

# Effective Land Administration – Law, Regulation, Institutions and Technology Challenges

## LITHUANIA EXPERIENCE

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Technical Deep Dive: Information Technologies for Improving Land Administration Services  
November 13-17, 2017 Tokyo and Kobe  
World Bank Tokyo Development Learning Center (TDLC)  
Land Thematic Group and Geospatial Community of Practice (CoP)



## THE REPUBLIC OF LITHUANIA



Area – 65 300 km<sup>2</sup>  
Population – 2,85 mil.

The density of population is 44 inhabitants per 1 sq. km.  
70 % live in urban areas and 30 % in rural areas.

Counties – 10  
Municipalities – 60

## HISTORICAL BACKGROUND



# STATE ENTERPRISE CENTRE OF REGISTERS

## MANAGER OF BASE STATE REGISTERS





## “Conceptual framework of the national information society development of Lithuania”

(Approved by resolution No. 229 of 28 February 2001 of the Government of the  
Republic of Lithuania)

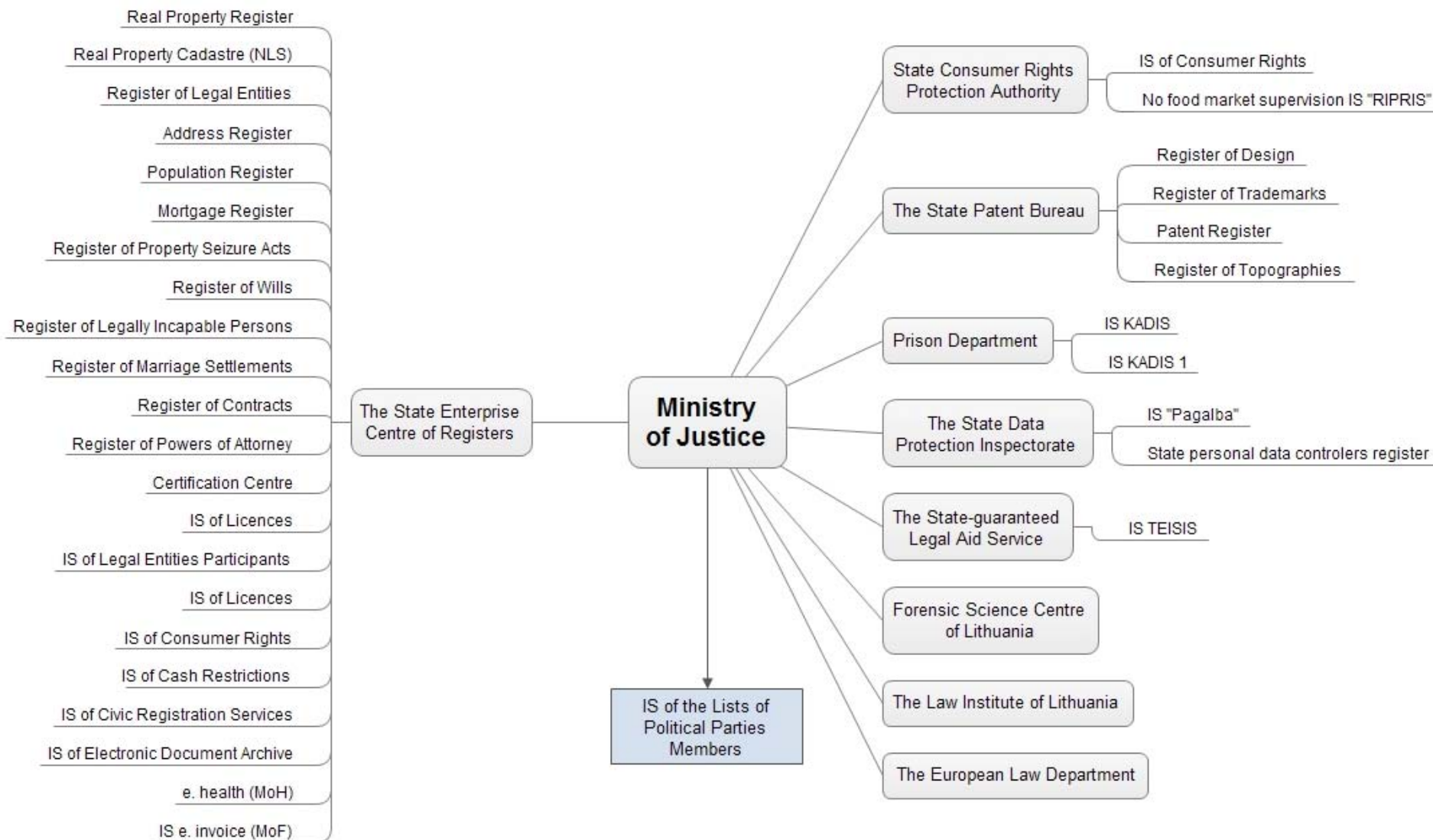
In order to modernize the management of the state:

1. to design an integral system of state registers
2. to harmonize the legal basis for the formation ...
3. to design modern IT tools to assist the Government ...
4. to design a joint information system ...

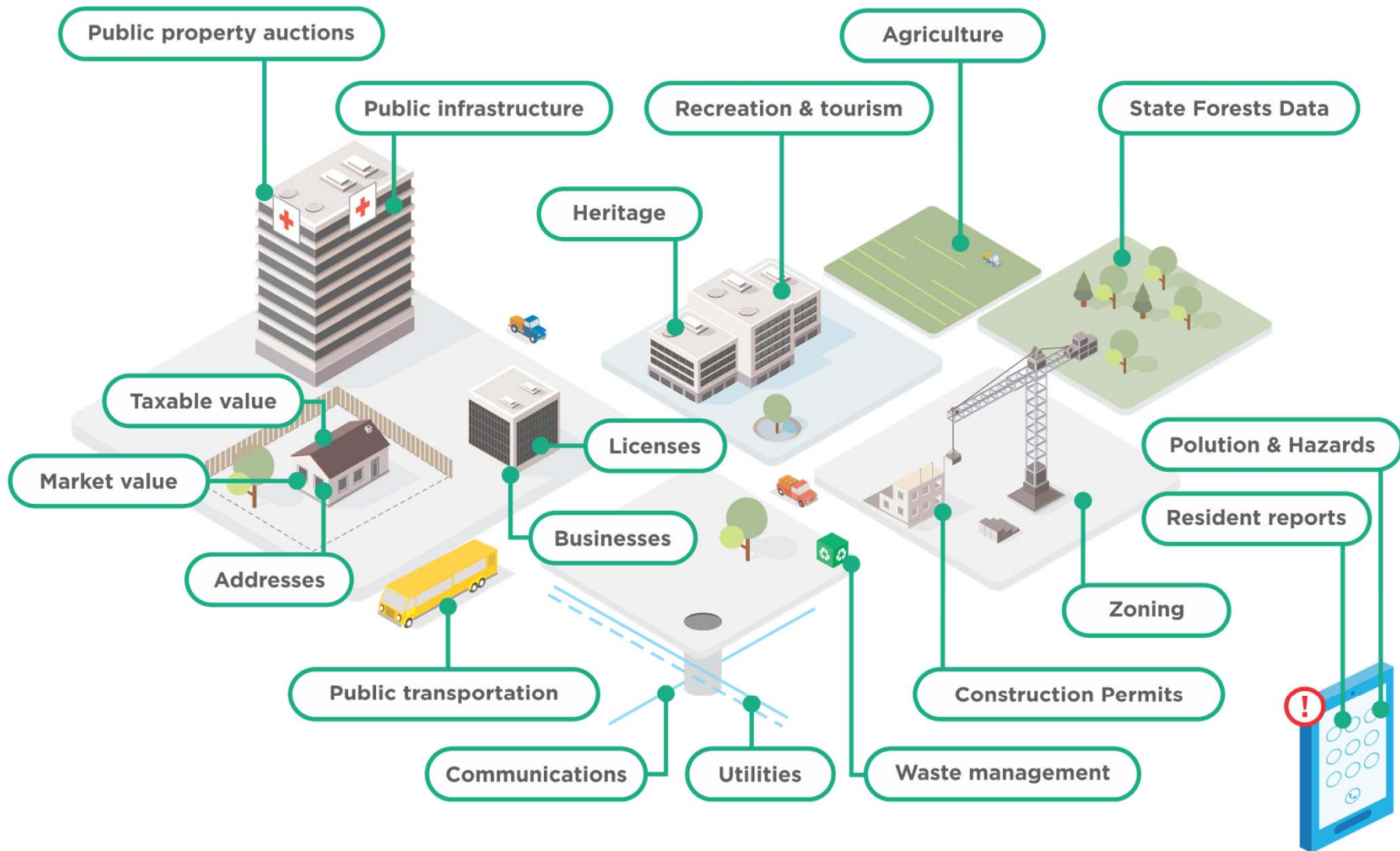
.....



# Registers and IS belonging to The State Enterprise Centre of Register

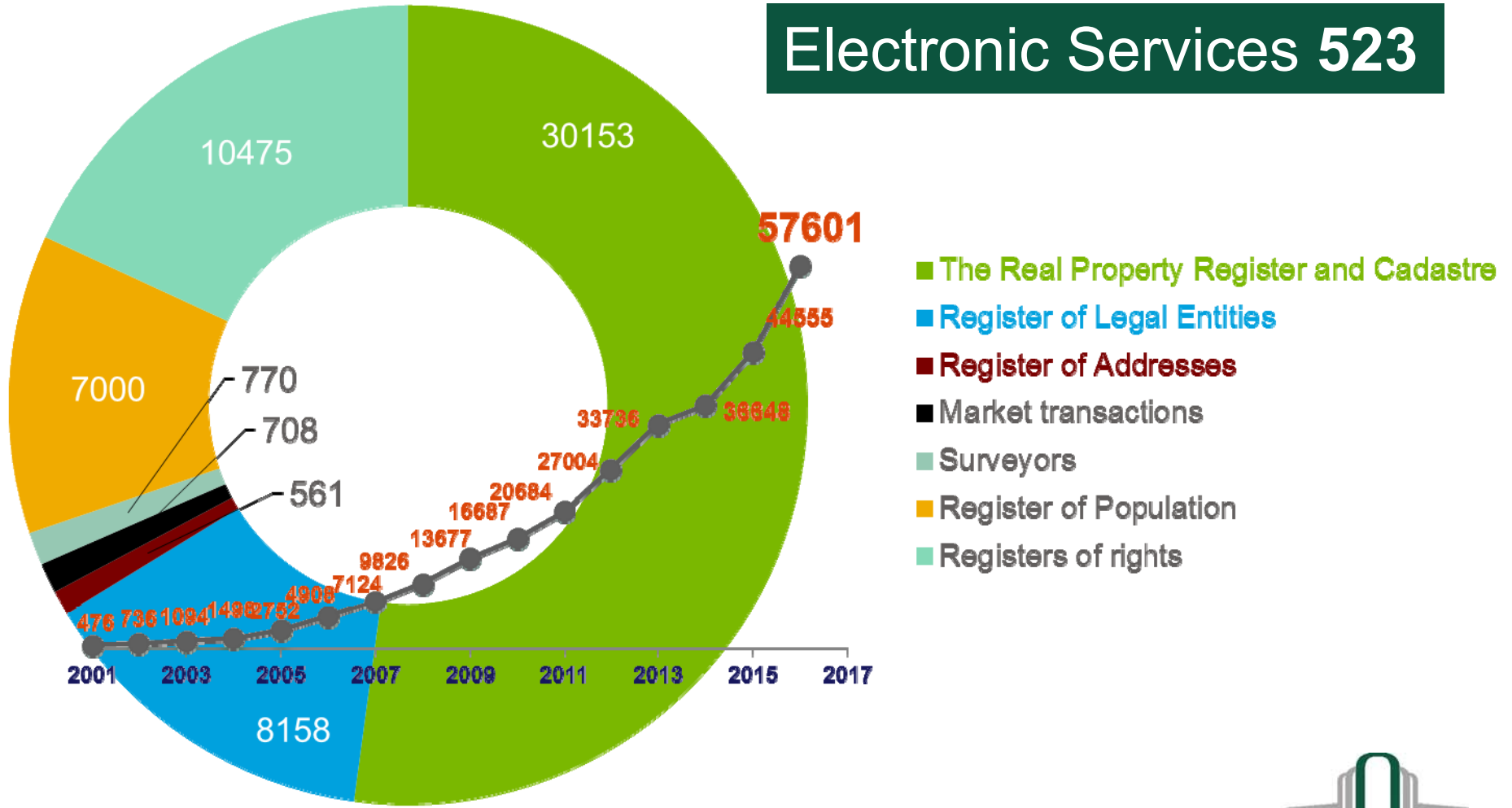


# DATA AND SERVICES

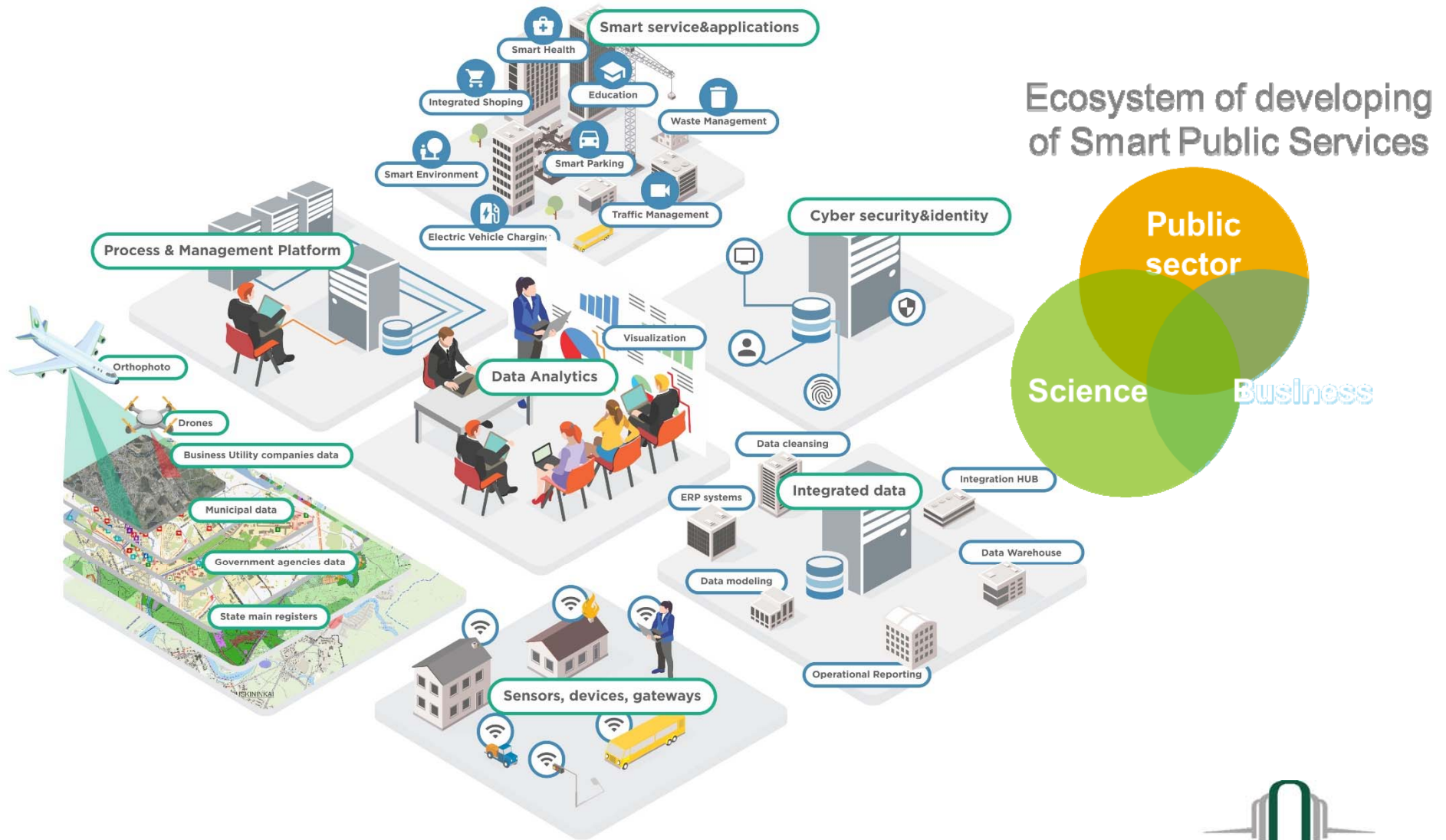


# SECR Electronic Services

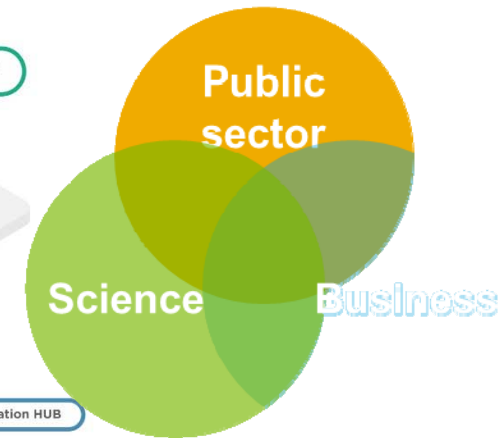
**Electronic Services 523**



# SMART SERVICES



Ecosystem of developing of Smart Public Services





**NEKILNOJAMOJO TURTO**  
KADASTRAS IR REGISTRAS

## **Real property cadastre and register**

Public electronic service for  
real property transactions  
Surveyor and Geo-Surveyor

Electronic documents archive

Energy certification

## **Real property mass and individual valuation**

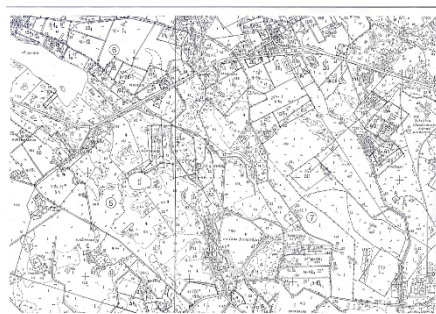
Real property market data analysis

Real property values  
maps

**REAL PROPERTY CADASTRE AND  
REGISTER**



# Development of Land Administration in Lithuania



1990-1996

## Paper files (BTI)

Topographical map

Separate formation and registration of land and constructions

Analogue survey equipment

Limited public data



1997-2004

## Integrated digital data of Cadastre, GIS, Register

Data of Cadastre and Register from the CDB have legal power.

Digital survey equipment

Public access to data and services

2005-2017

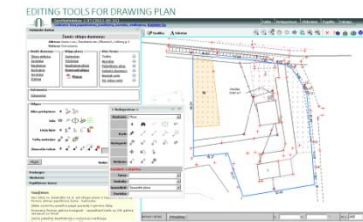
## Registers and cadastral data merged with municipal data to create context for new services and solutions (REGIA)

Digital notarized property transaction (NETSVEP)

Drones about to be deployed for greater surveying speed and accuracy

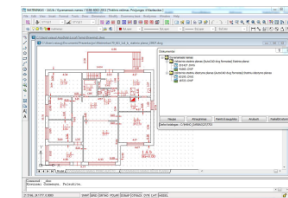
New land parcels are formed online on live cadastral map (Geo-surveyor application of CoR)

Open data

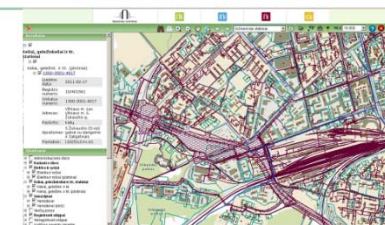


MAIN FUNCTIONALITIES OF SURVEYOR

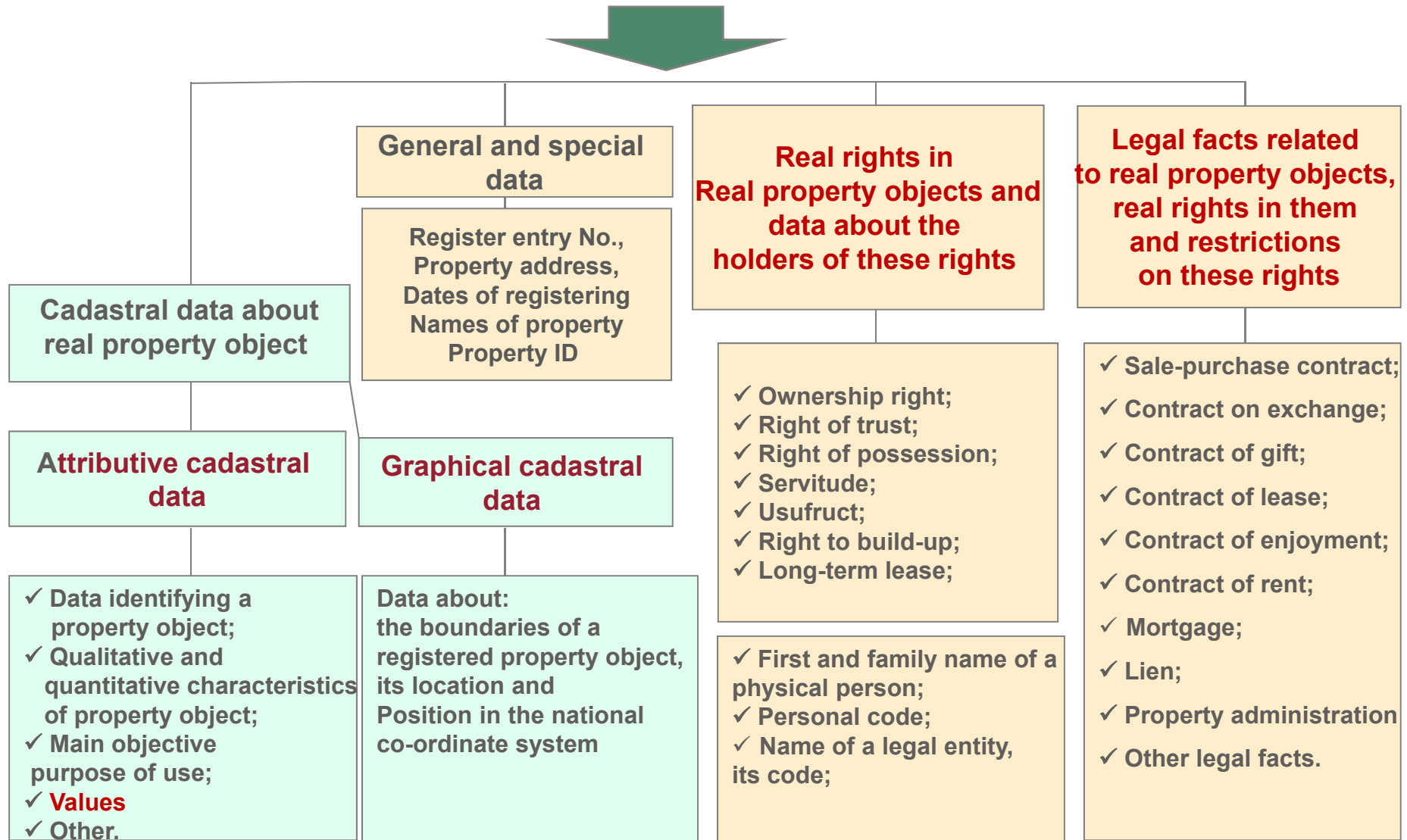
- OPERATIONS WITH PLANS – UPLOAD NEW PLANS, UPDATE THE EXISTING PLANS, DOWNLOAD PLANS FROM REPOSITORY FOR MODIFICATION.



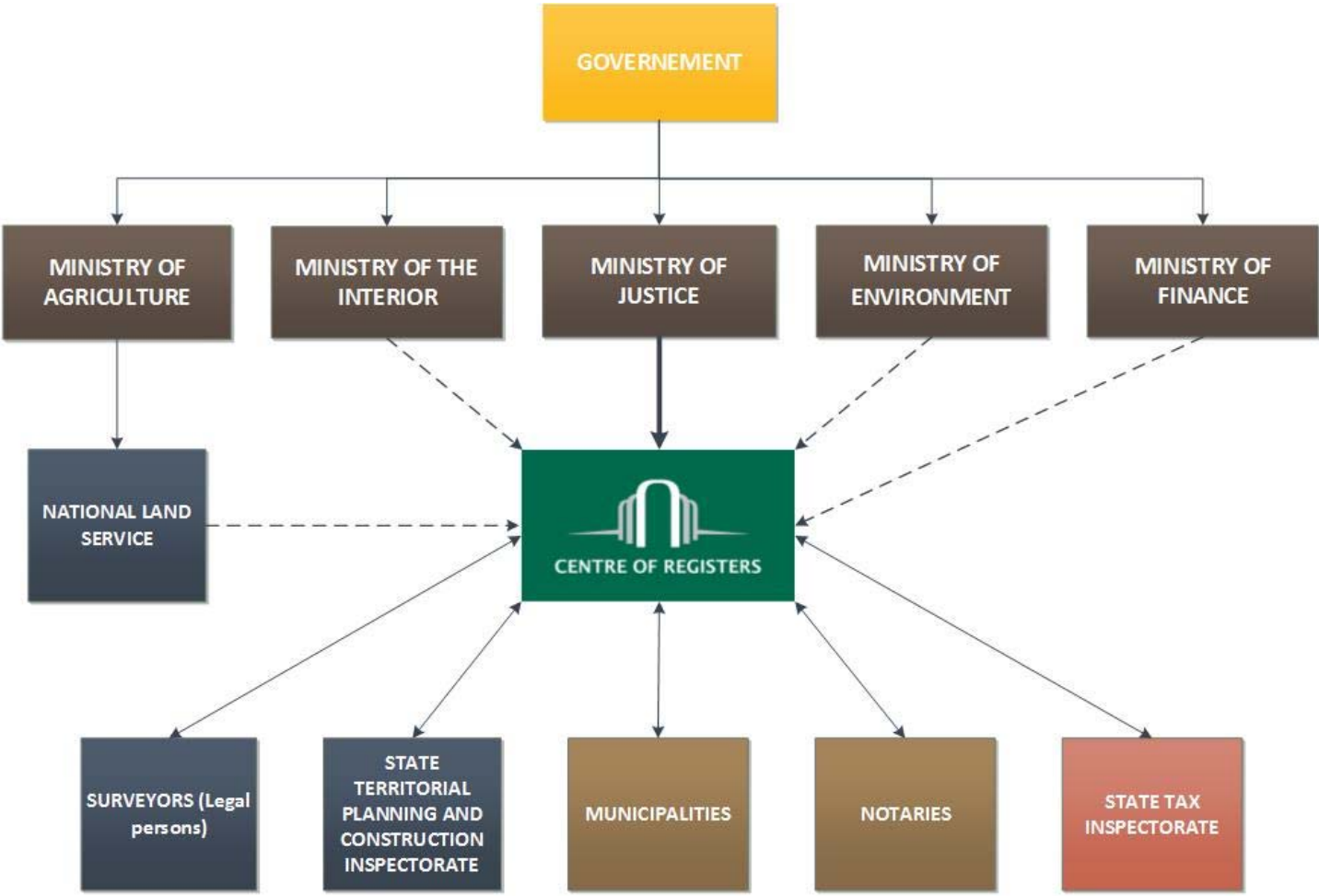
CADASTRAL MAP PUBLICATION ON THE INTERNET



# DATA CONTENTS OF THE REAL PROPERTY CADASTRE AND REGISTER

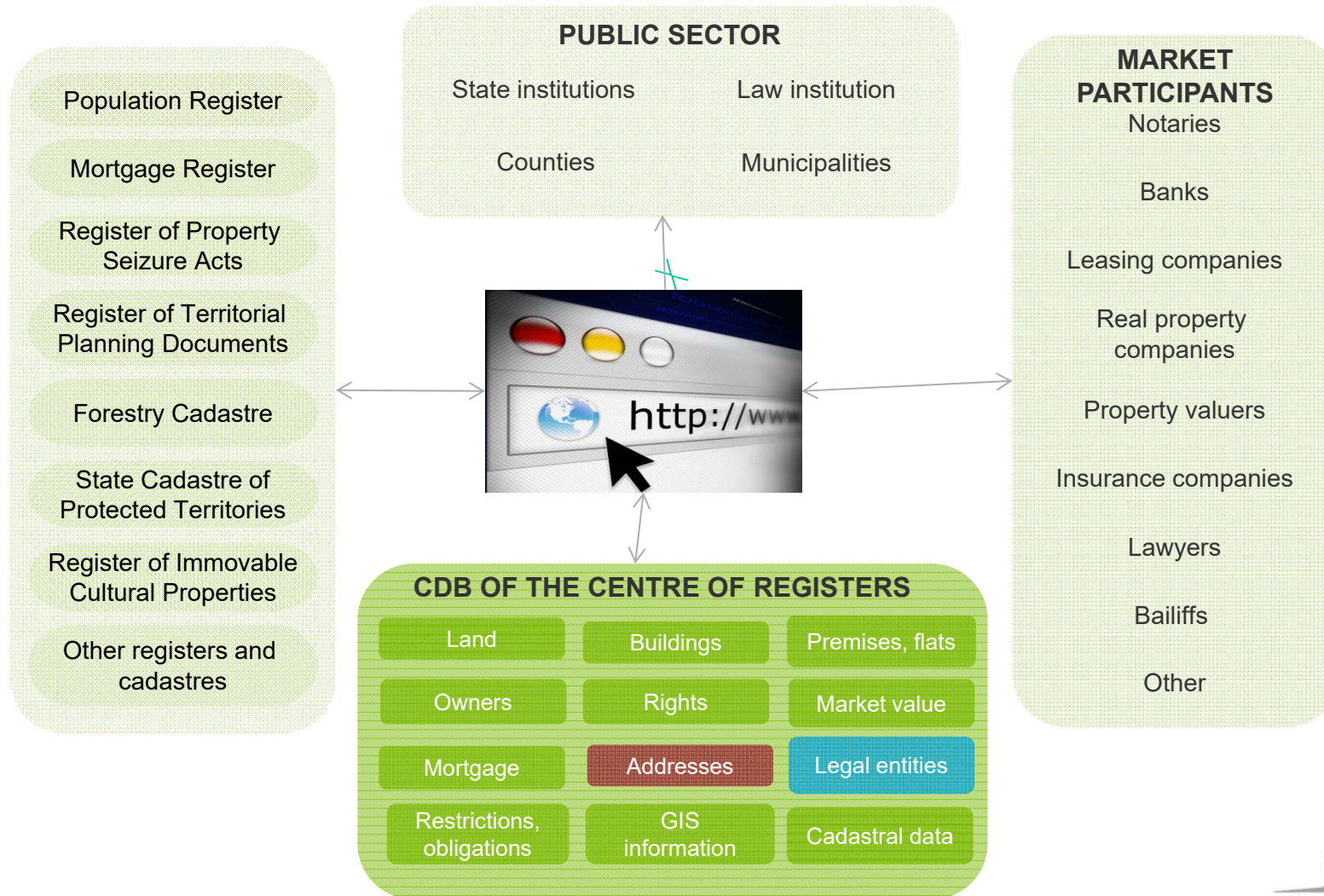


# INSTITUTIONS INVOLVED IN REAL PROPERTY ADMINISTRATION



→ Founder    - - - -> Methodical guidelines    ↔ Exchange of information

# SERVICES OF THE REAL PROPERTY REGISTER



# MAIN PRINCIPLES FOR IMPLEMENTING SMART CONVEYANCING

Only digital data have legal power



No paper documents



Preparation and provision of e-documents



Full integration with the base state cadastres and registers



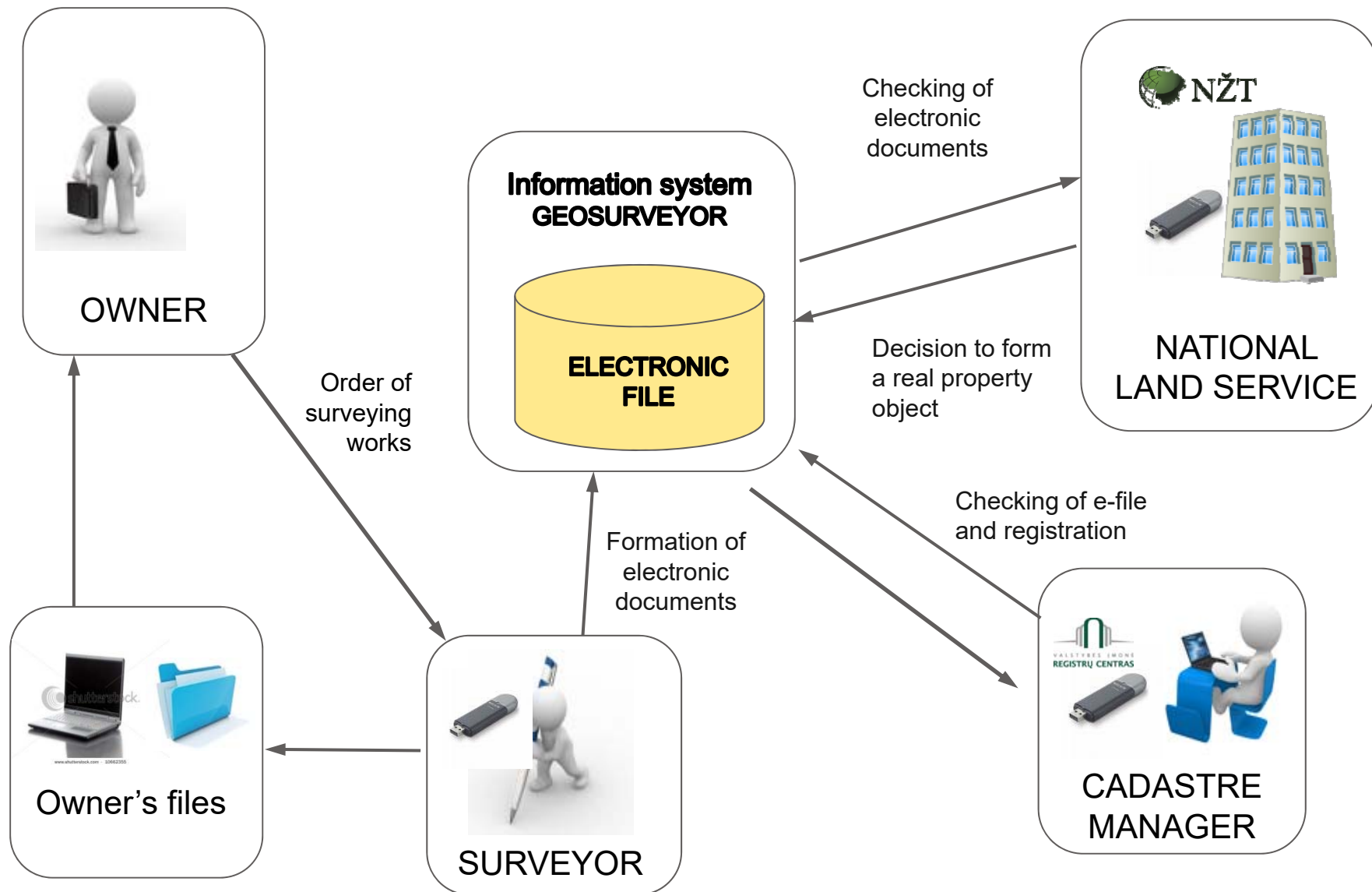
Full integration of graphical, attribute and visual data



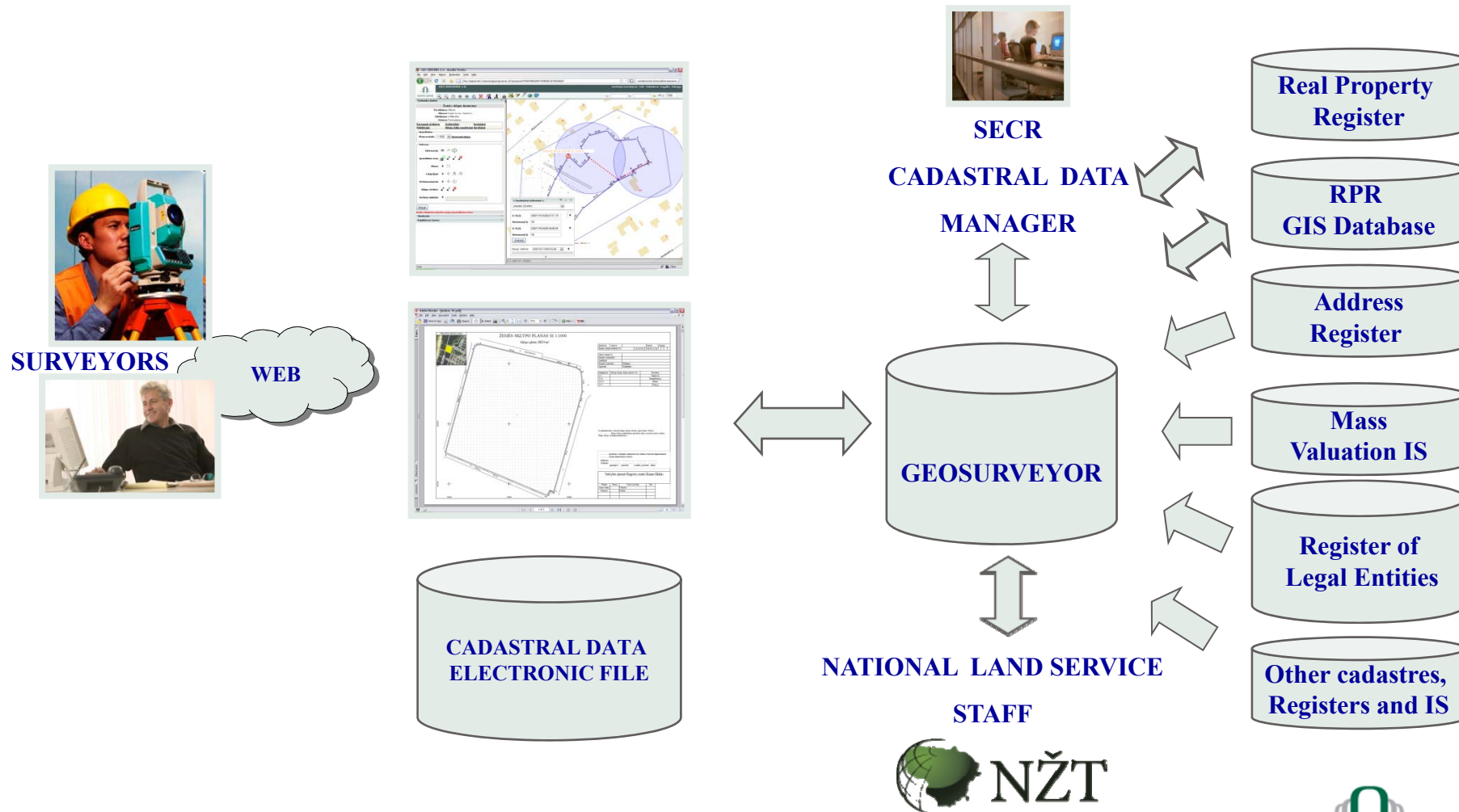


**GEOINFORMATION SYSTEM  
OF REAL PROPERTY  
CADASTRE**

# SYSTEM „GEOSURVEYOR“. OPERATIONAL PROCESS



# MAIN AIMS FOR THE CREATION OF “GEOSURVEYOR”



# MAIN AIMS FOR THE CREATION OF “GEOSURVEYOR” AND “E SURVEYOR”

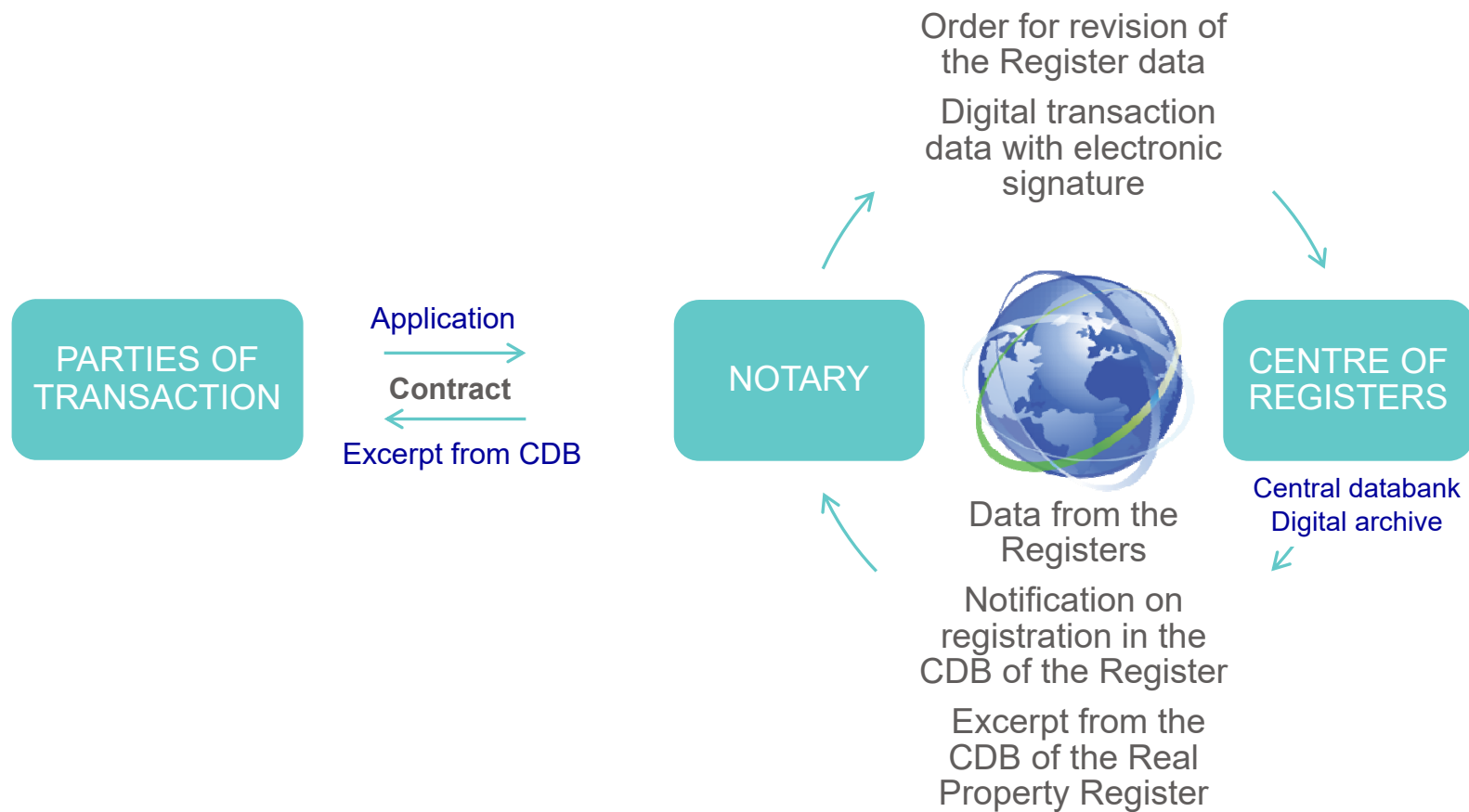
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- Web-based software for processing digital cadastral data, with access to as many as possible online data needed for surveying;
- Optimisation of the processes for preparation of digital cadastral data file;
- Submit the prepared cadastral data electronic file for revision and registration;
- Optimisation of the processes for revising cadastral file and registering;
- Partly automate revision of cadastral data file and registration processes;
- Increased quality of preparing cadastral data file;
- Standardization of digital cadastral data.

Information system of public e-  
service for real property  
transactions (NETSVEP)



# CONCLUSION OF CONTRACT FOR REAL PROPERTY TRANSACTION AND REGISTRATION



# GOSIGN - esignature

- **Signing documents with qualified electronic signature**
  - stationary and mobile
  - Time stamping

- **Verification of validity of digital signature**

### *Additional features:*

Invite one or more people to sign a document

Monitor subscription process

Send a reminder to sign the document

Store signed documents and share them

The screenshot shows the GOSIGN website interface. At the top, there is a navigation bar with various links and a search bar. The main header features the GOSIGN logo and the text "E-DOCUMENTS SIGNING AND SHARING". Below this, the main content area is titled "SIGN IN WITH E-SIGNATURE" and includes a "Log in" button. To the right, there is a list of features with corresponding icons and buttons:

- Sign document (Try it >)
- Verify a signed document (Try it >)
- Send invitation to sign a document (Log in)
- Follow the document signing progress (Log in)
- Store signed documents (Log in)

At the bottom of the page, there are two sections: "WHY WOULD YOU USE GOSIGN?" and "WHAT IS REQUIRED TO USE GOSIGN?".

**WHY WOULD YOU USE GOSIGN?**

- ✓ Legally binding e-signatures are recognized by institutions
- ✓ Time-saving opportunities
- ✓ Follow the status of your documents
- ✓ Involve a group of people in distant locations into the

**WHAT IS REQUIRED TO USE GOSIGN?**

- ✓ E-signature (How to get it? >)
- ✓ Internet connection
- ✓ E-document to be signed in PDF format

## STATISTICS OF NETSVEP

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On 15 July 2009, the first real property transaction agreement was prepared and signed electronically.

In May 2013, notaries, using NETSVEP IS, submitted a **millionth request** for transaction data processing, registration of legal facts, ownership and other real rights.



Using NETSVEP, the notaries prepare and attest 1500-2000 ( $\approx 90-95\%$ ) agreements and submit about 1200 legal facts for registration on the concluded transactions per day in the country.



## DOING BUSINESS 2017 – EFFICIENCY OF REGISTERING PROPERTY

According to Doing Business 2017 report, Lithuania is the second (2) among 190 countries in the category of efficiency of property registration.

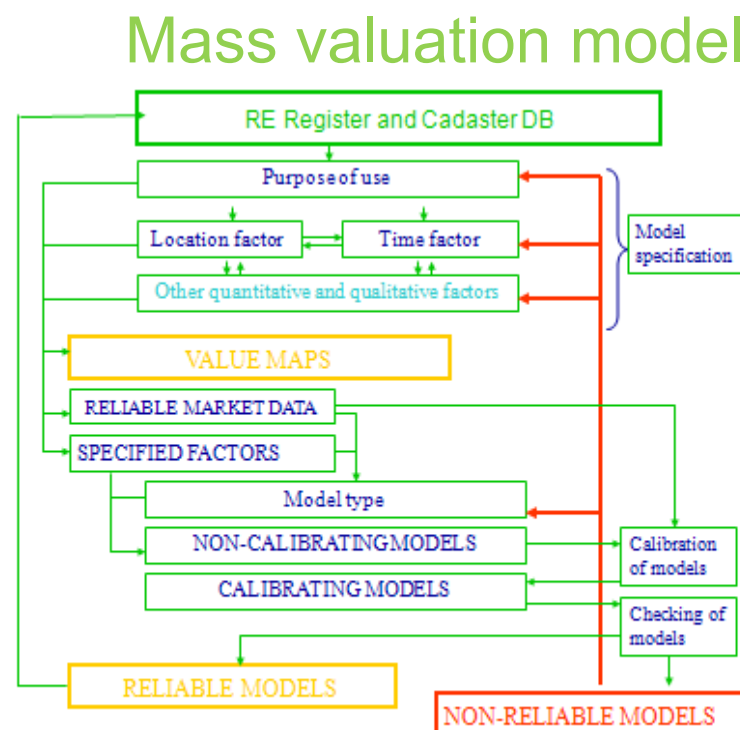
Indicators	Eastern Europe and Central Asia countries, in average	Lithuania
Number of procedures	5,4	3
Time (days)	22	2,5
Expenses (% property value)	2,6	0,8



# Information system of the real property market analysis and property valuation

# MAIN PRINCIPLES OF THE LITHUANIAN APPROACH TO MASS VALUATION

- Mass valuation system is built on the integrated **digital data** of real property cadastre and register and other main state registers.
- Mass valuation process is fully **automated**.
- Mass valuation **results are public** and published on the Internet.
- Mass valuation **results are easily applicable** for decision making on different issues.
- Lithuanian mass valuation system was presented in different international events, articles, international projects (China, Russia, Azerbaijan, Egypt, EU countries, etc.)





# GROUPS OF LAND



Agricultural,  
land of gardeners associations

Commercial, industrial

Residential

# GROUPS OF CONSTRUCTIONS



Residential:  
Dormitories,  
Apartments  
Detached houses



Administrative and health care  
Commercial and services  
  
Recreation and sports  
Culture, education and science  
Garden buildings  
Auxiliary  
Garages



Industrial,  
warehouses,  
transport and  
engineering

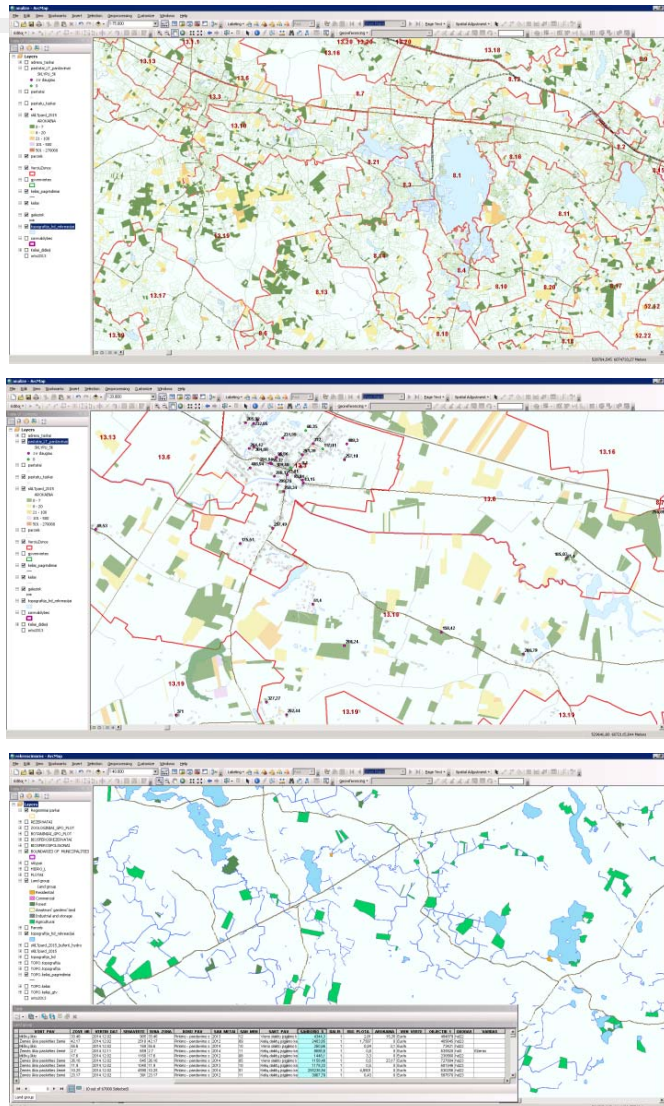
# MODEL SPECIFICATION: CORRELATION MATRIX

Correlation matrix used for determination of qualitative and quantitative factors which show how important is the relation between statistically interrelated factors.

Pearson Correlations Section (Row-Wise Deletion)									
	Price	m2_price	Year_constr	Total number of floors	Floor	Floors without first and last floors	Zone	Walls	Type of object
Price	1	0,500634	0,355828	0,229186	0,186679	0,265887	0,437425	0,105204	0,066759
m2_price	<b>0,5006</b>	<b>1</b>	<b>0,2483</b>	<b>0,228583</b>	<b>0,204958</b>	<b>0,276777</b>	<b>0,7845</b>	<b>0,1612</b>	<b>0,0652</b>
Year_constr	0,355828	0,248294	1	-0,002343	0,082343	0,048958	0,170319	-0,05794	0,084201
Total number of floors	0,229186	0,228583	-0,00234	1	0,236633	0,807229	0,271447	0,25406	0,098062
Floor	0,186679	0,204958	0,082343	0,236633	1	0,762646	0,219181	0,091507	0,022118
Floors without first and last floors	0,265887	0,276777	0,048958	0,807229	0,762646	1	0,319315	0,223767	0,081054
Zone	0,437425	0,784468	0,170319	0,271447	0,219181	0,319315	1	0,1712	0,075817
Walls	0,105204	0,1612	-0,05794	0,25406	0,091507	0,223767	0,1712	1	-0,02407
Type of object	0,066759	0,065246	0,084201	0,098062	0,022118	0,081054	0,075817	-0,02407	1

The outcome of specification: factors and zones (territories) are specified which may be important for estimating the average market value of real property.

# GIS IN MASS APPRAISAL

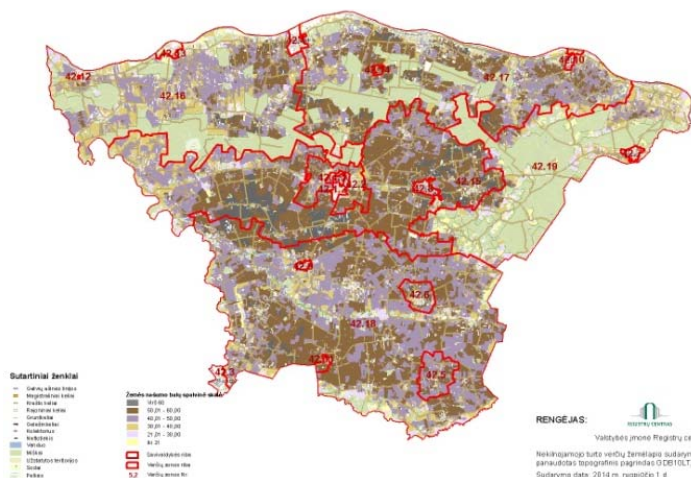


- Distribution of sales and sale prices
- Analysis of cadastral data
- Distribution of price influence factors

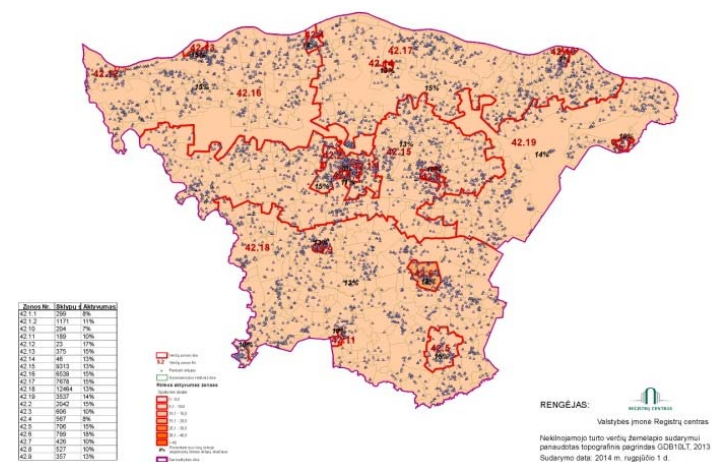


# ANALYSIS OF CADASTRAL DATA OF LAND PARCELS USING ARCMAP

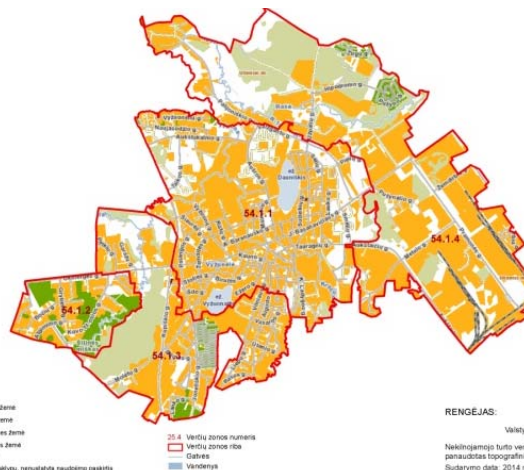
## Soil productivity score (Šakiai district)



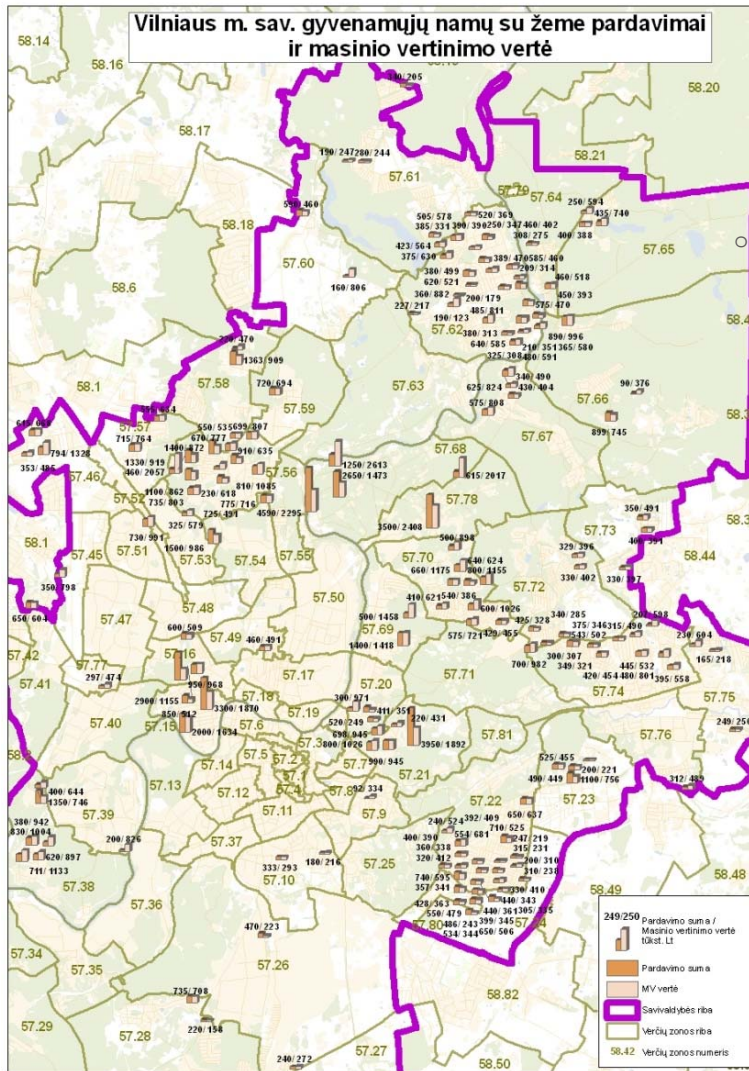
## Sales of land parcels 2010.01.01-2015.08.01



## Land structure according to the purpose of use (Utena city)



# VERIFICATION OF RESULTS



Comparison of mass valuation values and sales prices of residential buildings with land in Vilnius city

## RATIO STUDY

There are two primary aspects of assessment performance: level and uniformity.

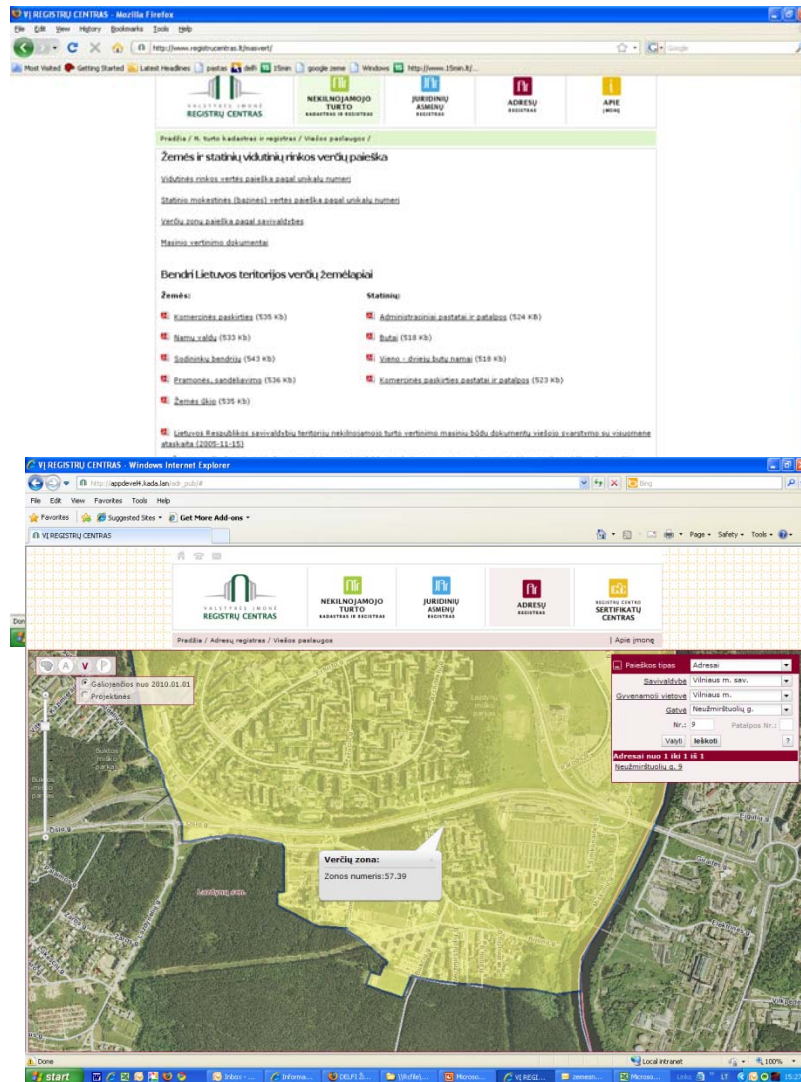
- Assessment level relates to how close overall assessments are to market value.
- Uniformity relates to the consistency or equity of assessed values.

ZOVĖ_No	OBJ_ID	Street	Address	MZ_VALUE	MZ_PRICE with TA	RATU	ZOVĖ_No	SUM_OF_TRANS	AVG_MZ_VALUE	AVG_MZ_PRICE with TA	RATIO
57.51	1311408	Galopio g.	2	365	347	0.94	57.1	33	1000	1065	0.97
57.51	1311418	Galopio g.	2	335	323	0.96	57.2	13	1653	1733	0.95
57.51	1311428	Galopio g.	2	317	313	0.98	57.3	17	1670	1629	0.97
57.51	1311438	Galopio g.	2	325	302	0.93	57.4	18	1665	1699	0.98
57.51	1311485	Galopio g.	23	765	733	0.96	57.5	100	1669	1801	0.93
57.51	1311505	Galopio g.	23	760	714	0.94	57.6	46	1501	1582	0.95
57.51	1311524	Galopio g.	23	768	690	0.90	57.7	29	1272	1327	0.96
57.51	1144325	Galopio g.	23	755	728	0.96	57.8	6	1259	1274	0.99
57.51	1144358	Galopio g.	23	755	728	0.96	57.9	6	1259	1274	0.99
57.51	1311805	Galopio g.	23	768	690	0.90	58.1	343	1065	1095	0.98
57.51	1311825	Galopio g.	23	768	690	0.90	58.2	343	1065	1095	0.98
57.51	1182518	Galopio g.	23	768	690	0.90	58.3	343	1065	1095	0.98
57.51	1144811	Galopio g.	23	768	690	0.90	58.4	343	1065	1095	0.98
57.51	1144813	Galopio g.	23	768	690	0.90	58.5	343	1065	1095	0.98
57.51	1144815	Galopio g.	23	768	690	0.90	58.6	343	1065	1095	0.98
57.51	80271	Galopio g.	1	7	11629	12233	8043	15462	12045	1.04	1.04
57.51	242826	J. Balausio g.	2	10	10620	10724	7011	13806	10257	0.97	0.97
57.51	1325709	J. Balausio g.	3	10	11502	11143	7464	16236	11742	1.02	1.02
57.51	1325715	J. Balausio g.	4	17	9600	8664	7127	14462	9615	1.02	1.02
57.51	429708	J. Balausio g.	6	1	8310	8510	8510	7775	0.91	0.91	
57.51	429843	J. Balausio g.	8	20	6450	7159	2062	8957	6025	0.93	0.93
57.51	429998	J. Balausio g.	10	3	6952	6917	5131	8928	6427	0.92	0.92
57.51	430081	J. Balausio g.	11	16	6272	6052	4076	8374	6327	1.01	1.01
57.51	1402612	Laisvės pr.	12	39	5200	5042	4047	7858	5168	0.99	0.99
57.51	1189343	Laisvės pr.	13	27	5476	5303	4003	8075	5806	1.06	1.06
57.51	1335445	Laisvės pr.	15	21	5342	5263	2310	8610	5670	1.06	1.06



# Providing Mass Valuation Results through the Internet

## [www.registrucentras.lt](http://www.registrucentras.lt) (Open for Public)



### Textual data

- Search for the average market value by unique number;
- Search for the taxable (base) value of the building by unique number;
- Search for value zones by municipalities, residential areas, streets;
- Mass valuation documents, materials of public discussions.

### Graphical data

- Value maps of the territory of municipalities and Lithuania;
- Graphical search for value zones (through the Address Register).

# USE OF REAL PROPERTY MASS VALUATION DATA AND VALUES



Assessment of taxable values of land and buildings



Calculation of inherited or gifted property taxable value



Providing of social support for low income citizens



Providing of state guaranteed legal assistance



Estimation of initial sales or rental value of state-owned land



Estimation of rent of state-owned fixed assets (constructions)



Estimation of statistical indexes

# USE OF REAL PROPERTY MASS VALUATION DATA AND VALUES



Calculation of fees for registration of real property and rights thereto



Calculation of notaries fees



Activities of insurance companies



Activities of bailiffs for estimation of initial action price



Banks activities



Providing market data to real estate professionals



For other state economic needs (estimation of losses, compensation, etc.)

# REAL PROPERTY MARKET DATA AND ANALYSIS

## Provision of real property market data by the Internet

Provision of real property transaction data

Dynamics of real property transaction prices

Dynamics of real property sales

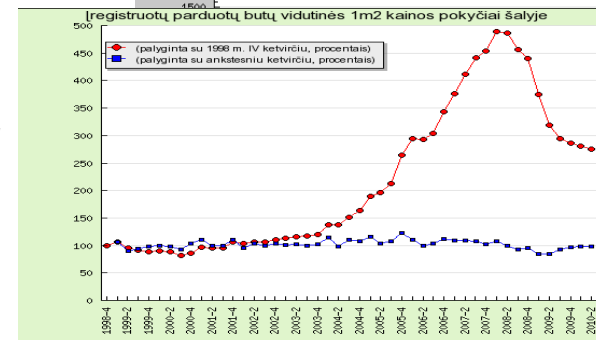
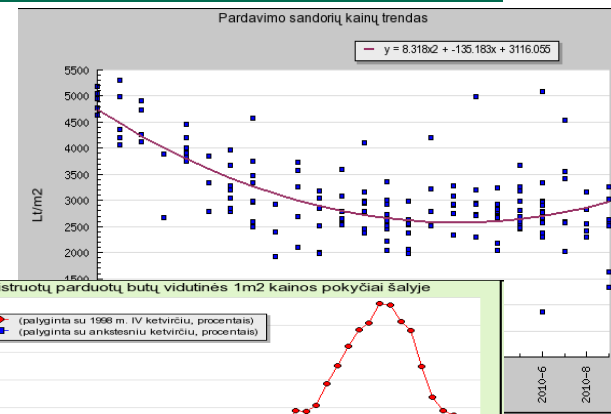
Administration of real property analytical applications

Calculation of housing price index

Value calculators

Individual enquiries and analyses

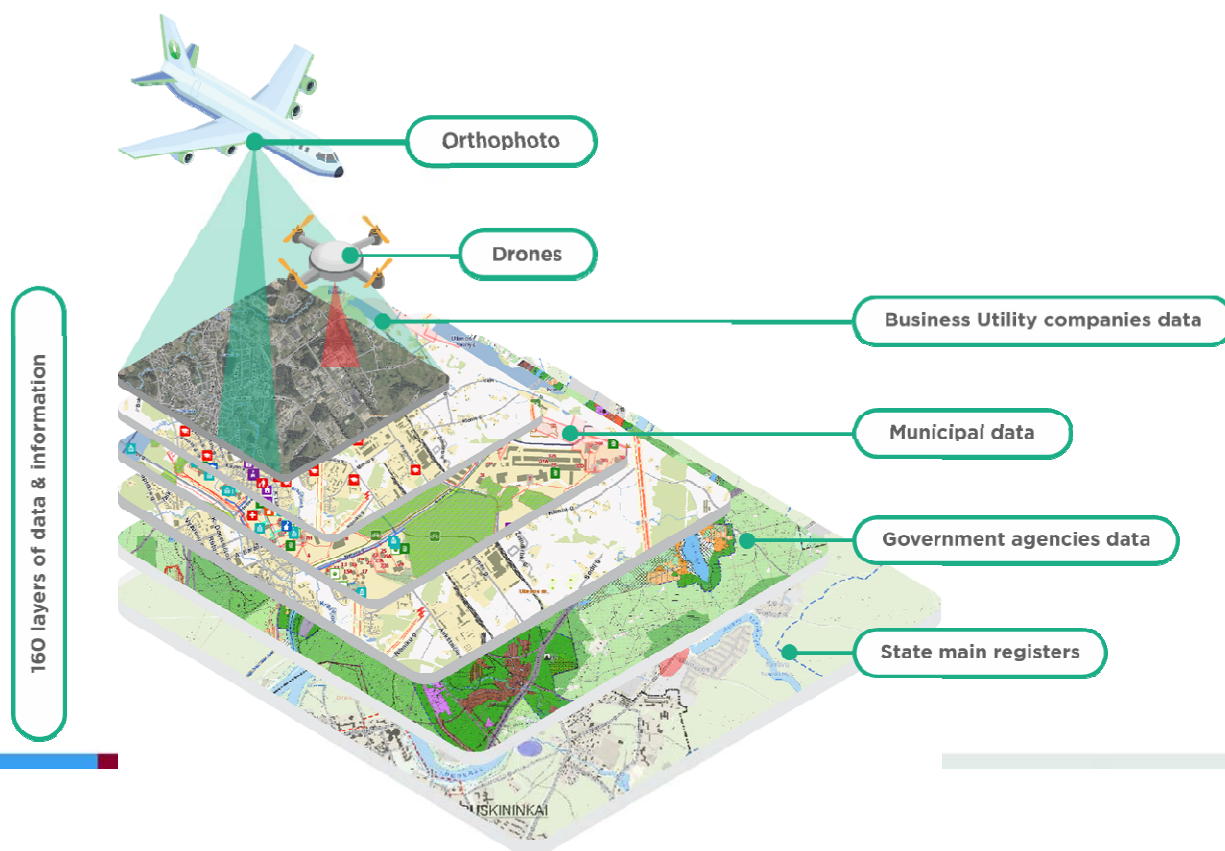
- ✓ DB of the Centre of Registers contains data about more than 2 million transactions which can be used for calculating values;
- ✓ The goal is to provide these data as quicker as possible and in the most appropriate form to the public institutions (Bank of Lithuania, Ministry of Finances, Statistics) and other specialists (banks, analysts, valuers, etc.).



# REGIONAL GEO-INFORMATION ENVIRONMENT SERVICE

[www.regia.lt](http://www.regia.lt)

- REGIA is a powerful and handy tool specifically developed for local authorities: their people, civil servants and therein operating businesses.
- Purpose of REGIA is to create favourable conditions for geography-based decision-making and to facilitate the exchange of information.



# CLOUD PRINCIPLE



- All information created by a user, data recorded, uploaded documents are accumulated and stored in the REGIA servers and are accessible from any computer.
  - Easy to use. It is enough to have a computer with Internet connection.
    - All services are managed through the web browser.



# REGIA OPERATIONAL SCHEME



Working in the service environment, the REGIA users can:

- create and manage their own data layers
- store and manage information or documents
- decide whether his data layer is publicly visible & who is entitled to use it
- services in the review mode are publicly accessible

# BASIC DATA PLATFORM & OTHER INSTITUTIONS DATA

## OTHER STATE REGISTERS AND MINISTRIES

National Land Service at the Ministry of Agriculture

Department of Cultural Heritage under the Ministry of Culture

State Service For Protected areas under the Ministry of Environment

State Forest Cadastre of the Republic of Lithuania

Ministry of Education and Science of the Republic of Lithuania

Fire and Rescure Department under the Ministry of Interior of the Republic of Lithuania



## ELECTRICAL POWER & GAS DISTRIBUTION

ESO

## MUNICIPALITIES



# REGIA SERVICE ADMINISTRATOR ENVIRONMENT

Within its managed data layer, the administrator can store and manage own data, information or documents, create and provide services based on geo-referenced data.

The screenshot displays the REGIA Service Administrator Environment. On the left, a map shows a residential area with various icons representing different services. The top left corner features the REGIA logo and a 'Help' button. The right side of the interface contains a 'Content' panel with a list of layers and a 'Land parcels' layer selected. A callout box highlights the 'Civil and fire safety' layer, listing its sub-features:

- Storage areas
- Access roads to water
- Information and warning System
- Dislocation of the fire brigade
- Accommodation for evacuated citizens
- Water intake areas
- Resident's collection point
- Distribution point of evacuated citizens



# PUBLIC REGIA

- It is up to the user to decide whether his data layer is publicly visible and who is entitled to use it.
- REGIA services in the review mode are publicly accessible.

REGIA

Help Sign in

**Druskininkai Municipality**  
Vilniaus al. 18, LT-66119 Druskininkai  
Ph. +370 313 55 355, Fax. +370 313 55 376, [info@druskininkai.lt](mailto:info@druskininkai.lt)  
Code: 188776264

TPDR No.: 000319  
Title: M.K.Čiurlionio g. 25 ir M.K.Čiurlionio g. 25C, Druskininkuose, sklypų sujungimo detalusis planas  
Originator: UAB "Druskininkų projektas", M.K.Čiurlionio g. 75, Druskininkai  
Document Date: 2008-05-29  
[Brezinys.pdf](#)  
[Aiskinamasis rastas.pdf](#)

Content Address finder

- Municipal activities
- Cultural heritage, Protected territories, Recreation and tourism
- Public objects
- Waste management
- Engineering infrastructure and communication
- Territorial planning
- Real property values and abandoned areas
- Land parcels
- Headquarters of legal entities
- Orthophoto

Orthophoto

# MOBILE MAPING E-SERVICES

- Services are intended to notify of problem



# RECEIVING NOTIFICATION IN REGIA ENVIROMENT

- Location is displayed in REGIA map
- Notification contains: data on messenger  
problem description & photos  
date, time and place of sending
- Administrating of notifications

The screenshot displays the REGIA map interface. A 'Resident reports' window is open, showing details for a report with Post ID 3226. The subject is 'Ecology', and the current status is 'Accepted'. Two photos of a pile of trash are shown. To the right, a list of categories is visible, including Ecology, Roads, streets, pavements, Utilities, City lighting, Transportation, Construction, territorial planning, and Other. The map shows a street grid with various colored pins indicating report locations.

Category	Status
Engineering infrastructure and communication	<input type="checkbox"/>
Territorial planning	<input type="checkbox"/>
Real property values and abandoned areas	<input type="checkbox"/>
Resident reports	<input type="checkbox"/>
Ecology	<input checked="" type="checkbox"/>
Roads, streets, pavements	<input checked="" type="checkbox"/>
Utilities	<input checked="" type="checkbox"/>
City lighting	<input checked="" type="checkbox"/>
Transportation	<input checked="" type="checkbox"/>
Construction, territorial planning	<input checked="" type="checkbox"/>
Other	<input checked="" type="checkbox"/>
Land parcels	<input type="checkbox"/>
Headquarters of legal entities	<input type="checkbox"/>
Orthophoto	<input type="checkbox"/>



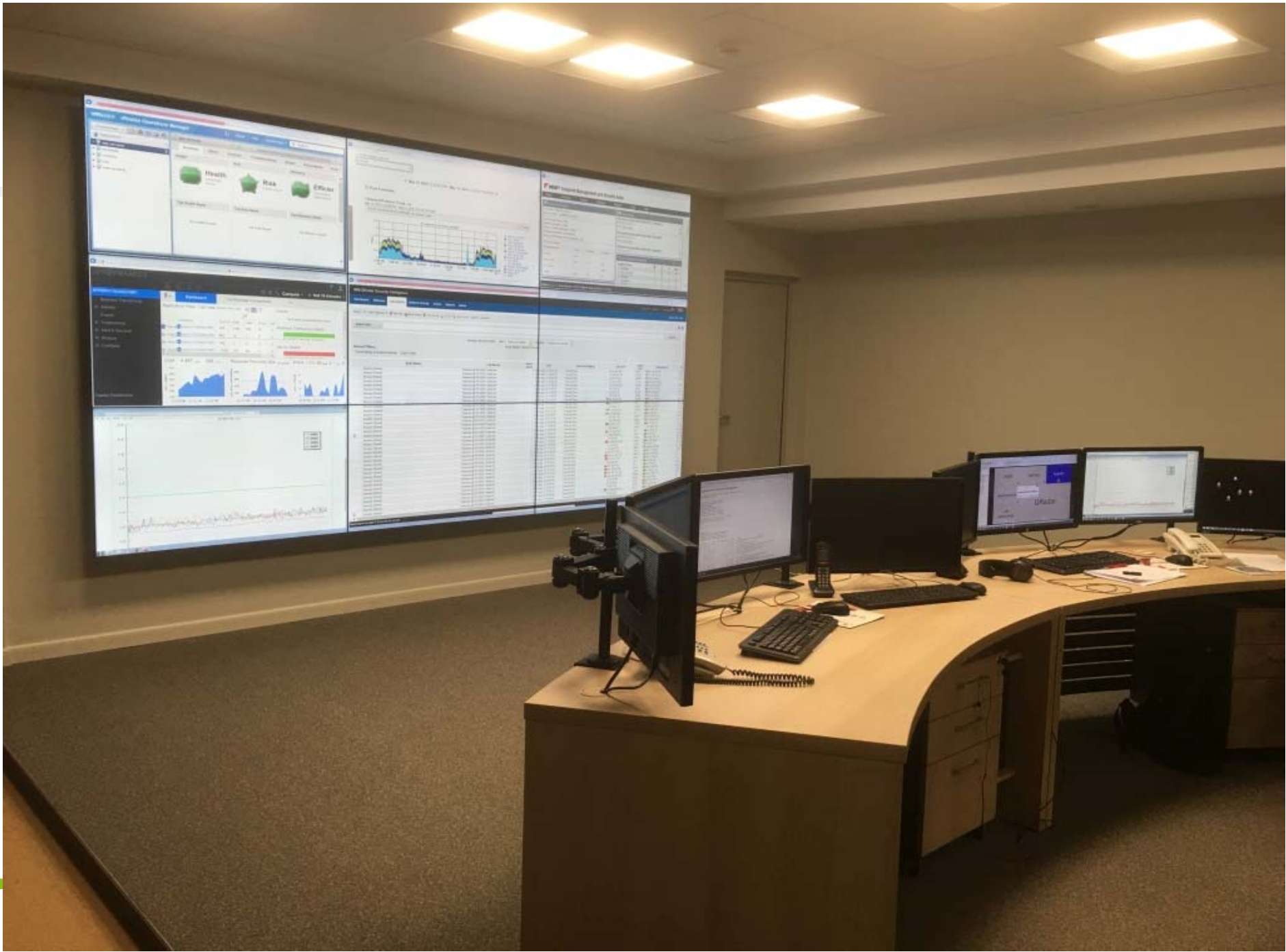
# INTEGRATION OF VIRTUAL ADDRESS SERVICE AND REGIA

- REGIA map allows selecting an area and addresses therein
- Messages and electronic documents may be sent to the addresses selected

The image displays two screenshots of the REGIA web application interface, illustrating the integration of a virtual address service.

**Left Screenshot:** Shows a map view with a red polygon selection over a residential area. A tooltip indicates: "Dvigubą paspaudimu baikite bręžti" (Double-click to finish drawing). The interface includes a top navigation bar with "Pagalba" and "Atsijungti", a REGIA logo, and a menu with "Pranešimai", "Informacija", "Adresų paieška", and "Pranešimų siuntimas". A form on the right has fields for "Adresas", "Antraštė", and "Pranešimas".

**Right Screenshot:** Shows the same map view with a list of selected addresses in the right-hand panel. The list includes: "Druskininkai, M. K. Čiurlionio g. 73 / Druskininkų g. 1", "Druskininkai, Druskininkų g. 11", "Druskininkai, Druskininkų g. 4", "Druskininkai, Druskininkų g. 8", "Druskininkai, Druskininkų g. 21", "Druskininkai, Druskininkų g. 10", and "Druskininkai, M. K. Čiurlionio g. 70". The form on the right is identical to the left screenshot, but the "Siuntėjas" field is visible at the bottom.



# Thank you for your attention!

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[www.registrucentras.lt](http://www.registrucentras.lt)

[www.regia.lt](http://www.regia.lt)

