

## Литература

1. Сизов А. В. , Боярко Г. Ю. Современные проблемы супервайзинга работ по строительству и ремонту нефтегазовых скважин в РФ// Экспозиция Нефть Газ. - 2014 - №. 5 (37). - С. 55-57
2. Официальный сайт Российской Федерации в сети Интернет для размещения информации о размещении заказов на поставки товаров, выполнение работ, оказание услуг [Официальный сайт]. URL: <http://www.zakupki.gov.ru> (дата обращения: 28.08.2014)

**SUCCESSFUL CONDUCTING OF THE REAL ESTATE CADASTRE  
ON THE BASIS OF EXPERIENCE OF THE NETHERLANDS.****N. I. Kalacheva, T.M. Semyonova**

Research supervisor professor V. K. Popov

*National research Tomsk polytechnic university, Tomsk, Russia*

Understanding the importance of effective and rational management of the use of land resources, bodies of executive and legislature power of the Russian Federation are engaged in establishment of the uniform system of the cadastre conducting, development and standardization of the methodological basis of conducting the cadastre of various real estate units. Thus as a legislative, practical and theoretical basis the effectively working cadastral systems of foreign countries with normally functioning real estate market are taken. Practice shows that the direct transfer of experience of foreign countries to Russia doesn't achieve expected results, or absolutely doesn't get accustomed to our conditions due to the features and traditions which have been developed for centuries. Therefore, the detailed analysis of foreign cadastral systems and their historical formation is important today for the adaptation of the Russian historically developed national identities.

In this regard let's consider the experience of the developed countries on the grounds of successful system of the cadastre conducting, suggested by Dale Peter F. and John D. McLaughlin [1]. Let's add additional sections for the research of the cadastral system point by point that are actual today:

- taxation;

- investment;
- management and development of the electronic land administration;
- three-dimensional cadastre.

Let's consider and analyse the experience of conducting thereal estate cadastre ofthe Netherlands (table 1). As a comparison we chose just that very experience because it is logical both on structure, and system. Moreover, it is professionally conducted and is almost faultless in the theoretical and practical sense.

The Netherlands havea small area— 41,5 thousand m<sup>2</sup>. The country relief is generally made by coastal lowlands; rather big territories increase at the expense of the seas. The fourth part of the Netherlands is occupied by the urbanized and densely populated territories.

The Dutch cadastral geographical data set contains information on lines ofplots and their cadastral numbers, contours of buildings (for the reference purpose), names of streets and the location address of the real estate unit.

According to the cadastral registration of the private property right there are following 3D components of the registration:

- proprietary right;
- limitedproprietary right;
- the right of superficies;
- theright of long rent;
- rights of servitude;
- right of condominium;
- joint property.

In the recording system the unique code corresponds to each proprietary right.

The proprietary rights in the Netherlands are always related to superficial plots. Therefore, the real estate property is always established on the superficial plots. If no rights are established concerning the plot of land, there work the rules of vertical and horizontal addition. The vertical addition designates that the owner of a plot owns all the constructions and structures assigned to this plot. The horizontal addition, according to the Dutch Civil Code, the constructions which are in the ground are a part of the property according to the rule of the vertical addition, if only these constructions are not a part of other property. At the same time, it is impossible to build a construction which will be put into someone else's property without the consent of this property owner. Rules of the vertical and horizontal addition are the consequences of the actual situation and aren't approved by the rights, therefore in many cases they lead to conflicts. [2, 3]

Observance of the cadastre conducting principles allowed to unify spatial data of the Netherlands in the following format (fig. 3).

At the plot registration in a 2D format it is possible to consider units which are located on a surface. At a registration in a 3D format the possibility of the spatial accounting increases and it is possible to consider a great number of units located at different levels both above and below the ground surface at a time. Such accounting is perspective for the management of the survey mine working land resources, and also when drilling oil and gas wells.

Conclusion:

On the basis of the Netherlands experience analysis and the attempt of the theoretical introduction of this experience to the territory of Russia we allocated two priority directions of further development of the real estate cadastre of the country, namely:

1. Now there is a task to formalize the rights on all the lands of the Russian Federation to assign the rights on the real estate, to carry out a

guarantee of rights on these units, to make a real assessment of the real estate that will subsequently increase the tax, insurance, crediting and investment base. We will execute one of the "Cadastre 2014" provisions- " Cadastre 2014 will reflect a full legal status of lands, including the public rights and restrictions" [10] that will improve ability of the cadastral activities of the country to perception of new tasks.

2. Introduction of the uniform coordinate system (GCS 2011 (Geodetic Coordinate System 2011)) to the territory of the Russian Federation is a way to the high precision of coordinate measuring and, as a result, to theremoval of problems with impositions which now are met everywhere. (fig. 4)

**Table 1**  
***The general principles of the cadastre conducting in the Netherlands***

Signs of the successful cadastresystem	Conducting the Real Estate State Cadastre in the Netherlands	What is necessary to carry out in Russia, using the example of this country.
Data integrity: on units of the accounting; on the volume of the considered information	Continuity of the information updating. Constancy of the storage. Integrity of the description of a legal status of lands. Correspondence of the legal and documentary description of the unit and its spatial description on the cadastral maps.	It is necessary to carry out registration of all lands and real estate units in the Russian Federation.
Data accuracy and adequacy	Unity of the conducting technology. Functions of registration of the rights on land and cadastre are assigned to one organization.	Now such unification is carried out.
Connection with the coordinate system: uniform for the registration district; with the national coordinate system	Cadastral maps marked with the coordinate grid of the country. The cadastral map contains about 300 million couples of coordinates and is strictly conformsto a large-scale basic topographic map of the Netherlands.	In our country the local coordinate system is introduced. It complicates connection of the real estate units on borders of the federal districts. (Fig. 6) It is necessary to carry out land and cadastral work in the coordinate system operating on the territory of all country, for example, GCS 2011 which will be applied everywhere from January 1, 2017. Accuracy of newlyintroducedcoordinate systems is increased not less than by an order of magnitude from units of decimeters to units of centimeters. With the same accuracy these systems are conformed together and with the international geocentric coordinate system.

The three-dimensional cadastral systems	In Holland it is applied more than 5 years and such system completely proved its value and now works on introduction of the 4D cadastral system in progress [6, 7]	On the territory of Russia, only as the "pilot" project for a while, it is introduced in the Nizhny Novgorod Oblast. [8,9]
Ability to perception of new tasks	Introduction of the cadastral 4D model, this is a formation of cadastral documents taking into account change of units in time. [5]	In Russia for a start it is necessary to consider all the real estate units.
Simple and clear accounting rules	Legal basis of the cadastral relations regulation make the Civil code of the Netherlands, the General law on administrative law, the Law on territorial planning, The Environmental Law, the surface-water contamination Law, the soil protection Law, the noise pollution control Law and the Decree on quality of air in the Netherlands, and other standard acts and instructions [4]	It is necessary to publish the fundamental laws to which in practice no other by-laws, federal laws, government regulations, etc contradict.
Possibility of the connection to other databases	Basic spatial data are obligatory for use by all organizations. The data collection, similar to registers data is forbidden. Thereby the possibility of duplication of works is excluded. (Fig. 3)	Works in this direction in our country are in progress now, for example, creation of the XML (eXtensible Markup Language) format for data presentation to the Federal Service for State Registration, Cadastre and Cartography (Rosreestr).
Investment and crediting	Increase of the state guarantees of the proprietary rights on the real estate, uniform approaches to formation and inventory of the real estate units, the uniform information system on its units, mechanisms of information exchange between the land cadastre and information systems on buildings, structures and rooms. The registered property acts as a guarantor for the investors and creditors.	Registration of all real estate units and rights is necessary. The information must be transparent and continuously updated.
Simple and clear accounting rules	Legal basis of the cadastral relations regulation make the Civil code of the Netherlands, the General law on administrative law, the Law on territorial planning, The Environmental Law, the surface-water contamination Law, the soil protection Law, the noise pollution control Law and the Decree on quality of air in the Netherlands, and other standard acts and instructions [4]	It is necessary to publish the fundamental laws to which in practice no other by-laws, federal laws, government regulations, etc contradict.

Taxation	Land registers, land and cadastral maps represent well operating, efficient and universal system. Information is continuously updated and it is possible to consider information both above and below the ground surface simultaneously with other units.	Introduction of the 3D cadastre is necessary, therefore underground services and surface construction, for example hinged balconies, etc. will be considered. It will increase tax base since today not all similar units are considered because of the impossibility according to the current legislation.
Electronic land administration,	Cadastral registers and maps are completely transferred to a digital format that reduces time when performing operational tasks. General idea about Land and information systems of border, identifiers of the land plots, addresses, buildings, numbers of houses, geodetic reference points, characteristics of plots.	Today in Russia work on information digitisation is carried out, but practical realization of these principles is introduced only half. (For example, experts still need to scan many map materials; information of SGN (State Geodetic Network) is held on papers and isn't all still transferred to an electronic format)

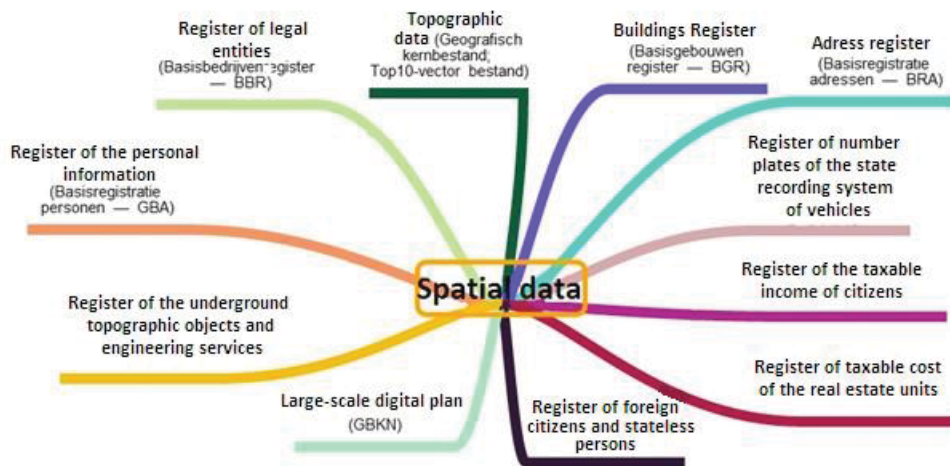


Fig. 3 Basic spatial data of the Netherlands

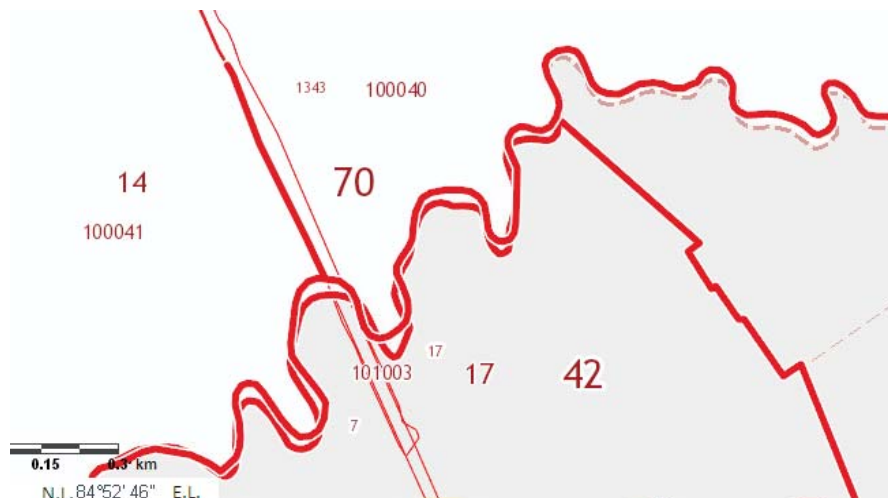


Fig. 4 Border of Tomsk and Kemerovo areas on the public cadastral map (we can see the crossing of two borders, though they had to coincide!)

## References

1. Dale Peter F. John D. McLaughlin Land Administration (Spatial Information Systems and Geostatics Series) // New York: Oxford University Press, March 23, 2000 - 184 p.
3. Jantine Esther Stoter. 3D Cadastre// NCG, Nederlandse Commissie voor Geodesie, Delft, July, 2004 - 342 p
4. Jantien Stoter. 3D Cadastre. – PhD Thesis TU Delft, Publications on Geodesy 57, Netherlands Geodetic Commission, Delft, 2004. – 327 p.
5. Paul Van der Molen and Martin Wubbe. E-Government and E-Land Administration. As an example: The Netherlands // Coastal Areas and Land Administration – Building the Capacity 6th FIG Regional Conference San José, Costa Rica 12–15 November 2007, pp. 1-13
6. Fatih Döner, Rod Thompson, Jantien Stoter, Christiaan Lemmen, Hendrik Ploeger, Peter van Oosterom and Sisi Zlatanova. Solutions for 4D cadastre – with a case study on utility networks // International journal of geographical information science, Vol. 25, No. 7, July 2011. – pp. 1173-1189
7. Jantien Stoter, Peter van Oosterom and Hendrik Ploeger. The Phased 3D Cadastre Implementation in the Netherlands. // Proceedings 3rd International Workshop on 3D Cadastres, 2012, Shenzhen. – pp. 201-218.
8. Jantien Stoter, Hendrik Ploeger and Peter van Oosterom. 3D cadastre in the Netherlands: Developments and international applicability // 3D Cadastres II, special issue of Computers, Environment and Urban Systems, Volume 40, July 2013. – pp. 56-67.
9. Снежко И.И. Сравнительный анализ создания 3D-кадастра в России и Нидерландах // Известия вузов. Геодезия и аэрофотосъемка. – 2013. – №4. – С. 100–104. (Snezhko I.I. Comparative analysis of 3D-cadastre creation in Russia and the Netherlands // News of universities. Geodesy and air survey. -2013. – №4. – P. 100–104.)
10. Jantien Stoter, Peter van Oosterom. 3D Cadastre in an International Context: Legal, Organizational, and Technological Aspects //
8. J.E. Stoter, P.J.M. Van Oosterom, R. Wouters, L.J.M. Jansen Current developments in 3D cadastre with examples from the Netherlands and the Russian Federation // Proceedings 1st Serbian Geodetic Congress, Belgrade, Serbia, 1-3 December 2011. – 10 p.
9. Jürg Kaufmann • Daniel Steudler with the Working Group 1 of FIG Commission 7 «Cadastre 2014» // Kuhn Druck AG, CH-8212 Neuhausen am Rheinfall, Switzerland, July 1998.