

UDC 34

Structural strategy of formation of equilibrium legal regulation of remote monitoring of agricultural lands**Trevor I. Manovich**

PhD, Associate Professor,
Florida Institute of Technology,
FL 32901, 150 W University blvd, Melbourne, United States of America;
e-mail: Manovich@blvd.edu

Abstract

Concretization of urban planning forecast to the level of planning comes at its second stage, which in the Urban planning code of the Russian Federation is called the regulation of urban settlements. Planning projects are developed for each stage of the territory development (construction and reconstruction). The planning project is carried out for the territories covered by the next scheme of placement of priority construction. At this stage, the territorial localization of the decision taken at the previous stages of the urban planning forecast takes place again – only a part of the territory envisaged by the scheme of placement of priority construction is considered in the planning project. The layout design is being developed on an even larger scale (1:2000). It is at this stage that the placement of all buildings is shown for the first time, but not definitively. The information used for the purposes of urban forecasting and design is divided into three types: directive, based on legislative acts; - analytical, based on statistical, planning, design, research materials; cartographic. Each type of information has its purpose. Directive information is mandatory for forecasting at any level. Analytical information is Advisory in nature, it is usually not used directly, and after additional processing, cartographic information serves as a graphical basis for drawings and special calculations.

For citation

Manovich T.I. (2019) Structural strategy of formation of equilibrium legal regulation of remote monitoring of agricultural lands. *Voprosy rossiiskogo i mezhdunarodnogo prava* [Matters of Russian and International Law], 9 (2B), pp. 359-367.

Keywords

Remote sensing, formation, system, agricultural sector, law, regulation.

Introduction

The planning project is a town-planning document developed for a part of the city territory and defining the following elements of the planning structure in accordance with the general plan: red lines and lines of regulation of building; boundaries of land plots (if the project of land surveying is not developed); placement of objects of social and cultural services of the population; density of building parameters; parameters of streets, driveways, pedestrian areas, as well as structures and communications of transport, communications, engineering equipment and landscaping.

Land surveying projects are developed for built-up or subject to development areas within the boundaries of the red lines. Surveying of public areas is not carried out.

The size of land plots within the boundaries of built-up areas shall be established taking into account the actual land use and town-planning standards in force at the time of construction. The revealed surplus of the territory is allocated for construction of real estate objects corresponding to town-planning regulations. Thus, the project of land surveying is a way of finding the reserves of the territory for urban development in the previously built-up area. Norms of granting land plots are established by local public authorities in accordance with the rules of development.

Further specification of urban planning decisions in space and time occurs at the stage of the development project. Building projects can be developed not only by order of local governments, but also on the initiative of the developer [Wang, 2012]. They cover the territory of neighborhoods, neighborhoods and other elements of the planning structure. In building projects are defined: building control lines; location of buildings and structures, their type, number of storeys and other characteristics; architectural design of the building; systems of the engineering equipment and communication and conditions of connection to the corresponding communications, system of improvement of the territory; organization of traffic and pedestrians; - public areas.

Main part

The structure of the city plan is the mutual arrangement of all architectural and planning elements, which determines the formation of the city as a single urban planning element.

The need for territory for the city is determined taking into account the location and future development of objects of all types of construction (urban functions).

Depending on the purposes of use, urban zoning can be carried out on the most characteristic features: location, belonging to a particular user, the degree of development, functional purpose, etc. depending on the type of initial elements of the urban plan and the type of use of the results of structuring are distinguished [Chelysheva, Verenich, 2009]: functional zoning; administrative zoning – planning zoning.

Zoning

For the purposes of forecasting, ensuring the rational organization of urban areas, the most suitable classification on a functional basis [Ameti, Kuka, Ajvazi, Cikaqi, 2011]. Functional zoning implements the most important functions of human life: work, life, rest, movement. Functional zoning is designed to solve one of the main tasks of urban planning forecast-to link the urban function with a specific territory to it, to determine the degree of their quantitative and qualitative mutual correspondence. It is at the stage of functional zoning that the question of the territorial resource of the city is solved.

For the early stages of the urban development forecast (for example, at the level of territorial complex schemes), especially for the preliminary assessment of urban territorial resource, in

accordance with paragraph 1.7 SNiP 2.07.01-89 area urban predominant use is divided into three main types: residential, industrial and landscape-recreational [Wang, Zhou, 2011]. For later stages of the forecast, this approach is not always justified, since in the phase of the concept master plan is given a discrete representation of the structure of urban land (for example, within residential allocated areas residential, public and business zones, zones of engineering and transport infrastructures, etc.), and in this case more appropriate is the allocation of functional zones in accordance with the construction code [Chen, Liao, Wu, Wang, 2012].

Residential district

The residential area is intended for housing, public buildings and structures, including research institutes and their complexes, as well as individual municipal and industrial facilities that do not require sanitary protection zones; for the device of intra-city communication routes, streets, squares, parks, gardens, boulevards and other common areas. This type of territory includes neighborhoods and residential areas, public service facilities and green spaces of citywide importance, transport areas and Parking lots [Xu, Dai, Xu, 2011].

Production area

Production areas are intended for placement of the industrial enterprises and the objects connected with them, complexes of research institutions with their experimental productions, municipal and warehouse objects, constructions external transport, non-city and suburban routes [Harris, Hodza, 2011].

Objects associated with industrial enterprises include industrial, storage facilities, energy facilities, sanitary protection zones, public centers of municipal importance.

Communal storage facilities include bases and warehouses, garages, tram and trolleybus depots, bus parks, etc. [Chelysheva, Verenich, 2010].

The territory of external transport includes the territory where transport devices and facilities (passenger and cargo stations, ports, wharves, etc.) are located [Chelysheva, Verenich, 2010].

Landscape and recreational area

This type of territory includes urban forests, forest parks, forest protection zones, reservoirs, agricultural lands and other lands, which together with parks, gardens, squares and boulevards, located on the residential territory, form a system of open spaces. This whole system of parks, beaches and other recreational facilities is located within the city limits [Verenich, 2015].

Territories that are not included in the main zones are allocated as others (nurseries, farms, cemeteries, sanitary facilities, inconvenient land).

In pure form, these zones are rarely created, mainly in new cities. In most cities, the type of zone is determined by the preferential placement of objects of a certain functional value in it [Fichera, Modica, Pollino, 2011]. When forming these zones it is forbidden to provide in them objects which joint placement is not allowed sanitary-hygienic, fire-prevention and technical rules. For example, in a residential area it is impossible to place industrial enterprises of I-IV classes.

Use site is defined in the zoning systems included in the developed city planning documents, as development, and development planning [Bill, Nash, Grenzdörffer, 2012]. Before the development of functional zoning schemes, restrictions are established for the implementation of urban planning activities in certain areas of the territory in relation to all types of urban functions [Chen, Li, Wang, 2012].

Features of use of territories

Zoning of the territory is aimed at ensuring a favorable environment for life, protection of territories from the adverse effects of natural and man-made emergencies, prevention of excessive concentration

of population and production, pollution of the natural environment, protection and use, including natural landscapes, territories of historical and cultural objects, forest lands, etc.

Restrictions for use of territories for the purposes of town-planning activity are established for the following zones: areas of protection of historical and cultural monuments, protected areas; zones of specially protected natural territories; sanitary, protective and sanitary protection zones; water protection zones and coastal protection strips; sanitary protection zones of water supply sources; zones of occurrence of minerals; areas exposed to emergency situations; natural and technogenic character; areas of environmental emergencies and environmental disasters'; zones with extreme climatic conditions.

Taking into account the restrictions on the use of territories, the functional purpose of the territories and the intensity of their use are determined. Data on the use of territories and established zones and restrictions on their use are included in the building regulations.

When planning the development of urban areas, the correct mutual placement of functional zones is important.

So, residential areas should occupy the most favorable areas in the city-dry, elevated, well-insulated, close to green areas and reservoirs. In relation to the industrial zone, residential areas should be located to windward and upstream.

It is recommended to place the industrial zone on the territory with a calm relief, providing it with convenient transport links with the places of settlement of workers employed at the enterprise and objects of external and urban transport. It is desirable to bring the communal and warehouse zone closer to the industrial areas of the city, using inconvenient and unsuitable for construction land and sanitary protection zones industrial enterprises and other facilities.

The zone of external transport should be linked to the street and road network of the city. Railway stations should be located on the side of the main part of the residential area, providing convenient transport links with the citywide center, residential and industrial areas.

Recreational zone is advisable to provide for areas of green areas and reservoirs, closer to the periphery of the city, but taking into account convenient transport links.

Proper functional zoning ensures: protection of the urban environment; rational use of urban areas; a more economical expenditure of funds for urban construction; the most favorable living conditions of the population.

To a large extent, the positive effects of functional zoning are achieved thanks to the scientifically justified rationing of territories for functional zones [Sui, Goodchild, 2011].

Administrative zoning

Administrative zoning provides for the division of the city into administrative districts. The purpose of administrative zoning is to ensure the management of urban areas and city-forming objects. Such areas are allocated only in large and largest cities. In super-large cities, administrative districts can be created, combining several administrative districts. Administrative regions, and even more so districts, include, as a rule, elements of all functional zones.

Planning zoning

Planning zoning is carried out by design urban planning institutes in the development of projects of master plans of cities and their districts [Yan, Wang, Zhang, 2013]. Such zoning is necessary for the rational placement of all elements of urban development, ensuring the best living conditions of the population and the formation of an expressive architectural appearance.

When planning residential development, as a rule, there are two levels of structural organization of the residential area: the neighborhood and the residential area.

Microdistrict (quarter) is a structural element of residential development with an area of not more than 80 hectares, not dissected by main streets and roads. Borders, as a rule, are main or residential streets, driveways, pedestrian paths, natural boundaries.

A residential area is a structural element of a residential area with an area of 80 to 250 hectares within which a part of the objects of citywide importance is located. Borders, as a rule, are difficult to overcome artificial and natural boundaries, main streets and roads of citywide importance [Wang et al., 2011].

Several residential areas, United by a complex of cultural and cultural institutions of occasional use, represent a qualitatively different structural unit-the planning area.

In the planning area, unlike other structural elements of the city, the presence of city-forming objects is mandatory and a balance of labor resources and jobs provided is desirable. The boundaries of the planning area may coincide with the boundaries of the administrative area, but this is not necessary.

Planning structure of cities is affected by: the size of the city, its political and administrative significance and role in the system of inter-settlement cultural and consumer services, industrial specialization of the city, the defining features of the place of employment; natural environment; the period of formation of the city (new, existing, emerging).

For large and largest cities, all planning elements are possible, in small and medium-sized cities-microdistricts and residential areas. In ultra-large cities, planning areas are usually combined into planning zones of up to 1 million people.

With rugged terrain and extreme climatic conditions (low temperatures and strong winds), residential groups are formed instead of the neighborhood; with calm terrain and under normal climatic conditions, intermagistral territories (territories limited by highways of citywide and district significance) are formed.

Classification of urban areas

The territory for the construction of a new or reconstruction of an existing city should be sufficient to accommodate construction projects of all kinds, taking into account their prospective development. The outer boundary of a city's land is the city line that separates the city's land from the land of other users [Gregoretti, Furlan, Degetto, 2011].

The city line is the boundary of the city lands transferred to the city for building, improvement, sanitary protection and other needs. It is established on the basis of the project of city line or as a part of the General plan of the city taking into account prospects of its development.

The town-planning code of the Russian Federation defines the following composition of lands included in the city limits: residential area; public and business areas; plant site; areas of engineering and transport infrastructure; recreational area; agricultural use areas; special purpose areas; area military facilities and other areas of sensitive areas.

In territorial zones, subzones may be allocated, the features of the use of which are determined by the town-planning regulations, taking into account the restrictions on their use in accordance with the current land legislation. Territorial zones may include common areas occupied by squares, streets, boulevards and other objects. Public areas are designed to meet the public interest of the population. The procedure for the use of public areas is determined by local governments.

Residential area

Residential areas are designed for building multi-apartment multi-storey residential buildings, residential buildings of medium and small storeys, individual residential buildings with homesteads. In residential areas it is allowed to place free-standing, built-in or attached objects of social and cultural

services, religious buildings, Parking lots of motor transport, industrial utilities, storage facilities that do not require the establishment of sanitary protection zones and whose activities do not have a harmful impact on the environment (noise, vibration, magnetic fields, radiation, soil, air, water pollution and other harmful effects). To the residential zones are also a horticultural suburban cooperatives located within the city boundaries (lines).

Public and business areas

Public business zones are intended for placement of objects of health care, culture, trade, public catering, consumer services, commercial activity, and also educational institutions of secondary professional and higher education, research institutions, religious buildings and other buildings, constructions, Parking of motor transport, centers of business, financial and public activity. Residential buildings, hotels, underground and multi-storey garages can be included in the list of real estate objects allowed for placement in public business zones.

Plant site

Production zones are intended for placement of industrial, municipal and warehouse objects, engineering and transport infrastructures, and also for establishment of sanitary protection zones of such objects. In sanitary-protective zones of industrial, municipal and warehouse objects placement of houses, preschool children's educational institutions, health care institutions, recreation institutions, sports and recreation facilities, horticultural, country and garden cooperatives, and also production of agricultural products is not allowed.

Areas of engineering and transport infrastructure

Zones of engineering and transport infrastructures are intended for placement and functioning of constructions and communications of railway, automobile, river, sea, air and pipeline transport, communication, engineering equipment. Facilities and communications of transport, communications, engineering equipment, the operation of which has a harmful impact on the safety of the population, located outside the city limits.

Recreational area

Recreational areas are designed to organize recreation areas for the population and include parks, gardens, urban forests, forest parks, beaches and other facilities. Construction and expansion of existing industrial, municipal and warehouse facilities not related to the operation of recreational and recreational facilities is not allowed on the territories of recreational zones.

Zone for agricultural purposes

Within urban settlements (city limits) can be allocated agricultural areas occupied by arable land, gardens, vineyards, hayfields, gardens, pastures, as well as agricultural buildings, structures, structures. Territories of the specified zones can be used for the purposes of agriculture till the moment of change of their type of use according to the general plan and rules of building.

Special purpose areas

Special purpose zones are allocated for placement of cemeteries, crematoria, animal burial grounds, dumps of household waste and other objects, the use of which is incompatible with the use of other territorial zones of cities. The order of use of territories of zones of special purpose is established by rules of building taking into account requirements of the state standards and rules, special standards.

Area military facilities and other sensitive areas within the Zone of military installations and other sensitive areas of the territories intended for placing of objects in respect of which a special regime of use. The order of use of the specified territories within city limits is established by Federal Executive authorities in coordination with local governments according to the state town-planning standards and rules, special standards and rules of building [Cao, Zou, Yi, 2011].

The above classification of urban areas by type of use is not the only one. In addition urban areas can be classified by location relative to the center: central zone; middle zones; peripheral zone.

There is also a classification of urban areas according to the degree of development: areas within urban development; areas outside of urban development.

Conclusion

The information used for the purposes of urban forecasting and design is divided into three types: directive, based on legislative acts; - analytical, based on statistical, planning, design, research materials; cartographic.

Each type of information has its purpose. Directive information is mandatory for forecasting at any level. Analytical information is Advisory in nature, it is usually not used directly, and after additional processing, cartographic information serves as a graphical basis for drawings and special calculations.

References

1. Ameti P., Kuka Y., Ajvazi B., Cikaqi I. (2011) A web-GIS model for vineyard cadastre in Kosovo. In: 11th International Multidisciplinary Scientific Geoconference and EXPO – Modern Management of Mine Producing, Geology and Environmental Protection, SGEM 2011, 2, pp. 591-598.
2. Bill R., Nash E., Grenzdörffer G. (2012) GIS in agriculture. Springer Handbook of Geographic Information. Available at: https://doi.org/10.1007/978-3-540-72680-7_24 [Accessed 18/12/2019].
3. Cao Y.-J., Zou Y.T., Yi S. (2011). Urban spatial expansion and traffic pulsation based on GIS: A case study of Xuzhou. In: Proceedings of the International Conference on Uncertainty Reasoning and Knowledge Engineering, URKE 2011, 2, pp. 242-245. Available at: <https://doi.org/10.1109/URKE.2011.6007879> [Accessed 14/12/2019].
4. Chelysheva O.V., Verenich I.V. (2009) Problemy ispol'zovaniya spetsial'nykh znaniy v forme zaklyucheniya i pokazanii spetsialista pri rassledovanii prestuplenii [Problems of using special knowledge in the form of a conclusion and testimony of a specialist in the investigation of crimes]. *Kriminalist* [Criminalist], 1(4), pp. 80-82.
5. Chelysheva O.V., Verenich I.V. (2010) Problemy naznacheniya sudebnoi ekspertizy i otsenki ee rezul'tatov [Problems of the appointment of a forensic examination and evaluation of its results]. *Kriminalist* [Criminalist], 1(6), pp. 77-81.
6. Chen J., Li C., Wang J. (2012) Station's network planning and optimization research of automated observation & forecasting system of hydrological regime based on GIS technology. In: 2012 2nd International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2012 - Proceedings. Available at: <https://doi.org/10.1109/RSETE.2012.6260736> [Accessed 14/12/2019].
7. Chen W., Liao J., Wu X., Wang K. (2012) Research and application of 3D GIS technology on the delineation and management of urban drinking water source protection area. In: 2012 International Symposium on Geomatics for Integrated Water Resources Management, GIWRM 2012. Available at: <https://doi.org/10.1109/GIWRM.2012.6349559> [Accessed 19/12/2019].
8. Fichera C.R., Modica G., Pollino M. (2011) GIS and remote sensing to study urban-rural transformation during a fifty-year period. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 6782, pp. 237-252. Available at: https://doi.org/10.1007/978-3-642-21928-3_17 [Accessed 17/12/2019].
9. Gregoretti C., Furlan M., Degetto M. (2011) GIS-based cell model for simulating debris flow routing and deposition phases on a fan. In: International Conference on Debris-Flow Hazards Mitigation: Mechanics, Prediction, and Assessment, Proceedings, pp. 425-434. Available at: <https://doi.org/10.4408/IJEGE.2011-03.B-048> [Accessed 10/12/2019].
10. Harris T.M., Hodza P. (2011) Geocollaborative soil boundary mapping in an experiential GIS environment. *Cartography and Geographic Information Science*, 38(1), pp. 20-35. Available at: <https://doi.org/10.1559/1523040638120> [Accessed 14/12/2019].
11. Sui D., Goodchild M. (2011) The convergence of GIS and social media: Challenges for GI Science. *International Journal of Geographical Information Science*, 25(11), pp. 1737-1748. Available at: <https://doi.org/10.1080/13658816.2011.604636> [Accessed 11/12/2019].
12. Verenich I.V. (2015) Massovye besporyadki kak sostavnaya chast' prestuplenii ekstremistskoi napravlenosti [Mass riots as an integral part of extremist crimes]. *Kriminologiya: vchera, segodnya, zavtra* [Criminology: yesterday, today, tomorrow], 1(36), pp. 65-68.
13. Wang C. et al. (2011) Experimental study on development characteristics of point discharge in GIS. *Power System*

Technology, 35(11), pp. 157-162.

14. Wang X., Zhou H. (2011) The design of police-using information system based on GIS. *Communications in Computer and Information Science*, 215, pp. 500-506. Available at: https://doi.org/10.1007/978-3-642-23324-1_81 [Accessed 15/12/2019].
15. Xu C., Dai F.-C., Xu X.-W. (2011) Earthquake triggered landslide susceptibility evaluation based on GIS platform and weight-of-evidence modeling. *Earth Science – Journal of China University of Geosciences*, 36(6), pp. 1155-1164. Available at: <https://doi.org/10.3799/dqkx.2011.122> [Accessed 14/12/2019].

Структурная стратегия формирования равновесного правового регулирования дистанционного мониторинга земель сельскохозяйственного назначения

Манович Тревор И.

Кандидат наук, доцент,
Флоридский технологический институт,
FL 32901, Соединённые Штаты Америки, Мельбурн, W University blvd., 150;
e-mail: Manovich@blvd.edu

Аннотация

Конкретизация градостроительного прогноза до уровня планирования наступает на второй его стадии, которая в Градостроительном кодексе РФ называется регулированием застройки городских поселений. Проекты планировки разрабатываются для каждого этапа развития территории (строительство и реконструкция). Проект планировки разрабатывается для территорий, на которые распространяется очередная схема размещения приоритетных сооружений. На этой стадии снова происходит территориальная локализация решения, принятого на предшествующих этапах градостроительного прогноза. В проекте планировки рассматривается лишь часть территории, предусматриваемой схемой размещения первоочередного строительства. Именно на этом этапе размещение всех зданий показано впервые, но не окончательно. Информация, используемая в целях городского прогнозирования и проектирования, подразделяется на три типа: директивы, основанные на законодательных актах; аналитическая, основанная на статистических, планировочных, конструкторских, исследовательских материалах; картографическая. Каждый тип информации имеет свое назначение. Директивная информация обязательна для прогнозирования на любом уровне. Аналитическая информация носит рекомендательный характер, обычно она не используется напрямую, и после дополнительной обработки картографическая информация служит графической основой для чертежей и специальных расчетов.

Для цитирования в научных исследованиях

Манович Т.И. Structural strategy of formation of equilibrium legal regulation of remote monitoring of agricultural lands // *Вопросы российского и международного права*. 2019. Том 9. № 2В. С. 359-367.

Ключевые слова

Дистанционное зондирование, образование, система, аграрный сектор, право, регулирование.

Библиография

1. Чельшева О.В., Веренич И.В. Проблемы использования специальных знаний в форме заключения и показаний специалиста при расследовании преступлений // *Криминалистика*. 2009. № 1 (4). С. 80-82.
2. Веренич И.В. Массовые беспорядки как составная часть преступлений экстремистской направленности // *Криминология: вчера, сегодня, завтра*. 2015. № 1 (36). С. 65-68.
3. Чельшева О.В., Веренич И.В. Проблемы назначения судебной экспертизы и оценки ее результатов // *Криминалистика*. 2010. № 1 (6). С. 77-81.
4. Ameti P., Kuka Y., Ajvazi B., Cikaqi I. A web-GIS model for vineyard cadastre in Kosovo // 11th International Multidisciplinary Scientific Geoconference and EXPO – Modern Management of Mine Producing, Geology and Environmental Protection, SGEM 2011. 2011. No. 2. P. 591-598.
5. Bill R., Nash E., Grenzdörffer G. GIS in agriculture. Springer Handbook of Geographic Information. 2012. Available at: https://doi.org/10.1007/978-3-540-72680-7_24 [Accessed 18/12/2019].
6. Cao Y.-J., Zou Y.T., Yi S. Urban spatial expansion and traffic pulsation based on GIS: A case study of Xuzhou // *Proceedings of the International Conference on Uncertainty Reasoning and Knowledge Engineering, URKE 2011*. 2011. No. 2. P. 242-245. Available at: <https://doi.org/10.1109/URKE.2011.6007879> [Accessed 14/12/2019].
7. Chen J., Li C., Wang J. Station's network planning and optimization research of automated observation & forecasting system of hydrological regime based on GIS technology // 2012 2nd International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2012 – Proceedings. 2012. Available at: <https://doi.org/10.1109/RSETE.2012.6260736> [Accessed 14/12/2019].
8. Chen W., Liao J., Wu X., Wang K. Research and application of 3D GIS technology on the delineation and management of urban drinking water source protection area // 2012 International Symposium on Geomatics for Integrated Water Resources Management, GIWRM 2011. 2012. Available at: <https://doi.org/10.1109/GIWRM.2012.6349559> [Accessed 19/12/2019].
9. Fichera C.R., Modica G., Pollino M. GIS and remote sensing to study urban-rural transformation during a fifty-year period. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*. 2011. No. 6782. P. 237-252. Available at: https://doi.org/10.1007/978-3-642-21928-3_17 [Accessed 17/12/2019].
10. Gregoretti C., Furlan M., Degetto M. GIS-based cell model for simulating debris flow routing and deposition phases on a fan // *International Conference on Debris-Flow Hazards Mitigation: Mechanics, Prediction, and Assessment, Proceedings*. 2011. P. 425-434. Available at: <https://doi.org/10.4408/IJEGE.2011-03.B-048> [Accessed 10/12/2019].
11. Harris T.M., Hodza P. Geocollaborative soil boundary mapping in an experiential GIS environment. *Cartography and Geographic Information Science*. 2011. No. 38(1). P. 20-35. Available at: <https://doi.org/10.1559/1523040638120> [Accessed 14/12/2019].
12. Sui D., Goodchild M. The convergence of GIS and social media: Challenges for GI Science. *International Journal of Geographical Information Science*. 2011. No. 25(11). P. 1737-1748. Available at: <https://doi.org/10.1080/13658816.2011.604636> [Accessed 11/12/2019].
13. Wang C. et al. Experimental study on development characteristics of point discharge in GIS. *Power System Technology*. 2011. No. 35(11). P. 157-162.
14. Wang X., Zhou H. The design of police-using information system based on GIS. *Communications in Computer and Information Science*. 2011. No. 215. P. 500-506. Available at: https://doi.org/10.1007/978-3-642-23324-1_81 [Accessed 15/12/2019].
15. Xu C., Dai F.-C., Xu X.-W. Earthquake triggered landslide susceptibility evaluation based on GIS platform and weight-of-evidence modeling. *Earth Science – Journal of China University of Geosciences*. 2011. No. 36(6). P. 1155-1164. Available at: <https://doi.org/10.3799/dqkx.2011.122> [Accessed 14/12/2019].