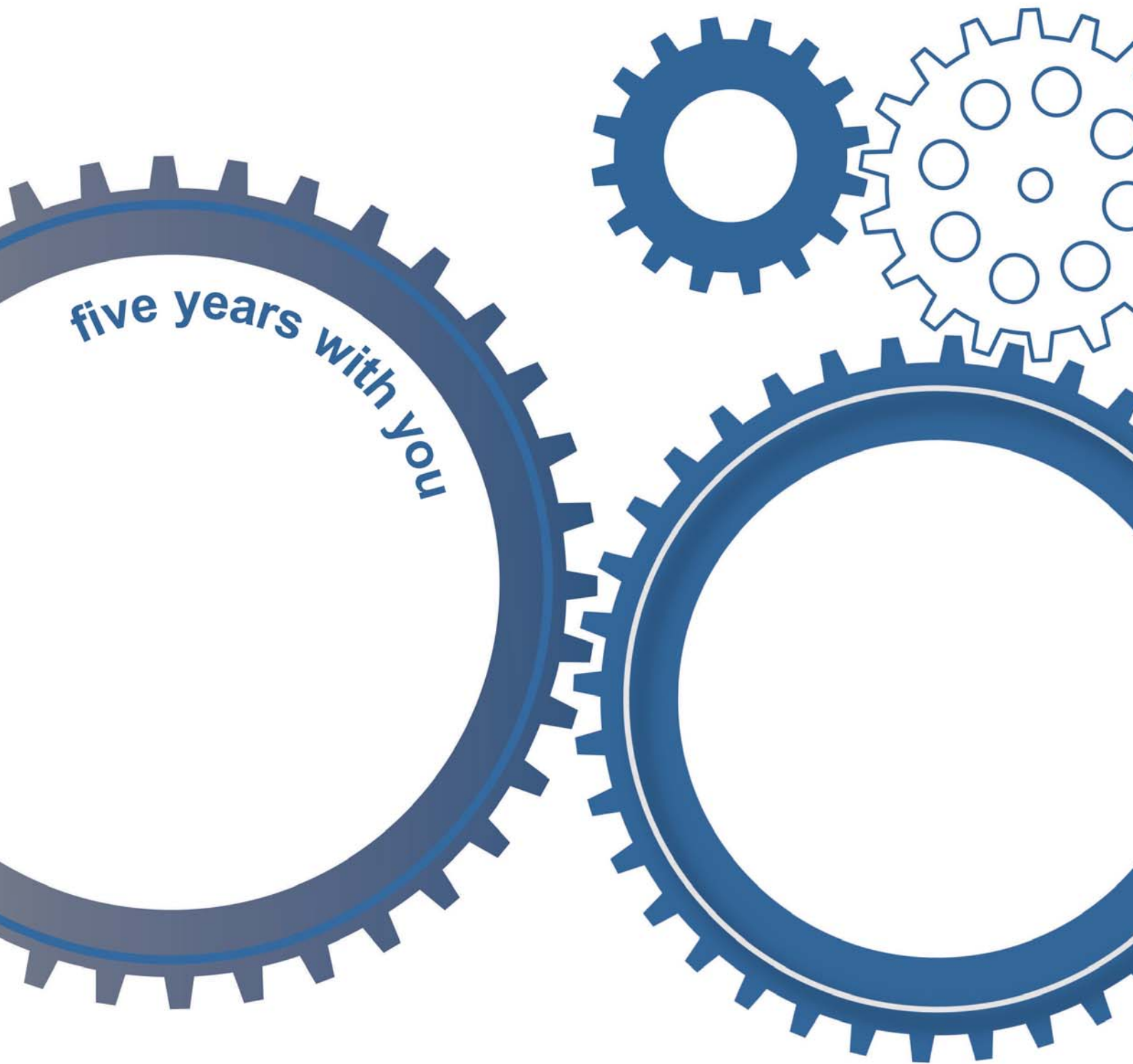# geoportal.lt

Lithuanian spatial information portal

five years with you

The Lithuanian Spatial Information Infrastructure is a system that connects organizations collecting, distributing and using data related to the coordinates of the Earth's surface. This *spatial* or geographic data comprises almost all the data we use in our lives. It is processed using special geographic information systems (GIS). Spatial data collected by institutions, businesses and educational organisations is complex, valuable and of great importance in addressing various matters. By developing the Lithuanian spatial information infrastructure, our government is ensuring that spatial data obtained from different sources is readily accessible and is as easy as possible to use.

The Lithuanian spatial information portal (the LSI portal) is the most important component of the infrastructure – it is a state information system for the online exchange of geographic information. By using the LSI portal you can access spatial data sets and their *metadata* (standardised information about data sets). The LSI portal spatial data services and web GIS solutions have been made available free of charge to government institutions and other providers of free public services. Due to the LSI portal services and tools, which are accessible to every user, geographical information use and transparency is increasing in the country, and better reasoned decisions can be made in various fields.

The LSI portal services are available at www.geoportal.lt.

This factsheet introduces the LSI portal services and the project **"Lithuanian spatial information infrastructure development by implementing priority tools of the INSPIRE directive"** funded by EU structural support funds between 2012 and 2014. The project is being implemented under the implementation measure "Interoperability" by Information Society For All, the economic growth programme (project No VP2-3.1-IVPK-06-V-02-002).

The partner of the project is the National Land Service under the ministry of Agriculture and the State Enterprise National Centre of Remote Sensing and Geoinformatics GIS-Centras (SE 'GIS-Centras').

Project objectives:

- To implement Directive 2007/2/EC of the Europe Parliament and of the Council of 14 March 2007 by establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), and the requirements on interoperability of spatial data set out in the implementing documents of the Directive.
- To ensure provision of the best quality Lithuanian spatial data to Lithuanian and EU users that is adequate to the data themes referred to in Annex I and II *(Geographical names, Administrative units, Addresses, Cadastral parcels, Transport networks, Hydrography, Protected sites, Elevation, Land cover, Orthoimagery)*.
- To expand the network of data providers and e-services, and increase the efficiency of national spatial data usage.

The expected outcome of the project is that organisations' geographical information collection, maintenance and delivery costs will be reduced, citizens' access to sensitive and detailed geographic information will be improved, and document coordination processes will become simpler. The socio-economic benefit to the country will be on average six million LTL per year from the implementation of the project.

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www.gis-centras.lt
www.geoportal.lt

# Geographic information services and solutions

Data and maps of the state

Orthophoto maps, georeferential data sets, multi-scale background maps, hybrid maps and much more is available free of charge to citizens, organisations and all information systems that provide services for free.

p. **5**

Diversity of spatial data and services

Official public data sets that are provided to *geoportal.lt* using primary sources and regularly updated, aesthetical professionally developed digital maps, statistical and scientific maps, browsing and downloading services. Currently, the LSI portal provides more than 250 publicly available data sets.
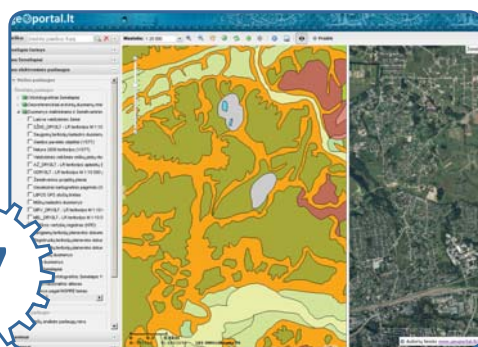
p. **7**

New services and GIS cloud

New services are being developed and will help users to collect and maintain spatial data sets online and to share them with others, as well as allowing them to download and compile maps without needing any special software!

p. **15**

Services to municipalities and other organisations

The LSI portal services are successfully used by other information systems to carry out their functions. Data collection environments that can be embedded in any website have been developed for municipalities, tourist information centres and other organisations!

p. **17**

The LSI portal: services to everybody

The LSI portal consists of two parts: content pages which can be opened directly from www. geoportal.lt, and the map browser (www.geoportal. lt/map). The portal pages contain methodical and training materials, documents, news, support texts and a dictionary of geographical terms. The thematic community areas have been designed for particular categories of geographical information users: cartographers, georeferential data users, and surveyors. The portal pages also provide access to spatial data sets, and offer the possibility to order and download them, review your order list, receive information on concluded contracts and data updates. In the My Portal area, users can check their account information, the rights granted, saved search settings, reports and other account-related information.

Map browser is the environment used for work with maps and the most popular portal system. Here you cannot only view data, but also search for data sets and places on maps based on place names, use thematic catalogues of spatial data services where services are grouped according to their popular fields of application. The map browser has measurement, comparison, embedded map link creation, and various statistics calculation tools; you can compile, save and print your own maps in a format of your choice; you can also download these maps and spatial data. For your convenience, we are developing new tools which will enable easy use of data without any special software.

The LSI portal e-services are various ways to use Lithuanian geographical information. The simplest are spatial data services: single actions performed on particular spatial data sets that are supplied by different data providers:

- To search data sets based on keywords and other criteria, to find and view their metadata
- To view spatial data using the map browser
- To order and download data sets or selected parts of them
- To order and download data sets or selected parts of them.

These standard operations are also known as the LSI portal **network services.**

Search and view functions are available to any user of geoportal.lt. If you want to order and download data, registration and agreement with the Terms of Use is required. Registration on the LSI portal and almost all spatial data services is free of charge! When ordering a service, verification of users' identity may be requested, usually in cases when a user wants to download official data.
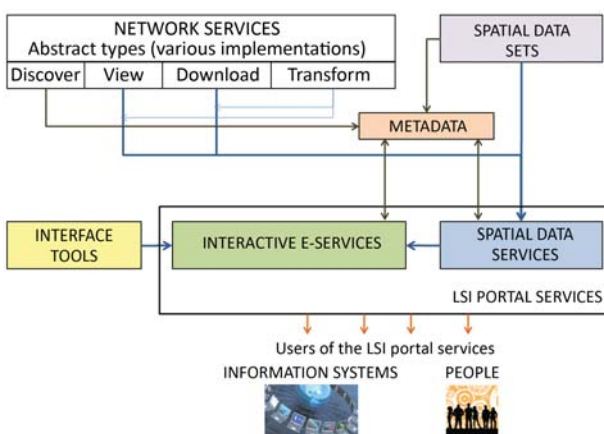

Figure 1. Types of LSI portal services

Interactive LSI portal services are more complex and comprise various operations using spatial data, for example, land reform land management project plans provision service. Such services have individual user interfaces.

Did you know that

...a map can convey more information in a single glance than pages of text. Humans have an innate ability to immediately notice unknown relations and object location peculiarities in 2D or 3D space. This unique perception feature has not been fully investigated, but is successfully used in many fields. That is geographical insight, i.e. one of the means of acquiring new knowledge. Just try it!

More investment in knowledge rather than in equipment!

Most important state data and maps

Official large-scale maps are some of the most important national documents. They display natural and anthropogenic features located within the country's territory: elevation points above the Earth's surface, bodies of water, forests, roads, buildings and communication networks. The spatial data used to develop this map is referred to as georeferential data.

The most important sources of georeferential data are **orthophoto maps**, compiled using aerial photos which are taken on a regular basis for all or any territories and linked to geographic coordinates. The main orthophoto map of Lithuania ORT10LT is created based on accuracy requirements corresponding to a scale of at least 1:10000. Orthophoto maps of densely built-up areas are of better resolution which complies to precision requirements at scale 1:5000 (ORT5LT) and 1:2000 (ORT2LT). These maps include easily identifiable small objects, including trees, small structures and cars. Orthophoto maps are used to compile georeferential data which can be displayed in different ways, as well as to split in different layers and to change individual objects.

Georeferential data sets are supplied through the LSI portal free of charge by the National Land Service under the Ministry of Agriculture. They are updated by the SE 'GIS-Centras' on a regular basis. You can order and download all data, or only the data that has been updated. The most recent data is at any time provided as a web map service (WMS).

- Georeferential base cadastre (GRPK) is an official set of relatively invariant simple geographical objects (axial lines, borders and points). It is updated on a regular basis using outdoor measurement data, and information received from other institutions and users about inconsistencies or changes observed.

- National georeferential data set GDR10LT at scale 1:10000 is updated monthly based on the updated GRPK data set. The GDR10LT data set consists of 12 spatial data themes: roads and streets; railways; buildings and constructions; land cover; geodetic points; trunk pipelines; electricity networks; air navigation barriers, forest quartal lines; natural and cultural heritage sites; administrative boundaries and place names.

- Georeferential data sets at other scales. Georeferential data sets at small scale GDR50LT (1:50000), GDR250LT (1:250000) and GDR1kLT (1:1000000) are used usually in cartography and developed by generalising information of GDR10LT. The information from large-scale georeferential data sets developed for residential areas for territory planning purposes (1:5000, 1:2000, 1:1000) is used to adjust GRPK, and GDR10LT data.
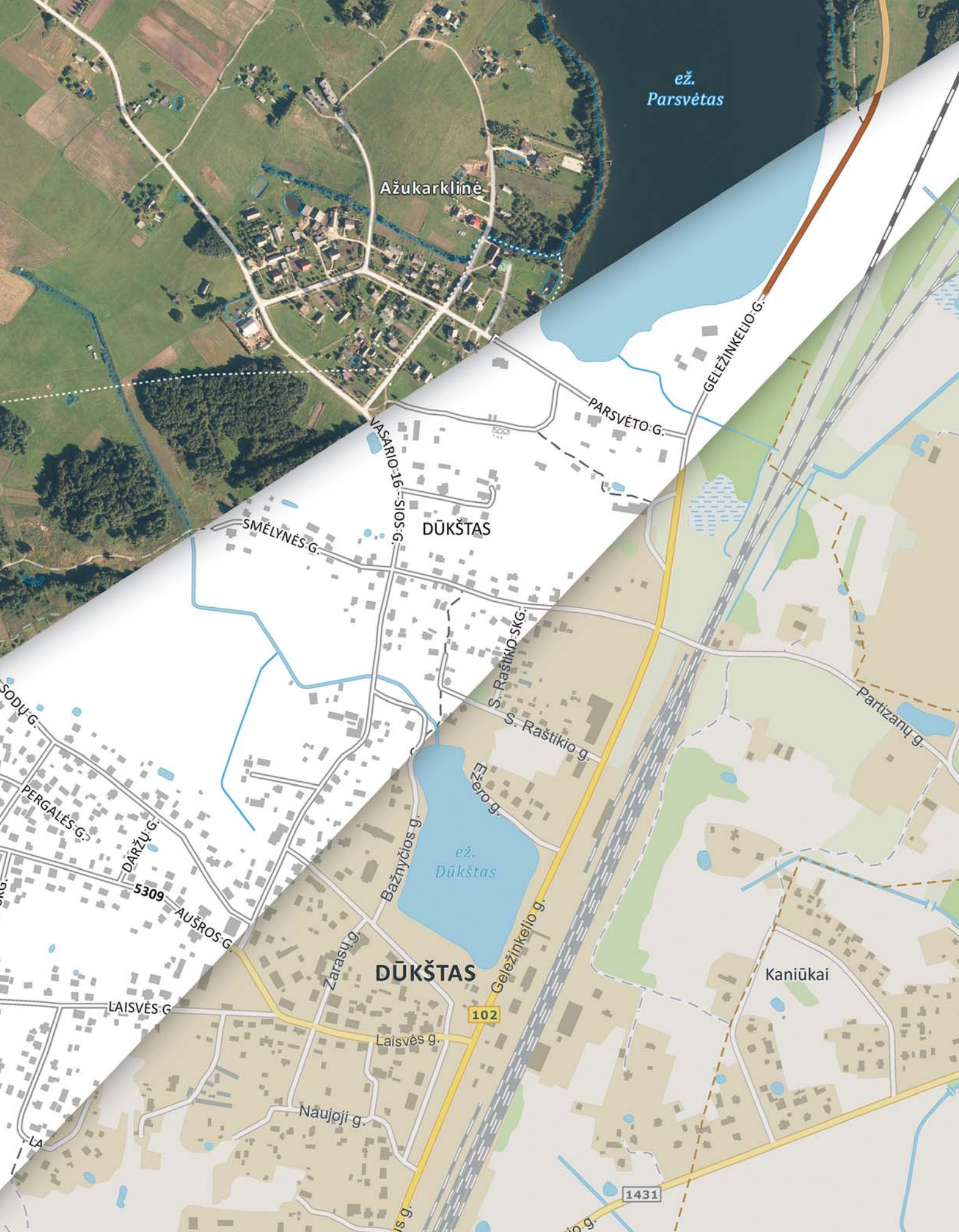
At the LSI portal, we offer to users the background reference base map prepared by professional cartographers and adapted to use with 13 different scales. This map is updated on a regular basis using orthophoto map information. Linear elements and labels of the background map can be shown on the orthophoto map; this kind of map is called a hybrid background map. Background maps in the map browser can be partially transparent, and so they can easily be used with other data sets. The map can be printed in a format of your choice at a higher than screen resolution. We guarantee the quality of background maps and that they are continuously being improved.

Did you know that

... the time required by an experienced cartographer to compile a georeferential data-based map that is quickly transmitted on the Internet, beautiful and cartographically correct, is approximately 500 hours.

Ažukarklinė

ež. Parsvétas

GELEŽINKELIO G.

PARSVĖTO G.

VASARIO-16-SIOS G.

SMĖLYNĖS G.

DŪKŠTAS

S. Raštikio skg.

S. Raštikio g.

Partizanų g.

SODŲ G.

PERGALĖS G.

DARŽŲ G.

5309

AUŠROS G.

Bažnyčios g.

Zarasų g.

Ežero g.

ež. Dūkštas

Geležinkelio g.

Kaniūkai

LAISVĖS G.

DŪKŠTAS

Laisvės g.

102

Naujoji g.

LA

1431

Diversity of spatial data

The LSI portal does not only provide georeferential data. Thematic data sets are provided by institutions that implement national policy in different fields, municipal institutions, educational and training institutions, public organisations, and business entities. In spring 2014, 28 organisations provided 255 spatial data sets through the LSI portal. We are striving to facilitate access through the portal to all official national and municipal data sets and more information collected by competent organisations. The volume of large-scale data that is provided by the municipalities keeps increasing. A data set can be collected without special GIS software. For example, specialists of Lithuanian tourist information centres simply enter data on places of interest to sightseers in the portal's map browser. This is the way how data sets are collectively developed by different bodies.

Spatial data service is the LSI portal service that helps to find, view or download particular data sets. Using the map browser, registered users can choose public or orderable services from a thematic catalogue where view services are grouped by popular areas of use: georeferential data; data for surveyors and land use planners; municipal data; data from the national atlas of Lithuania etc.

Metadata is brief, standardised, essential information about each data set or service. Metadata is provided to all users free of charge. This information is necessary to evaluate whether data sets have been obtained from reliable sources and are suitable for their intended use; it is possible to obtain the date when the data set was created or updated, the terms of use, to obtain contact data of administrator and distributor. The coverage of data set in map and a map fragment is also shown in document of metadata.

The main LSI portal **data providers** are government institutions: National Land Service that provides a biggest number of data sets,

Figure 2. Search and metadata document in the LSI portal

including national georeferential data and the most important data on land; the Lithuanian Geological Survey, the State Service for Protected Areas, the State Forest Survey Service, the Lithuanian Department of Statistics, the State Enterprise Centre of Registers, the Department of Cultural Heritage, the municipal administrations and other organisations.

Large-scale data on engineering communications and small-scale maps of the National atlas of Lithuania covering various themes, georeferential data which is updated monthly and historical cartographic material, precise facts and statistical summaries on maps are available on the LSI portal. The diversity of the data accessible on the portal is constantly increasing, allowing users to perform a comprehensive analysis of the territory of Lithuania. We invite municipal administrations, education and training organizations to share the valuable data that they have already collected. During 2013 users of geoportal.lt received almost a million e-services.

Did you know that

...a map that displays in detail both geographic objects and geographic objects or phenomena related to a theme selected by the author is referred to as a thematic map. The LSI portal contains up to 200 different thematic data sets and maps of Lithuania: from information about pollution sources to geo-ecological tension of landscapes.

Interactive services

The LSI portal offers more than just spatial data services. Specialists from SE 'GIS-Centras' have created many complex Web GIS solutions for people and organisations. These are interactive e-services with individual map browser environments and tools which are tailored for specific challenges. They are constantly improved and adapted to the needs of users!

Historical cartographic material

The LSI portal component that has been designed to create, maintain and use a cartographic heritage archive is tailored for two interactive services that assure provision of geodetic and cartographic materials fund (GKMF) and land reform land management project plans.

The geodetic and cartographic materials fund consists of topographic map sheets from different years. The maps are provided in digital format, linked to coordinates and described by metadata. The GKMF is regularly expanded to systematically collect and manage all national geodetic and cartographic material. Today users have access to almost 8,000 sheets of previously published maps. The GKMF material is used to carry out national geodetic and mapping works. It provides an invaluable basis for historical analysis of the evolution of particular territories. More information on GKMF is available at the thematic channel (www.geoportal.lt/gkmf).

The system of land reform land management project plans is operated in a very similar way, but has a simpler user environment. Today users can view and download 9,500 land reform project plans. There is a plan to collect other types of geodetic, cartographic and other graphic material related to land management.

You can use cartographic materials at *geoportal.lt*: perform document search based on specified criteria (document coordinate system, creation date, scale, map extent, the document type and preferred file format). You can view or download the found maps to your computer in a graphic format of your choice (SID, TIF or PDF).

LSI portal services for land accounting and maintenance

After the tax on desolated land was raised in 2013, we have developed e-service which allows people, who have noticed inaccuracies on map of desolated land, or know that the situation in the territory has changed, to mark the error on a map and to communicate it through the Internet. In the last year we have registered more than 7,500 notices about inaccuracies. Information is automatically transferred to the State Enterprise the State Land Fund, the administrator of data relating to desolated land. The service is accessible on www.geoportal.lt/az.

The map is easy to use. Using the system for desolated land registration errors, you can view data about desolated land on the vector or orthophoto map background on *geoportal.lt*, and find desolated land using different criteria.

The e-service of the **Vacant State Land Fund** (www.geoportal.lt/lzf) allows specialists of land management and others to work with information about vacant state property in rural areas: to collect, find and analyse data based on different criteria, e.g., what kinds of property and in what proportion the vacant state land fund is formed from.

> ### *Did you know that*
>
> *...The cartographic material fund can be developed directly online. Cartographic heritage administrator can upload the map document to the LSI portal, link it to coordinates and publish using only an Internet browser and the simple LSI portal tool designed for that purpose. It takes only a few minutes!*

Our users

On *geoportal.lt* users cooperate, share their experiences, and create added value to spatial data.

Non-registered users receive the general portal's services just by visiting its pages. They can use any portal information that is available to public: training and information material; search and metadata systems; background maps in the map browser; Land information system and Cartographic material funds services; measurement, map export, and map link tools. The portal information for non-commercial purposes can be used virtually without limits, although if this information is published in other places, identification of the source is required. Please read the portal's terms of use and copyright information, which you will find on the main page of the portal.
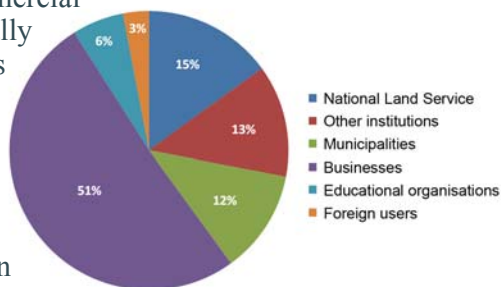
Additionally, **registered users** can use all public spatial data services directly in the map browser, order spatial data sets and conclude use contracts in case when use is limited. They can save settings of performed searches, compile maps, enter their spatial data directly into the portal, and mark errors in data sets. The assigned rights and user profile information is also visible to registered users. Registration is required to provide metadata and data sets to the LSI portal, to receive special services and to obtain the right to enter information. Registration is free of charge to all users.

The LSI portal data providers are portal users who share the data that they maintain, receive reports about data usage, and sell pay data on the portal. Data providers automatically receive data errors that have been registered by users. The data provider agrees with the LSI portal administrator regarding terms and conditions for the provision of data and signs a data provision contract which obliges both parties to ensure the highest possible level of data accessibility.

The LSI portal is designed for everybody. Of course, it was primarily intended to increase the efficiency of spatial data use in institutions and business entities. Five years later, it is safe to say that this goal has been achieved. Up to 30% of the portal users are institutional staff who manage their work faster and solve problems better, because so much information about territories is now available at a single click. The LSI portal services save hundreds of hours of civil servants' working time each year.
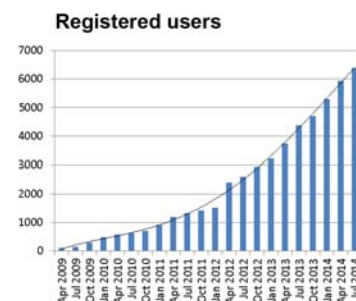

Figure 3 www.geoportal.lt user structure and dynamics

Almost half of the LSI portal users are from the business sector: mostly geodesists, surveyors, planners and other GIS specialists. We are inviting more business representatives who are able to create added value geographic information products and distribute them through the LSI portal.

Users from education and training institutions create new information and knowledge from incoming data that they can spread further. Students are highly active users of the LSI portal, since they are of a generation which is well aware of the importance of open information. They use the data and study material which has been published in the portal in Lithuanian and English.

> **Did you know that**
>
> ...Non-expert users' movement, which started in the 21st century, and uses geographic information technologies, tools and methods to create spatial data sets, already has a name – **neogeography**.

Development of the LSI portal: Implementation of the INSPIRE directive

Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 (OL 2007 L 108, p. 1) establishing an Infrastructure for Spatial Information in Europe entered into force on 15 May 2007. The aim of the Directive is to enable Member States to use mutually compatible spatial data about the environment obtained from primary sources. Common Implementing Rules of the Directive are adopted and Member States should ensure that the spatial data infrastructures are compatible to these rules. The Directive will be implemented in stages until 2019. Further information on the INSPIRE directive is available at http://inspire.jrc.ec.europa.eu.

The INSPIRE directive is an incentive for Lithuanian organisations, particularly state institutions, to properly organise, standardise and provide collected spatial data in the best possible way, not only to European Union institutions, but, first of all, to Lithuanian users. One or a few spatial data sets must be consistent to the themes indicated in the Annexes to the INSPIRE directive: the themes in Annexes I and II, which are essential for management: (geographical names, administrative units, addresses, cadastral parcels, transport networks, hydrography, protected sites, elevation, land cover, orthoimagery, and geology) and the broad range of themes covered in Annex III, including natural, social and economic aspects. The list of spatial data sets, which fall under these themes is revised and updated every year according to a resolution of the Lithuanian government, requiring these data administrators to provide data through the LSI portal.

The LSI portal is a technological platform that is used to implement INSPIRE requirements in Lithuania. The search, view, download and transformation services that fulfil interoperability requirements laid down in the Implementation Rules will be provided, and performance, capacity and availability of all spatial data services will increase after the completion of the project that is carried out from 2012 to 2014. At the LSI portal,

we offer tools to all data providers, helping them to provide their data on the LSI portal in accordance with the INSPIRE directive's requirements, and we help them to transform data sets in a manner that is compatible with the INSPIRE data specifications. We provide consultations and methodical assistance to all data providers.

- *How to identify which data sets should be submitted to INSPIRE?*

Data sets from primary sources that best correspond to the themes set out in INSPIRE are selected. At least one or more data sets should correspond to one theme.

- *Is it necessary to submit a data set indicated in the government resolution if it does not meet the requirements of INSPIRE data specifications?*

Yes. Data sets that have not been recently created or transformed may not comply with appropriate INSPIRE data specifications. It is more important that data is described using metadata and is available online.

The INSPIRE directive implementation in Lithuania is described at the LSI portal's thematic channel 'INSPIRE'. Here you can find information about the provision of spatial data sets and their metadata, and the values of monitoring indicators.

Did you know that

...Lithuania is one of the few European countries where development of spatial information infrastructure began long before the INSPIRE directive was adopted. The LSI portal has been developed to be a complex knowledge system of geographic information which provides different services to users: from data searches to GIS training material. In Europe, there are only a few portals of this kind.
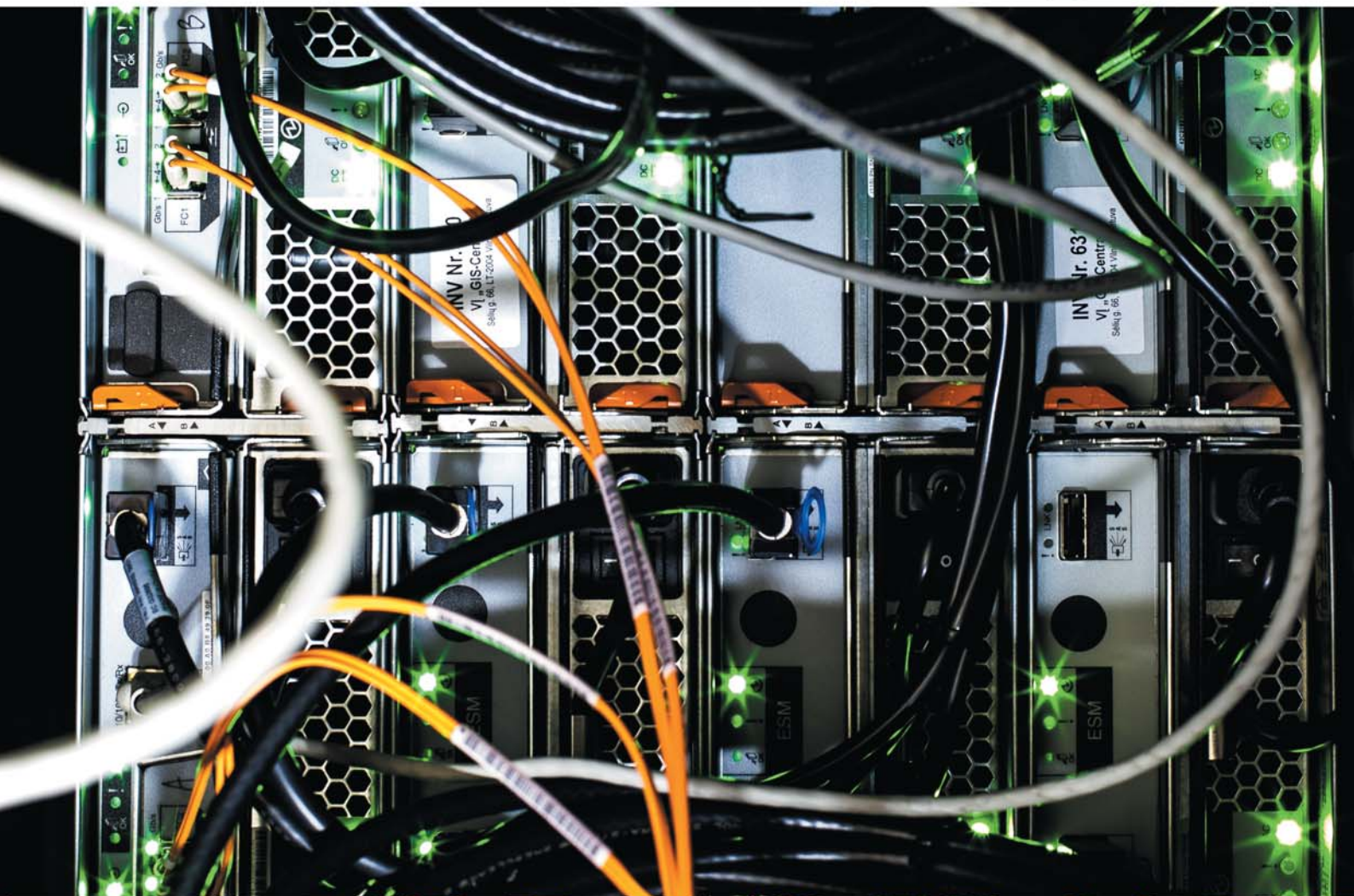
LSI portal development: the GIS cloud and other new services

Online management of spatial data

We will introduce a new e-service based on cloud computing technology later in 2014. Users of the service entitled Online Management of Spatial Data will be able to maintain their spatial data and maps on the LSI portal. This will not require any additional GIS software. Users will use cloud computing based system to enter, revise and publish new spatial data or to integrate existing date, as well as to create public or user-specific maps. The mobile service will allow them not only to view data sets and maps, but also to edit and fill them in using GPS equipment. In this way, they can mark territory problems or planned works, show land boundaries and collect data on community-related objects and incidents.

The possibility to collect spatial data online is very important to those who are inexperienced geographic information users: scientists, SME specialists, employees of public institutions and members of community organisations. Each new set of high quality spatial data which we share with others on the LSI portal is another step towards a better understanding of the natural, social and information environment.

Verification of measurement data conformity to GRPK data

Surveyors using this service on the LSI portal will be able to upload available measurement data and use appropriate tools to identify whether this data corresponds with data from the georeferential base cadastre dataset (GRPK) of e.g. roads, streets, railways, rivers, and rivulets, axial lines of drainage ditches, boundaries of lakes and ponds. Users will also be able to receive conclusions regarding conformity of their data online, thus saving both the surveyor's and client's time.

Provision of consent to construct transport communications, networks and buildings on state-owned land

The public e-service is available to users who seek to obtain permission to construct transport communications, or engineering communications and necessary supporting structures on state-owned land that is not divided into separate parcels. Applicants will not have to go to a local land planning department and waste their time waiting in a queue; the new service will allow them to submit applications on the LSI portal. There they will be able to create and submit a new drawing. An application will be automatically registered and sent to the local land planning department for evaluation. Applicants will be able to see their application's submission and evaluation state and will be notified when the decision is made. This helps to save time for both applicants and local land planning department specialists.

Analysis and evaluation of land fund

The e-service used to perform analysis and evaluation of land funds will allow people to use data from the LSI portal to evaluate the characteristics of their selected territory. Each user will be able to indicate land boundaries (by uploading data or by drawing shapes directly in the map browser); to choose indicators and spatial data sets; to perform analyses; and to receive statistical reports illustrated by charts. When planning, for example, to rent a parcel of land, a summary of information will be provided, including details of land use, dominant soils, land productivity, restrictions stipulated in the special terms of land use and desolated land.

Did you know that

*...each user of **geoportal.lt** can mark several objects on a map, enter their names and a brief description, then form and add an interactive map to their website. Use the LSI portal link to a mapping service!*

share

manage

use

create

geoportal.lt

The LSI portal for municipalities

About one sixth of users of the LSI portal are employees of municipal institutions and enterprises. Administrations of Lithuanian municipalities collect a lot of precise and valuable information about sites in their territory, including engineering communications, drainage systems, green plantations, containers for secondary raw material, outdoor advertising, as well as other sites and their locations. People use this information every day; it is shared between specialists of municipalities, businesses. Municipalities use the LSI portal services because the tools for geographical information processing which are available online are provided free of charge and without any conditions.

Municipality map

All the municipalities in the country can use online maps on the LSI portal. The maps are compiled by the SE 'GIS-Centras'. The interactive map displays spatial data provided on the LSI portal. The map is adapted for the particular needs of each municipality: to display selected data sets, create additional tools that are used to work with these data, and symbols. It is possible to search for place names and routes, to prepare and print a map with settings of the user's choice, and download collected data in a desirable format. Even those municipalities that already have online maps can always supplement them by using the LSI portal's professional mapping solutions and other new tools which are constantly developed.

The online map of municipality is interactive and easy to use, free of charge to all users; it can be used at any time and is accessible from any place with Internet access. The map is easy to add to Internet pages and always includes the most recent data.

Integration of municipal

Municipal topographic plans and digital spatial data sets are included in the list of themes that were approved by a resolution of the Government of the Republic of Lithuania and which data shall be provided through the LSI portal for the INSPIRE directive. Detailed geographic information about communication infrastructure (power transmission, telecommunication networks; water pipelines; oil, gas, heat and wastewater pipelines; and transport infrastructure) is of particular importance. This data is used by municipal administrations, as well as by businesses that conduct geodetic measurements, territory planning and construction design, operate utility networks. It is also used by real estate and construction companies; investors; and land owners and buyers. It is therefore our goal to make all collected information about communication networks available in one place and to effectively provide it online. Municipal spatial data sets can be combined into a single state-wide and single-technology-based spatial data system. The LSI portal already has all the means to attain this aim. It's up to municipalities to decide which data sets they want to provide, although their decision does not alter their ability to use the LSI portal services designated for them.

Municipal thematic channel

Separate thematic channel of geoportal.lt is intended for the use of municipalities. There the user can check the list of spatial data sets provided by each municipality, find their metadata and maps. Relevant methodical materials and detailed instructions about how to provide data through the LSI portal are also provided.

Did you know that

...the largest number (17) of data sets on the LSI portal is provided by Tauragė District Municipality Administration. Particularly precise and complete data is provided by Vilnius City Municipality Administration.

Papilė

Rimšiai

Daubiškiai
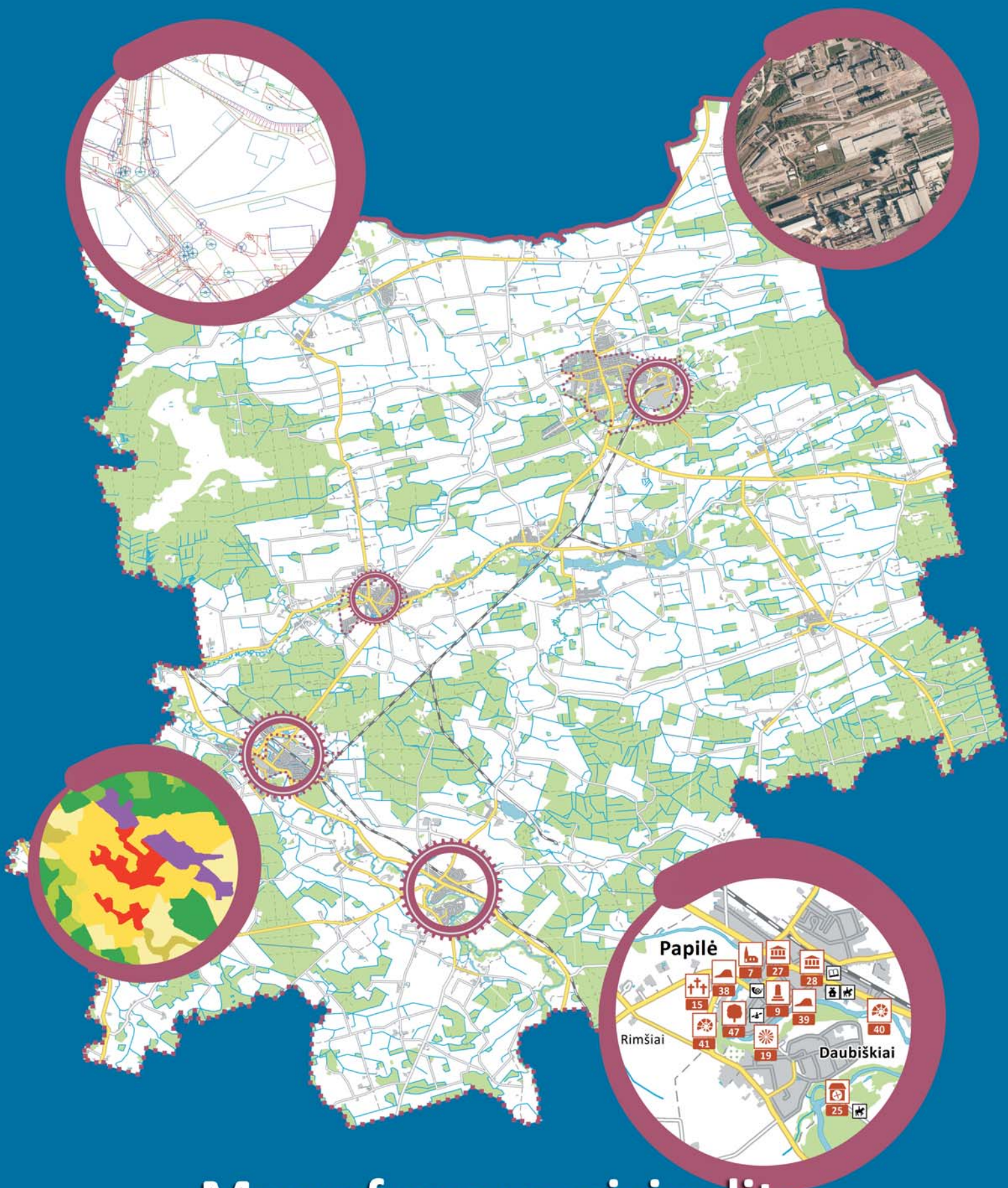
Map of my municipality

The LSI portal for other information systems

The LSI portal is an open system that is designed for a whole country rather than for a particular organisation. Most of the e-services and technological solutions available on geoportal.lt are successfully used by other organisations that want to save time and money.

The LSI portal's **spatial data services** are easy to integrate into other information systems and use in other applications. The most popular service in the LSI portal is the multi-scale background map which is used for internal purposes of organisations, and is displayed as background in other systems. Several variants of the main background map are supported and can be tailored to client needs. This is the only digital map that is constantly updated from official data. We provide this continuously improved map and adapted spatial data services free of charge to other organisations and their information systems to use for both non-commercial and for commercial purposes. All you need to do is apply to SE 'GIS-Centras' and sign a bilateral e-service provision contract.

Everything about the land...

We seek to provide on the LSI portal not only the data that is handled by different institutions: parcels of land, areas where parcels are not formed, desolated land, restrictions of land use, drainage systems, types of soil, etc., but also as many public and administrative services related to land as possible. Therefore, we create standardised components that are available to different e-service providers: spatial data review and comparison, editing and analysis, criteria-based search, statistics calculation and online data upload.

The land information system services are provided exclusively through the LSI portal map browser (www.geoportal.lt/zis). SE 'GIS-Centras' and SE 'State Land Fund' share resources and expertise to successfully develop together new geographic information technology solutions and tools which have been made available to all LSI portal users.

Map browser – a version for you?

Many companies and institutions have important spatial data but use it only for simple operations: enter, edit and publish online. To date, a substantial amount of money has been spent on various semi-professional GIS solutions whose outcomes are online maps of poor quality, indifferent users, and systems that are difficult to develop and support. We offer simple and effective means based on modern LSI portal technology. Adapted map browser solutions are successfully used by tourist information centres in Lithuanian cities and regions (tourism map of Lithuania), the Lithuanian Consumer Institute (interactive map of organic farms) and other organisations to save money on software, data storage and system support, and provide users with more valuable information.

> ### *Did you know that*
>
> *...**crowdsourcing** is the process of data collection for online maps jointly performed by users in different locations. Crowdsourcing can be professional or amateur, voluntary or for a charge, but is always coordinated. This is a way to quickly compile spatial data sets.*

www.lakd.lt

osp.stat.gov.lt

www.vpgt.lt

lgt.lt/epaslaugos

www.arsa.lt

www.nzt.lt

www.klaipeda.lt

zumis.lt

www.kedainiai.lt

www.vstt.lt

uetk.am.lt

www.registrucentras.lt

sris.am.lt

www.gamta.lt

alis.am.lt

www.vilnius.lt

www.vu.lt

www.amvmt.lt

stk.am.lt

www.lazdijai.lt

aakis.am.lt

www.meteo.lt

Others about us

Jana Vanagė, GIS specialist at Lithuanian Department of Statistics

Geoportal.lt ensures that you do not get lost in the variety of spatial data. There is no longer any need to waste time searching what data sets from institutions are available, and what the conditions of acquirement are. All we need to do is visit *geoportal.lt*, look for the required data, then to download it, use and receive updates – all using the same site.

Lithuanian Department of Statistics provides statistical information through geoportal.lt. I believe it is a great tool to disseminate information and advertise our organisation.

We also use *geoportal.lt* services in the Official Statistics Portal of the Lithuanian Department of Statistics (osp.stat.gov.lt): the georeferential and orthophoto background maps and search service. In this way our institution can be sure that the reference base data of Lithuania data is always up to date and relevant to the current situation. The search service allows us to find places or sites in Lithuania for which statistical information is being analysed.

Darius Katilius, director of UAB GEOMANAI

Geoportal.lt is an excellent information platform which contains compiled, processed and structured archives that have been practically inaccessible to users for many years. Using an interactive online environment allows us to finish work faster and to improve its quality. We welcome the opportunity to obtain necessary information from a single portal quickly and for free. Many thanks to all the staff of the geoportal.lt for a great step forward and I encourage them to continue successful development.

Ramūnas Mockevičius, head of the State Enterprise the State Land Fund

The State Enterprise the State Land Fund is the administrator of the Land Information System (LIS). We use the technical and software solutions of *geoportal.lt* for the provision of the LIS data sets and related services.

The Land Information System includes up to date data sets that describe land use, resources, productivity, natural and economic characteristics, drainage state, and are prepared in accordance with the geographic information system principles; it also includes management tools that, when used with the georeference base data, allow this information to be processed and data to be provided to users on the Web.

We publish the LIS data sets and management tools in *geoportal.lt* to focus on LIS development, support and improvement, while technical issues (data backups, system security, accessibility issues, etc.) are successfully managed by specialists of the SE 'GIS-Centras'.

Dr. Habil. Algimantas Česnulevičius, President of Lithuanian Cartographic Society, professor of Vilnius University

The Lithuanian spatial information portal is a reliable, user-friendly and constantly developing environment. Cartographers and scientists, as well as producers use a broad range of spatial data. It is readily available in a single place; moreover, the sources are well-known and reliable, and, if data is updated, we receive information immediately. We are happy to see that most of the data which is needed for scientific research is easily and freely available, and the digital maps developed by the SE 'GIS-Centras' are of excellent cartographic quality. We welcome the initiative of the National Land Service to publish maps of the national atlas of Lithuania on the LSI portal, and encourage cooperation between institutions and scientists. Geoportal.lt is an important part of the emerging knowledge society in Lithuania.

Geoportal.lt team

We constantly improve the Lithuanian spatial information portal and provide more and more e-services and spatial data. It is important for us to make our services easy to use, allowing you to find easily the data that you want and to make it comfortable to work with.
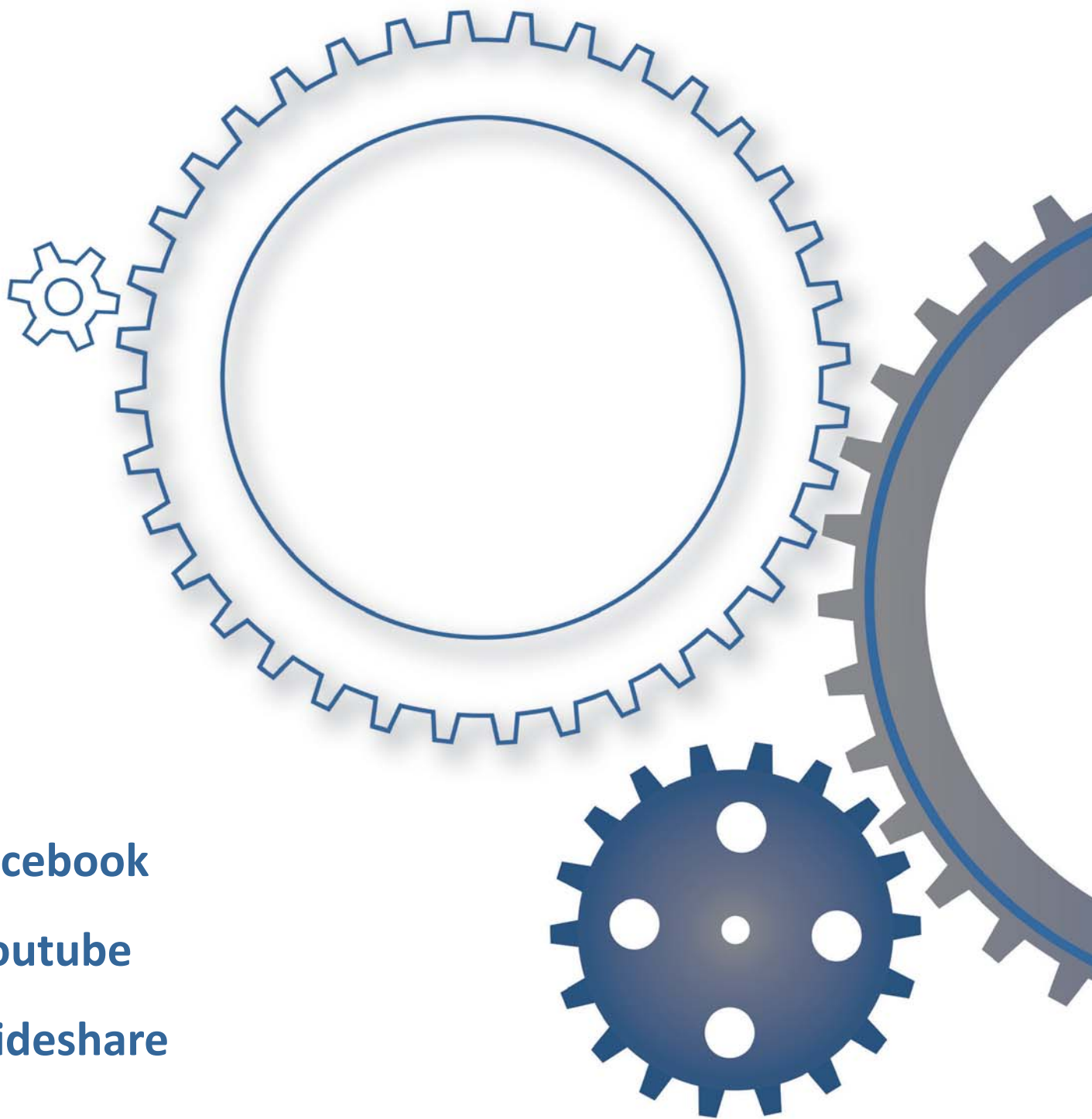
We have prepared a broad range of information to help with using the LSI portal. Video tutorials are a fast way to learn how to perform desired actions. Users have viewed video lessons on our *Youtube* channel more than 11,000 times. We also publish presentations about *Geoportal.lt* on *Slideshare*. Useful information about the LSI portal is available in both Lithuanian and English.

Interesting facts and news about the LSI portal can be found on *Facebook*. We communicate informally with users on the *Geoportal.lt Facebook* page. It is great to see that our informal community of interest keeps growing.

We are open to ideas and suggestions concerning improvement of the LSI portal. We will do our best to implement them so that *geoportal.lt* remains the best place to share spatial information about Lithuania.

facebook

youtube

slideshare