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Opportunities for the Development of the Latvian Property Tax Administration System through Improvements in the Property Registration System and the Implementation of European Union Requirements for Geospatial Information

Sarmite Barvika, Aldis Rausis, Inga Berzina

(MBA, Sarmite Barvika, Riga Technical University, The Faculty of Engineering Economics and Management, Department of Civil Construction and Real Estate Economics, 6 Kalnciema Street, Riga, LV-1048, Latvia, sarmite.barvika@rtu.lv)
(Associate Professor, Aldis Rausis, Riga Technical University, The Faculty of Engineering Economics and Management, Department of Civil Construction and Real Estate Economics, 6 Kalnciema Street, Riga, LV-1048, Latvia, aldis.rausis@rtu.lv)
(MSc., Inga Berzina, Zemgales Planning Region, 2b Katolu Street, Jelgava LV-3001, Latvia, inga.berzina@tdf.lv)

1 ABSTRACT

Nowadays modern, geospatial information system (GIS) based, integrated property data systems (infrastructures) are used for increasing the performance of the public sector and decreasing the administrative burden on society with regard to real estate, spatial planning, also in property tax administration and property mass appraisal. [2]

The real property tax is a strong source of local incomes and essentially demands highly effective administration and functioning of the property tax system and enhances public confidence in local governments. [18]

The recent fiscal crisis has stimulated interest in new revenue sources of local governments, including capturing immovable property price increments [3]. This challenge in 2008 led the responsible authorities to revise the current property tax and mass appraisal systems in the Republic of Latvia (Latvia) with the purpose of developing and implementing a new strategy for fair real estate tax policy. One of the purposes was also to make more efficient the functioning and use of property related data information systems on for better real estate tax administration and use in mass valuation.

Within implementation of the Communities action plan for setting environmental policy (Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007, establishing the Infrastructure for Spatial Information in the European Community – the INSPIRE directive), since 2009 the implementation of several important large scale projects for the development of GIS have also been started in Latvia with the purpose of improving the property related spatial and descriptive data and statistics spatial data processing, maintenance and sharing.[7]

The benefit from the three planned large scale information systems: “Development of the State Land Service’s Geospatial Data Geospatial Information System” (SLS GIS), "Information System for Administration and Supervision of Territorial Development Planning of Local Governments, Infrastructure and Immovable Properties”, which is more widely known as Territorial Development Planning Information System (TDPIS) and Building Data Information System (BIS), also will contribute to improve the functioning of the property taxation system and property mass valuation in Latvia.

This paper will describe suggested possible proposals for the improvement of real property tax administration and mass valuation system, because new implementations are only on the development phases now: there are no completed and functioning solutions yet regarding of new approach of property related data registration and sharing, as well as use in the property taxation administration and mass valuation.

Key words: real property tax, property mass valuation, spatial planning, GIS, INSPIRE directive

2 GENERAL FACTS ABOUT LATVIA

Latvia is the central of the three Baltic States and renewed its independence in 1991 after collapse of the Soviet Union.

The area of the country is 64,589 sq. km: the length of the border – 1,862 km. In accordance with the 2011 Census, 2 067 887 people lived in Latvia in 2011. [17]

The Administrative Territorial Reform of 2009 has improved administrative capacity of local governments, moving from almost 600 administrative units with 28 regions to 119 counties (local governments), 9 republican cities and 5 planning regions. [17]

Latvia's political, economic and culture centre is the capital city of Riga, where almost one third part of Latvia's population (707 thousand) lives and works. [16] Latvia is a member of the United Nations (1991), the World Trade Organization (1998), NATO (2004) and EU (2004).

Latvia's national currency is "the lats" (LVL). 1 LVL is equivalent 0,702804 Euros. In 2014 Latvia will be presiding over the EU, as well as plans to join European Monetary Union.

The dominant sectors of Latvia's economy are trade (16.9 % of GDP), production (19.1 % of GDP), financial services (3.8 % of GDP), construction (6.1 % of GDP), real property operations (7.6 % of GDP), and agriculture and forestry (4.5 % of GDP). GDP increased most rapidly immediately after Latvia's accession to the EU, reaching its highest growth in comparative prices in 2007: 12.14 billion Euros, but at the same time the budget deficit reached 22 % of GDP. [6]

During past two decades Latvia gradually established its property right and data registration system (Unified Computerized Land Register), developed the modern digital National Cadastre Information System (Cadastre IS) with integrated market value based property mass valuation as well as developed property taxation system.

Latvian land reform is almost completed: 64.6 % of all of Latvia's territory belongs to private and legal entities, 4.7 % – to municipalities, 30.7 % – to the state (including public waters and state forest land). There were about 5.7 million objects registered in Cadastre IS, which is maintained by the State Land Service (SLS), on 01.01.2012: of them 1 million were land parcels (with territory coverage of 100 %) and 1.4 million buildings (with the territory coverage 96 %). [15] Almost 96 % of real properties are secured in the Unified Computerized Land Register (2013). [16] The State Address Register contains 1,346,139 addresses (2011). The total stock of assessed property values on 01.01.2013 was 25.9 billion Euros. [16]

Latvia has a traditional three level spatial planning system with 100 % area coverage ofthe entire country. All municipalities have local territorial plans, which is the basic document for stated current and planned land use within their area of jurisdiction.

The global economic crisis hit Latvia in early 2008. In order to overcome the impact of the economic crisis on the national budget, Latvia was granted a 7.5 billion Euro loan from the International Monetary Fund (IMF) and European Commission (EC) at the end of 2008, bearing a lender's oversight on urged reforms within three years period. [6]

The real GDP contracted by18 % and the unemployment rate reached almost 20 % in 2009. Positive GDP growth returned only in the last quarter of 2010, and then followed by an increase in average of 5 % or 10.15 billion Euros in 2011. [6]

3 THE CONTEXT OF THE SINGLE EUROPEAN INFORMATION SPACE

The Establishment of The Single European Information Space of European Community is the one of three pillars defined by the European Commission (EC) i2010 strategy (2005), whose objectives are to offer high, bandwidth communication, rich content and digital services with a market oriented regulatory framework for all users in European Community with regard to spatial information, including property related information. [7]

The concept includes geodesy and cartography as the essence and mutual connection of geospatial infrastructure elements (see Fig.1). [5]

In 2007 the INSPIRE directive laid down general rules for establishing an infrastructure for spatial information in the entire Community that is the basis of support for the Community's policies and for the fulfillment of the requirements of environmental issues around Europe. [7]

To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and trans boundary context, the INSPIRE directive requires that common Implementation Rules are adopted in a number of specific areas: metadata, data specifications, network services, network services and technologies; licenses on sharing, access and use; and coordination and monitoring mechanisms, processes and procedures, established, operated or made available in accordance with the INSPIRE directive requirements. [7]

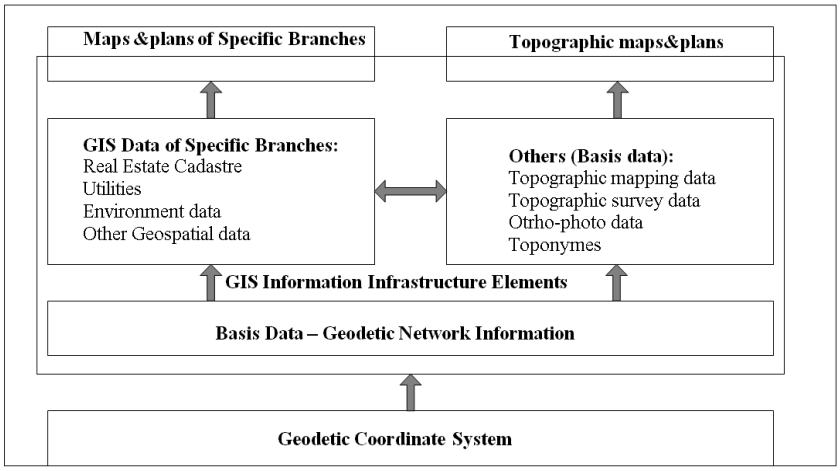


Fig. 1: Geospatial information elements. [5]

The INSPIRE directive should be based on the developed infrastructure for spatial information of Member States and does not require new data collection system. The Member States must ensure that this infrastructure is compatible, interoperable and usable on the national level, as well as in the Community trans-boundary context. The Member States' duty is also to develop and launch national Geo-portals which will be integrated in the European Geo-portal and via that the data and services required by the INSPIRE directive will be available in the national and trans-boundary context. [7]

The three annexes of the INSPIRE directive list 34 spatial data themes [subjects?], including land use, land cover, addresses, cadastral parcels and buildings, administrative borders, etc. maintained by public sector for what Member States must provide specified set of spatial data storing, maintenance, availability and share in the most appropriate level with the possibility to combine spatial data from different sources across the Community. The INSPIRE directive's common Implementing Rules require each Member State to implement INSPIRE directive's requirements into their own legislative systems. The Member States are also therefore engaged in implementing the appropriate technologies, policies and institutional arrangements that will form the basis for their INSPIRE compliant systems. [7]

The development and implementation of the INSPIRE directive will follow a work schedule consisting of three phases: the Preparatory Phase (2005-2006), the Transposition Phase (2007-2009) and the Implementation Phase (2009-2019). [7]

In order to quicken the implementation of its digitally based and customer oriented strategies, the EC lunched several programs (such as e-Content and e-Content Plus programs) on behalf of Community's Member States to develop GIS related infrastructure, testing and launching new e-services and sharing related national experiences and best practices. It is well known that GIS as a computer system will be capable of creating, storing, managing, analyzing, and displaying geographically referenced information. GIS will allow one to understand, question, interpret and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts. [13]

4 THE INSPIRE DIRECTIVE IMPLEMENTATION INITIATIVE IN LATVIA

The INSPIRE Directive has been adapted in Latvia's legislation by the adoption of the Spatial Planning System Development Concept (2009) and the passage of the Geospatial Information Act in 2009. [8]

The concept included geodesy and cartography at its essence and the mutual connection of geospatial infrastructure elements intended to eliminate the overlapping of spatial planning documents, creating a new legal framework to enable the new administrative and territorial reform by local governments (counties), the effectiveness and quality of the planning of its development, the definition of the appropriate planning documents, expertise, provision a number of new laws and regulations for its development. Geospatial Information Act set the role of the institution, the degree of responsibility in information maintenance and information exchange among institutions regarding annexes of the INSPIRE directive. [8]

The implementation of the INSPIRE directive with regard its data themes is split among the number of Latvian authorities emphasizing common cooperation, actions and data sharing with regard to the progress of the implementation of directive. The Ministry of Defence has granted supervision of overall processes and

reporting duty about the progress of implementation of INSPIRE. Latvia's Regional Development Agency (LRDA) is the responsible authority for development of Latvia's National Geo-portal where information (metadata) requested by the INSPIRE directive will be accessible by everyone. [8]

From 2009 several of Latvia's public authorities have started to develop their GIS systems (such as TDPIS, BIS, SLS GIS, etc.) using funding from the European Regional Development Fund for the purpose of complying with the requirements of the INSPIRE directive and to solve problems that have emerged in the public sector, such as insufficient development of information systems and their interoperability and lack of integration; undeveloped technical basis for the introduction of e-services and the decrease of administrative burden for entrepreneurs and citizens.

5 THE PROPERTY TAX AND ITS ADMINISTRATION SYSTEM

The real property tax is a so-called "ad-valorem tax" or "unit based tax" and is directly connected with geographic location. Land and other immovable features (human made improvements on land, such as buildings and structures) are usually visible, immovable, have geographic location and coordinates, specific use, physical parameters, the owner or user, and the value, so it is difficult to taxpayer to escape the tax as easily they can avoid other levies. [2]

In almost all countries around the world, also in Latvia property tax administration is a duty of local governments. Income from real property tax is a strong and considerable source for local governments, and all revenue from real property taxation goes to the budget of the local government where the specific real property is located. [18] For example in 2011 Latvia's local governments were collected 165 million euros (15 % from local tax revenues) from real property tax. [12] The revenue basis from property tax usually dependent on three politically sensitive variables: tax base (the taxable objects), tax rate (how much taxpayers will pay) and estimated revenue from taxes (requested income). The property tax collection is a complicated duty for local governments because of necessity to manage a large number of different taxation objects (real estates), as well as subjects (property owners and users). Setting of property tax requires use of special knowledge and capacity to work with variable data and data basis which very often is a challenge for small in size municipalities. Failure to establish a creditable tax base usually erodes taxpayer confidence; dampers compliance rates, and limits revenue performance [2]

The Law on Immovable Property Tax in Latvia was adopted in 1997, setting the basic principles of property taxation, taxable objects, tax relief, valuation, and information to be used, etc. [9]

In 2006 with adoption of Law on Cadastre valuation, issues were separated from general taxation legislation. Currently The Law On Immovable Property Tax also assigns local governments limited power for setting taxation policy within their jurisdiction with regard to taxation rate (from 2013) and objects of taxation (for imposing tax on auxiliary buildings of residential real estates), as well as allows the granting of relief for separate categories of taxpayers based on regulations issued by each municipality (such as for pensioners, the poor, repressed persons). The real property tax examines management capacity of local administrations and requires strong cooperation between involved partners, maintenance of the relevant tax (taxpayers) administration system and an appropriate data basis containing property related information. There are no unified property tax administration principles in Latvia. Local governments manage property taxation issues in accordance with their administrative capacity.

There are four main partners involved in the implementation of property tax in Latvia:

- The Ministry of Finance sets general principles and proposes appropriate legislative initiatives with respect to taxation);
- Ministry of Justice sets general principles and proposes appropriate legislative initiatives with respect to property valuation, property cadastre, as well as ownership registration (maintenance of the Unified Computerized Land Register);
- The SLS – Cadastre IS is responsible for the maintenance and performance of real estate mass valuation.

Local governments are responsible for the administration of property tax and revenue collection in their jurisdiction, development of local spatial planning documents and issuing building permits. It is also the duty of the local governments to determine land uses (land uses types) for taxation purposes. The determination of

land use types is based on permitted current land use in a relevant local territorial (spatial) plan or legally permitted use of the property. There is no unified developed classification of land uses for spatial planning in Latvia; otherwise the SLS uses their own classification code system (unified approach) for managing of land use types with regard of mass assessment in the Cadastre IS.

Due to crucial effect of spatial planning on real estate development, cooperation with the spatial planning policy setting authority in the Ministry of Environment and Regional Development and the construction process supervision authority in the Ministry of Economy also is required.

6 THE CURRENT PROPERTY MASS VALUATION SYSTEM AND PROPERTY RELATED DATA REGISTRATION SYSTEM; ITS CONNECTION WITH PROPERTY TAXATION

In Latvia property valuation was established along with the restoration of property rights and the development of a property data recording system. Market value based real estate valuation was gradually introduced from 1998 with the passage of the Law on Immovable Property Tax. Mass valuation is one of the responsibilities of the SLS along with the maintenance of Cadastre IS.

The basis for the setting of property tax is assessed values of real estate entered in official real estate data recording system – cadastre. The basis of value assessment is real property sales data. The establishing of property value for taxation also requires appropriate administrative resources; management, cooperation and an effective property related data system (see Fig.2). [2]

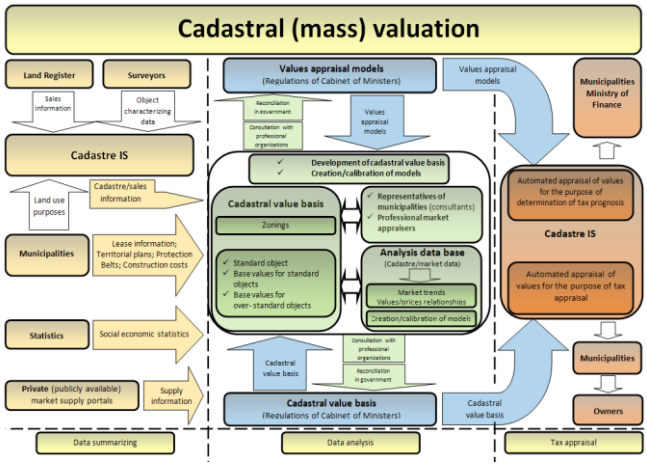


Fig. 2: Mass valuation performance in Latvia. [17]

The development of the mass valuation system demands continual improvements to achieve maximum quality with an efficient use of available resources.

The quality of the property assessment system is also determined by term accuracy, uniformity, equity, reliability, and a "low per-parcel cost system". [2] [4] Incomplete or obsolete property data in the registers is the main obstacle for accurate valuation performance or the introduction of improvements in mass valuation models. The three basic functions of a mass valuation system are revaluation, data maintenance, and value updates. [2]

Nowadays the functioning of the mass valuation system depends on the degree of automatization of the three interdependent subsystems:

- an administrative system;
- data management and system;
- data analysis and valuation system. [2]

The Computer Assisted Mass Appraisal (CAMA) system is commonly used for real estate valuation for tax estimation purposes in many countries around the world, since the use of computers and IT technologies became ordinary for performance of duties in large scale planning and data evaluation. CAMA is a generic term of any software package used by property assessment authority with regard to establishing real estate valuation for tax estimation purpose. The use of CAMA allows for the application of a systemic (automatic)

approach of appraisal to groups of properties at a given date using standardized procedures and statistical testing and analysis methods. [13]

CAMA approach is the most effective tool to perform mass valuation in the most efficient way in the complete sense of the term „efficiency". The use of CAMA ensures the performance of annual mass valuation and the update of properties values at the same tame on large number of the objects (usually on properties registered in the data base – cadastre) using common evaluation approaches (models), ensuring values accuracy, as well as "low per parcel" costs.

The Mass valuation system consists of mass appraisal applications of valuation models to real estate value. The spatial model and automated sales analysis are part of the modern property valuation system. The integration of GIS and CAMA enables the mass assessment function to be concurrent with relevant updated spatial data and supports the creation and maintenance of an accurate single property data repository with respect to each land parcel's geometry and descriptive data supporting workflow, updates, and mass appraisal input. GIS adds value to CAMA systems, such as an appraisal model, which can place added value on property that has, for example, a building located on coastline. If the parcel's description and spatial data are maintained in a geodatabase, location impact calculation is simple and easy using the spatial intelligence of GIS. [13]

CAMA or automatic (mass) valuation modules have been integrated into the Cadastre IS since 2001: mass assessment applies to all cadastral objects (land, buildings, engineering structures, premises) using accumulated cadastral information on specific property annually or whether data update takes place in the Cadastre IS. The source of cadastral information is land and building surveying cases.

The SLS for mass valuation purposes develops and updates the value (zoning) maps, determines value models for land and buildings, value bands (levels), and model parameters. GIS applications for value zonings are not developed yet, although GIS is the basis for the cadastral map in matters of property information.

Accurate valuation requires the SLS to keep strong cooperation with local governments, appropriate actual social economic statistics, reliable market data base, accurate data on encumbrances and property use, etc. The catalogue system is used in the Cadastre IS for the classification of land and building use types and encumbrances. The cadastre is often used by local tax administration authorities for setting of property tax, responses on complain, determination of land use for taxation purpose (land use type). Local building boards are use cadastre information as a basis for the development of local territorial plans and detail plans.

Since 1998 improvements in Latvia's valuation system have occurred several times. The most important changes to affect accuracy and low per-parcel costs have been connected with the development of appropriate software for valuation. In order to improve assessment accuracy and integrity, the valuation model has been improved several times taking into account the accumulated data in the Cadastre IS.

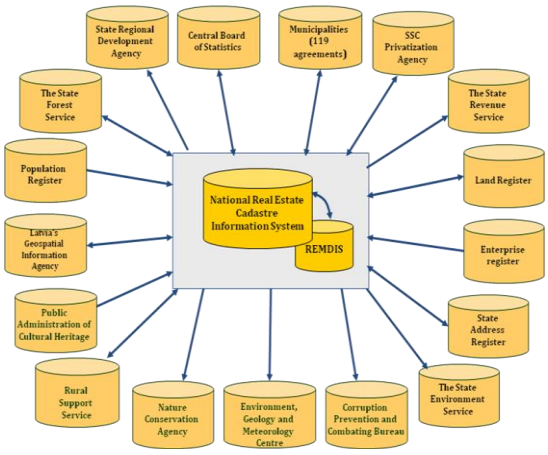


Fig. 3: Cadastre IS and its data exchange partners. [17]

In Latvia the Cadastre IS and the ownership register (the Unified Computerized Land Register) is maintained separately by different authorities – the SLS and the Latvian Court Administration. All real estate shall be

entered into the Cadastre IS – it is mandatory due to the fiscal function of the Cadastre IS. Securing of ownership can take place only after completion of cadastral activities in the Cadastre IS. Electronic information exchange takes place daily between the Cadastre IS and the Unified Computerized Land Register in regard to delivering actual sales prices for the maintenance of The Real Estate Market Data Information System. This system is the property market information (sales data) source for setting of mass value basis [10]

The assessment of values used for tax estimation and the cadastral surveying of buildings is the function of the SLS which maintains the largest state information system – Cadastre IS. Almost all Latvian registries are linked with the Cadatre IS [see Fig. 3].

The maintenance of an effective property tax administration and mass valuation system requires the efficient acquisition of information from several large-scale state maintained information systems, which contain property related technical and legal data such as:

- The Cadastre IS – land parcel and building spatial and descriptive data, surveying information, building valuation files, land and building use types, land value zonings, base values, the Real Estate Market Data Information System, encumbrances, etc.;
- The Unified Computerized Land Register – ownership and real estate market information;
- The State Address Register of the SLS – addresses, administrative units, administrative boarders;
- The State Forest Service Data Base – forest surveying data;
- The Rural Support Service Data Base – cultivated areas of arable land, etc.

Property mass assessment also requires local, regional and national social-economic statistics maintained by local governments and the Central Statistical Board of Latvia. Mass valuation system requires actual (permitted) land uses from local territorial plans maintained by local governments. Permitted land use types shall be entered in the Cadastre IS. The type of use has a decisive effect on the assessed value: base values used in assessment differ among different property uses within one valuation zone and can be considerable. Local governments also are responsible for assigning of adresses (names of administrative units, streets and estates) and the numeration of buildings. Address information shall be entered in State Address Register of the SLS.

The local municipal tax authority uses almost all information from Cadastre IS and from its cooperation partners for setting of property tax. These systems operate separately and require extra resources (time and work) from local municipalities for the purpose of obtaining necessary data and use this information for the input in tax administration. For example:

- the estimation of the volume of tax for each taxable real estate, local tax authorities use current mass assessment in the Cadastre IS;
- the list of taxpayers is maintained using actual residence data from the State Address Register and the Population Register with regard to the names of taxpayers and the addresses of legal entities from the Enterprise Register. Tax notices have been sent to the residences or entrepreneurship addresses of all relevant taxpayers at the beginning of each taxation year;
- tax reliefs request additional information about taxpayers that might be stored by other entities (such as the State Revenue Service), etc.

In order to better determine municipal administrative capacity, the Joint Municipal Information System has been developed, but this system is not in complete use yet.

In current the information exchange and circulation among registers is slow: technical information overlapped and registers very often contained similar records and inaccurate data. The Law on Cadastre obliges property owners to update information in the cadastre when changes to property take place (for example, building renovation impact on building cadastral information), but due to the complexity and costs of the process, this responsibility has not been completely completed.

The applied system requires an efficient system for taxpayers to receive actual information about properties and their values. Required cadastral data as well as assessed mass values are available for costumers in the data distribution portal of the SLS www.kadastrs.lv for a small fee. Several fee-free e-services, like “My data

in Cadastre", are available in the Latvian national portal www.latvia.lv. The information for clients also is provided at the regional offices of the SLS. [17]

7 THE PROPERTY RELATED DATA SYSTEM AND ITS CONNECTION TO PROPERTY TAXATION AND MASS VALUATION

The recent fiscal crisis has stimulated interest in new sources of revenue, including capturing immovable property price increments, and the improvements of property taxation in connection with mass valuation and cadastral information update were among highly recommended reforms of international lenders for the purpose to set better, fair taxation policy and to increase of municipal incomes in the recent economic crises context. [3]

With the implementation of common GIS solutions, many countries around the world have successfully performed integration of specific functions in information systems with real property registration and management to ensure efficient data use in various economic sectors and to reduce costs for data acquisition and maintenance. GIS solutions will focus on the exploration of new sources of information that would provide property data actuality and completeness, security, as well as to not increase registry maintenance costs. GIS applications implementation has shown a rapid increase in the use of spatial data in many countries (Denmark, Finland).

It is suggested that the INSPIRE directive implementation activities also be used in order to better property taxation and mass valuation performance.

In accordance with the INSPIRE directive, 34 data themes shall be covered and integrated into a new GIS system: almost all economic branches, professionals, entrepreneurs, researchers, tax authorities, property developers and managers, property owners and citizens will benefit from these new developments and will make spatial data more accessible for all users.

In Latvia two separate strategies were developed for the improvement of property tax policy and mass assessment, emphasizing better data accumulation, integrity and exchange among registers. The newly developed concept of mass valuation (2012) plans massive reforms in property related data management system for the purpose of improvement of valuation models and better performance of real property tax in near years. The new principles (directions) shall be implemented for the future development of mass valuation system and solving problems which disturbs the current system for full functioning; for example new solutions for:

- building information collection and update – the use of registration of building (structures) data from project (design) documents for new constructions and reconstructions in BIS and the use of self-assessment (owners declarations);
- determination of land use for property taxation purpose – the use combination information of TAPIS with Cadastre IS graphical (spatial) part for each land unit (indicating permitted land use, building intensity and density); use of building code (building classification) for determination of land use for built-up land units from the Cadastre IS textual (descriptive) data; connection of descriptive and spatial information for determination of multiple land use of land parcel;
- new data collection for the purpose of perfection of valuation of commercial properties – rental information collection in the market data base of Cadastre IS.

Consequently all of mentioned above solutions, the concept will require also strong cooperation among involved parties and early informing of society about coming improvements and their obligations with regards of data update in the registers. [1]

The three large-scale planned information systems will contribute to better the performance of mass valuation, resulting in better taxation policy, transparency of the system and cooperation among partners:

- The TDPIS will focus on requested standardized land use information from local territorial plans for mass valuation;
- The BIS will ensure the accumulation and updating of building data;

- SLS GIS will concentrate on cadastral data accuracy and interoperability with other information systems, integrated valuation models; appropriate analysis tools (local, national statistics, market data, etc.) for mass valuation performance, etc.

8 THE DEVELOPMENT OF THE STATE LAND SERVICE'S GEOSPATIAL DATA GEOSPATIAL INFORMATION SYSTEM

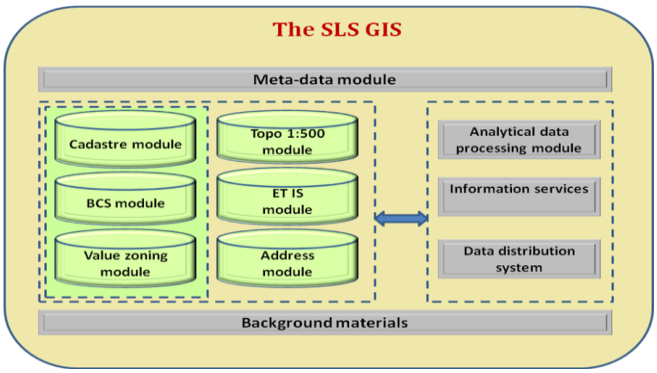
The aim of "The Development of the State Land Service's Geospatial Data Geospatial Information System" (SLS GIS) is:

to develop a joint system for the entry, storage and processing of SLS's geospatial information, by ensuring migration of geospatial information already stored in the SLS into the new system;

- to modernize SLS data distribution system;
- to ensure e-services to the society related with SLS geospatial data;
- to ensure information services to other organizations for the transfer of SLS geospatial data needed in order to fulfill their functions. [17]

With the development of the SLS GIS, the requirements of INSPIRE directive in the sphere of cadastral information, addresses, boundaries and buildings has been also implemented. [15]

It is planned within the frameworks of SLS GIS to develop new, centralized object oriented information system for SLS geospatial data, in which a joint spatial data base owned by the SLS will be logically integrated and stored: spatial data of the cadastre (including, the land value zonings, building cadastral surveying data); spatial data of the State Address Register; spatial data of administrative borders; topographical data on the scale of 1:500; data on protection zones from documents regarding the planning of territory; other data available for SLS. It is planned to integrate 6 data modules; to develop their meta-data module within SLS GIS. (see Fig.4)



Topo 500 module – Topographic information in scale 1:500 module BCS module – Building cadastral surveing module ET IS module – Encumbred Territories IS module Fig.4: SLS GIS structure. [17]

The background materials for maps will be ortho-photo maps; topographical data in scale of 1:2000 and 1:10 000; satellite maps and thematic maps owned by the SLS.

Data integration will be ensured by mutual linkage and integration in both the descriptive and spatial data of the SLS.

The two modules: the Value zoning module and the Building cadastral surveying module will be very important for better mass valuation performance and for improvement of CAMA. Other modules will also be important in matters of cadastral data and its quality (data used for mass valuation of real estates).

The Value zoning module will ensure connection of base value information with value zoning maps; the tool for correction of zoning maps using cadastral map elements; analysis features and development of thematic maps.

All land uses for valuation purposes will be obtained from TDPIS. For this and spatial planning purpose the unified classification of land uses will be developed and integrated within the system.

The building cadastral surveying module will allow:

- for the mutual exchange of building data with the future BIS;

- automatic creation of a building data file in the Cadastre IS and its storage within future digital archive system
- drawing of building layouts in connection with coordinate system and use of standardized modules, data control and correction and the automatic obtaining of cadastral descriptive data, etc. [17]

It is planned to launch SLS GIS in 2015. All customers of the SLS will receive benefits from this integrated approach, like a availability to new spatial data sets, a centralized high resolution topographic data base, information about encumbrances, single customers derived services (e-services and information services) and a data distribution system, analysis features, information services, availability of cadastral information in the national portal www.latvija.lv , e-services for cadastral surveying professionals with regard to the updating of thematic maps and the electronic ordering of services and information.

9 THE TERRITORIAL DEVELOPMENT PLANNING INFORMATION SYSTEM

The aim of future TDPIS is to create modern, GIS based systems for transparent spatial planning information storage, processing and sharing, territorial development and real estate and infrastructure management for the entire territory of Latvia in lieu of the current, autonomous, unconnected with actual property information planning systems of local municipalities. [14]

Within TDPIS the framework of the infrastructure system has been created that will include a spatial development module for the purpose of local territorial planning of local municipalities, where local land use graphic and descriptive data (information on current and planned land use, including development restrictions and encumbrances) will be stored.

TDPIS will contribute also to cover all territories of local municipalities and all property related information in the performance of municipalities' duties.

TDPIS will contain all of Latvia's planning system (national, regional, municipal plans, also detail plans and local plans), functional zonings, and all documentation on planning initiatives, activities and normative regulation.

There will be two stages to the implementation of the TDPIS:

(1) The first stage will cover a survey of the current situation and the development of requirements for future systems, development of the basic functionality of TDPIS module and the implementation of it as a pilot project in 5 municipalities to test TDPIS integration with other information systems, development of security and test requirements and the testing of the newly developed e-service „Information about legal land use of the real estate in accordance of local territorial plan". Currently, this stage is in its completion phase;

(2) The second stage will include TDPIS technical development, introduction, integration, software purchasing and users training; introduction of the module of monitoring and evaluation of regional development indicators and e-services on current land use, a land use plan browser, electronic certificates on the permitted use of land parcels, detail planning and use restrictions of properties as well as digitization of information resources.

Within TDPIS the unified land use classification will be developed and introduced for both spatial planning and property mass valuation purposes and will be used from the catalogue in both systems – TDPIS and SLS GIS. The Module of Indicators of Regional Development will be developed and integrated with TDPIS for the providing of actual statistics concerning selected territory and will be very usable for the SLS in evaluation of territories within determination of mass value basis (evaluation of social economic factors for mutual comparison of the territories). It is planned to lunch TDPIS in 2015 with other systems: SLS GIS and BIS. [14]

10 THE BUILDING INFORMATION SYSTEM

The BIS is among those Latvian GIS projects which will be implemented in close cooperation with SLS GIS, TDPIS and SRDA (the responsible institution for developing Latvia's national geo-portal) and local building authorities (such as Riga City Building Board). The purpose of the future BIS is to provide future electronic circulation, standardized collection and use spatial and descriptive information about constructions, it's planning and documentation, which in present is collected, maintained and used separately by different public and local authorities.

Through BIS access will be provided to information on professional organizations: the Construction Merchant Register, Builders and Architect Practice Certificate Registry, Register of Energy Auditors, Building Energy Efficiency Performance Certificates Register, Residential Housing Manager Registry, Building Inspectors registry, etc.

The BIS will provide the following significant interfaces to The National Information System Integrator, Geospatial Data Integrator, Population Register, Business Register, Cadastre IS of the SLS, State Address Register of the SLS, TDPIS, Unified Computerized Land Register and Joint Municipal Information System. Four new e-services will be developed and launched:

(1) Construction project (initiative) review;

(2) Issuing of building permission;

(3) Reconciliation of simplified reconstruction or renovation and Construction commissioning.

The development of construction monitoring functionality is also planned, including mobile application, reporting module, use of e-signature, use of branch statistics and normative documents, e-service features and on-line payment options, as well as the performance of industrial research – BIS implementation and testing of at least 30 local construction boards before the launching of its operation. [11]

It is planned to lunch the BIS also until 2015 with the TDPIS and SLS GIS. The introduction of BIS will be step forward to make access to the building process and its documentation transparent for all parties involved: public and municipal authorities; process supervisors; entrepreneurs and costumers. All documents and communication among clients and data exchange partners will be provided only in electronic form with the purpose of decreasing the existing administrative burden in dealing with building information from the issuing of planning permission to the registration of a newly developed building.

11 CONCLUTIONS

The implementation of qualitatively new national spatial data system is a great challenge for the enforcement of the design of Latvia's national spatial data infrastructure (national GIS), as well as for planned massive reforms in property taxation administration, mass valuation and the fast updating and registration of data in the Cadastre IS, which will lead to improvement in the quality of valuation and taxation of property. The enforced reforms in the development of Latvia's national spatial data infrastructure are in the early stage and will be completed only in the next few years.

In practice GIS creates new opportunities for updating spatial and descriptive data and for making the system transparent (clear) and interoperable. GIS solutions will focus on the exploration of new sources of information that will provide property data actuality, completeness and security without increasing registry maintenance costs.

In order to improve the situation and to prevent an unsatisfactory and inadequate state of the modern technology that provides opportunities in the sphere of geospatial information, it is necessary to work out the binding normative acts for all involved institutions, to standardize the acquisition, treatment and exchange processes of geospatial data, as well as to ensure distribution of geospatial data and to improve legislation. [5]

The implementation of INSPIRE is a great opportunity for Latvia to develop its large interoperable information GIS in accordance of required data structures of the directive, as well as to provide this systems interoperable in cross-border context through Europe.

The impact of the new GIS developments on the property tax administration system and property mass valuation can be estimated as:

(1) improved property data structure and determination of the land use (SLS GIS and TDPIS);

(2) better property valuation models using GIS modeling capabilities (SLS GIS, TDPIS, BIS);

(3) better transparency and public information (the property values, and its characteristic data in the Cadastre IS will be easy accessible online: valuations zones with attributed spatial and descriptive data, market information and statistics etc.).

The data accuracy and complete coverage in the registers will provide better performance of property taxation: accurate real estate values and faire taxes; more accurate taxable object data base (more accurate taxable building data); better informing of taxpayers, etc.

At the same time main contributions in the improvement of the SLS GIS will also contribute to the development of the largest IS based data base covering property spatial and descriptive data in the entire country; TDPIS will contribute to the storage of authorized information concerning planned and current land uses in each municipality, but BIS will provide a complete overview of every building construction process from project application to the construction operation, even includingfurther building improvements and other changes.

It is planned to provide within SLS GIS also cleavage (section) of different graphical data: cadastral maps with topographic information; remote sensing data – LIDAR and ortho-photo maps with the purpose to observe changes in land use structure. Recent tests have shown that the first (pilot) section cadastral map with topographic information allowed to determine almost 80 000 new building objects which had not previously been recorded in the Cadastre IS and might be earlier unidentified objects of taxation.

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