Does not provide INSPIRE data
- No download (regulated by special agreements individually)
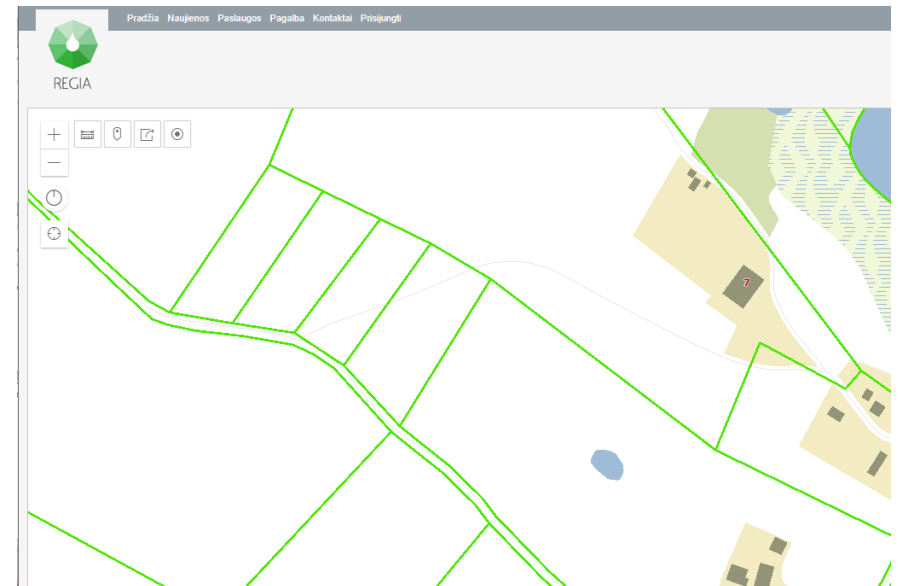
GIS-Centras – your spatial data partner

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