UDC 34

Development of the legal framework for resolving controversial issues in the formation of qualitative content of remote monitoring

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Abstract

As a prerequisite for the implementation of urban development projects is the inclusion of urban planning activities in the territorial plans of economic and social development, the processes of urban design and decision-making should be included in the overall continuous process of "project – plan –implementation". The process of making a town-planning decision is as follows: "concept (forecast) – project-implementation programs". In this approach, the city is considered as an element of the regional urban planning system (CSG), and the forecast of urban development is only a stage in the regional forecast. Development of the project at the regional level with the use of modern methods and means of computer-aided design and information support can be carried out within 1,5-3 years. The stage of development of master plans at the level of program-target and normative-target models can be completed within 2-3 years. Thus, the entire process of urban planning forecast can be reduced to a five-year period, which is consistent with the traditional order of preparation of planning and project documents. Every five years it is necessary to repeat the whole cycle of development and adjustment of normative-target models with the shift of the estimated period for the next five years and, if necessary, the revision of the program-target model.

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Keywords

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

Introduction

The researchers determined 6 basic principles of continuous urban planning forecast:

1. Unity and continuity of decision-making processes and management of their implementation.
2. Cyclical process.
3. A clear distinction between the control and managed systems.
4. Achieving a measure of diversity in the management system that is adequate to the diversity in the managed system.
5. Removal of management functions from several spheres of decision-making and their concentration in one.
6. Unity of information support of the system, the system of technical and economic indicators and the regulatory framework.

The management system of urban territorial resources should provide two functions: ensuring national interests; ensuring the interests of individual members of the society [Verenich, 2015].

New socio-political and economic conditions have formed a new system of governance, the main characteristics of which are:

– abrupt transition from administrative-planned to market-based model;
– differentiation of functions and subjects of state and non-state management;
– development of processes of democratization of public relations;
– integration of Russia into the world information technology process;
– integration of political, social and economic processes.

Management of urban areas covers the entire spectrum of public relations - from social to economic, legal, environmental and other types of management and should include: planning, regulation, organization and control of land use.

The basis of the management system of urban areas are the object, subject, subject, purpose, objectives and functions of management.

The object of management – all the territory within the city limits, differing in the nature of use, legal status, as well as land plots that are not included in the land use (public land).

The subject of management is the processes of organizing the use of the territory, which within the city territory ensure the implementation of the diversity of the needs of its residents.

The diversity of needs leads to a variety of uses of land to be managed. These methods include:

– implementation of the territorial organization of land use within the boundaries of land use, individual plots (arrays), land (land management, planning, zoning, etc.);
– engineering support of the process of land use (engineering communications);
– establishment of the legal status of land (ownership, use, lease, restrictions, encumbrances);
– establishment of directions and types of land use (permitted use);
– introduction of economically and environmentally efficient land use technologies;
– analysis of the natural and economic condition of the land;
– other measures affecting the status and condition of the land.

The purpose of territory management is to Express the needs of society on the basis of the properties of a particular land resource. In general, the purpose of land management is to create and ensure the functioning of the system of land relations and land use, allowing the greatest extent to meet the needs of society associated with the use of land.

The goal reflects the prospective state of territorial resources and the process of their use and is planning the use of urban areas. Since urban land consists of territories with different legal status and belonging to different users, General rules are created to facilitate the management process and the boundaries of the use of the territory are established.

In a particular time period, the goal may have a pronounced emphasis: social, economic, environmental, or a combination of both. Until the mid-80s of the last century, the social aspect prevailed in planning the development of the territories of cities and towns (the maximum possible satisfaction of all the needs of residents was declared, often without establishing their sufficient efficiency) [Chelysheva, Verenich, 2010]. At present, in the conditions of development of market relations, including in relation to land real estate, there has been a reorientation to take into account the economic aspect, that is, the achieving maximum economic effect, which often takes the form of maximum cash receipts to the budget and cost recovery. However, without a social focus, the goal of management can exacerbate the social situation. The modern goal of land management should be oriented to the maximum economic effect while ensuring a guaranteed social and environmental level [Mari et al., 2011].

The purpose of cadastral valuation of urban areas is not only to analyze the cost structure of the creation and reproduction of land real estate, but also the real or potential profits from the use of urban land. The achievement of this goal, which is enshrined in the integrated assessment of urban areas, and represented not only by the numerical values of this assessment, but also by the corresponding cartographic material displaying its spatial distribution, makes it possible to create modern economic levers for changing the land use system in the interests of optimizing the living conditions, work and leisure of residents, more harmonious development of the city as a whole.

Cadastral (economic) assessment provides a reasonable answer to the question: at whose expense and how effectively is the use and development of individual territories and urban land real estate in general.

The city as an urban planning system is a multi-level object of management, being on the one hand an element of socio-economic and territorial-production systems at the national level, and on the other hand being in the conditions of specific microeconomic processes and territorial planning conditions. This feature of the city determines the methods of urban territorial resource management.

Main part

Indirect management plays the role of the regulatory framework regulating urban development, and direct management is a real mechanism of influence on the distribution of urban land.

The complexity of the processes occurring in the urban planning system and their significant uncertainty and ambiguity are reflected in the variety of methods of setting tasks and determining the effectiveness of management decisions. Among the most common methods are: directory; analytical; expert assessments; calculation and correlation; economic and mathematical modeling.

Each of these methods used in management decision-making has its advantages and disadvantages. The use of the latest information technologies is one of the conditions for successful management of the territory of the modern city, for the design, construction and operation of buildings, structures and urban engineering infrastructure [Cavallin, Sterlacchini, Frigerio, Frigerio, 2011].

Planning the development of the city and its management is now simply unthinkable without a modeling phase. Additional complexity, in addition to General growth, compact development, connected with increased requirements to comfort of living, ecology, environmental protection, preservation of the historical character and tradition of urban development in a particular region or city. In the process of modeling, a prototype of new buildings is created, which in the future are designed to serve the interests of the city's population, business, tourism, etc.

Modeling of new objects and architectural complexes of urban development has traditionally been performed on a sheet of paper or by creating models of buildings (usually made of foam), modeling the landscape of the area-by all available means, from cardboard, foam and ending with the most ordinary moss and twigs of plants. The creation of such layouts took a lot of effort and time. But times are changing, there are new effective tools and technologies, such as GIS.

Until recently, two-dimensional spatial data were mainly used in geographic information systems Now GIS allows you to work in the so-called 2.5-dimensional space, when the value of Z is attribute-bound to a point (X, Y), often using digital terrain models. Designers are trying to move to the so-called integrated photorealistic information environment, the formation of which we are now witnessing. Now it is also possible to move to full-fledged three-dimensional data and, moreover, taking into account the time parameter, to multidimensional operations of working with objects. No wonder recently a lot of attention is paid to 3D technologies used in GIS, including ESRI products [Ikhile, Oyebande, 2007].

Three-dimensional computer representation of the area of construction significantly increases the possibility of visual analysis in the study and management of the urban area, it allows:

- to perform photorealistic display of the study area and virtual movement on and above the terrain model;
- to assess the possibilities of existing and options for the projected urban development and urban landscape;
- to analyze design decisions, including compliance with the master plan of the city development;
- compile required thematic layers with embedded 3D objects;
- develop methods for preparing promising three-dimensional topological GIS data and models and combining them with CAD data [Ikhile, Oyebande, 2007].

The 3D model gives a more complete view of the territory of the city than conventional maps and plans, provides viewing of objects from any point of space (from a bird's eye view, from the surface of the earth, from the window of any house, etc.), simplifies the processes of planning, control and decision-making.

Already, one of the conditions for error – free construction of the building is the preliminary construction of its projected three-dimensional model and three-dimensional models of the surrounding building [Huff et al., 2002]. The three-dimensional model of the projected object helps the architect to better understand himself and explain to the customer what he is going to build. The three-dimensional model of the object helps the engineer to better work out the elements of building structures, perform strength calculations of the building. It allows all specialists to better navigate the object under construction.

Such three-dimensional models, integrating heterogeneous vector and raster data, allow you to better assess the trends of development of the territory, help designers in planning the appearance of buildings. They are useful to use in various fields of activity in a comprehensive assessment of the current situation in the area of interest of the city or when it is redeveloped.

In addition, you can quickly analyze the options and details of the project, move buildings and other elements of the project development area and through successive approximations to achieve the desired result. At the same time, ArcGIS tools and the additional module 3D Analyst allow you to look at the projected object both from the outside and from the inside, as well as see the view from the Windows of the new building.

The big advantage of this approach is that the user does not work in the coordinate system of a paper sheet, but in a real geographic system (even if local) [Liu et al., 2018]. In this case, the designer can evaluate his project comprehensively, without interruption from the urban environment, taking into account existing and projected utilities, transport accessibility, with an assessment of the impact of various sources of pollution, including noise, the environment, etc.

Currently, the terms "geotechnologies", "geospatial technologies" are widely used. In recent years, the term has become actively used in the field of territorial planning [Mănoiu et al., 2013]. In the present work the term "Geotechnology" is used as describing the application of methods of spatial-temporal analysis in the management system of territorial development and planning for the inventory and assessment of facilities management, prognosis of their development in the context of the development of the territory as a whole, and to develop optimal models of territorial organisation of socio-economic systems. In fact, geotechnologies are typical examples of applied problems in the field of territorial development management, implemented on the basis of the application of a complex of modern GIS technology and relevant geodata. The list of such typical applied tasks was defined through the functions of geographical support of territorial development management systems. The main means of automated spatial and temporal analysis are technologies of geographic information systems (GIS-technologies), which have received revolutionary development in the last 15 years [Hinojosa-Arango et al., 2014].

Development of GIS as a basis for the introduction of geotechnologies in the management of territorial development.

The development of GIS technology reflects the most important trends in the Informatization of geography:

– the "industry" of geographical information (unification – and integration of methods of receiving, processing, representation and information storage on the basis of GIS-technologies);

– standards for geographic information and its exchange are being created and implemented (national and international spatial data infrastructures, a special Commission to the UN for the exchange of geographic information has been established, active work has begun on development of national spatial data infrastructures in 17 European countries, including Russia, Ukraine-has observer status so far);

– geographic information has become a commodity and will (and can) be freely purchased over the Internet (space imagery is already being purchased over the Internet, there is a broad discussion around the global spatial data infrastructure, which describes the conceptual framework for data exchange at the global level, ESRI has begun to talk about g.net -new architecture for distribution and use of GIS information from distributed sources. This architecture is now known as a geographic network g.net).

Without applying for a systematic analysis of the subject area, we can note a number of trends in the development of GIS, which determine the approaches to their further study:

1. Avalanche growth in the number of GIS projects implemented in various spheres of public life and a corresponding increase in the number of publications. In this regard, specific GIS projects should be considered and planned as interacting elements of heterogeneous software and technical environment, closely related to other elements of the territorial management system. To do this, it is necessary to formulate, adapting on the basis of appropriate standards, consistent and sufficiently detailed "information images" of the subject areas in which GIS technologies are implemented. An analogy with the creation of regional ACS is quite appropriate here, when the level of their development depended not so much on the perfection of the applied methods and means of control automation, as on the level of knowledge of the regularities of relations between bodies and the object of management in a particular region.

2. The transformation of GIS into a kind of"end-to-end " approach (in the form of a GIS function)

within the entire information technology system. This reflects the processes of active integration of GIS developments with telecommunications, remote sensing data, CAD and less active interaction with expert systems technologies. The target base of integration is different types of applied problems of territorial management [Vach, Holubec, Dlesk, 2018].

3. The development of GIS has moved from the pioneer phase to the maturity phase i.e. to the use of specialists and commercialization. In this regard, it is planned to move from the assessment of the possibilities of using GIS (often depending only on the financial capabilities of the consumer) to a comprehensive analysis of the real need for their implementation at the level of individual regions In recent years, the synergy of high technologies has been a breakthrough in the development of GIS, associated with declared E. Turner neogeographer the approaches on the basis of geointerfaces (geoportals, geoservices) such as Google Earth and Google Maps to provide synchronized concurrent access to remote sensing data across a hierarchy of spatial scales [Bennour, Guettouche, 2018]. In addition to the previously developed models of the territorial development management system, which allows us to plan sustainable development through the justification of a set of management decisions, we will formulate a definition of structural and geographical support, including, from our point of view, the following blocks:

– geographical information (data on management objects considered as polystructural and poliierarchic interacting at the elemental, component and complex levels of the organization territorial geosystems arising in the process of interpenetration of society, nature and economy);

– theoretical and methodological basis (methods of spatial-temporal analysis and complex evaluation of geoinformation, as well as its transformation into the form necessary for justification and management decision-making);

– regulatory framework (regulated by the current legislation - from the law to the guidelines and instructions-the prerogatives of the actions of organizational structures for the collection, processing, storage, transformation, transfer and use of geodata);

– organizational and technological unit (organizations or their units receiving, transmitting, transforming geographic information, and a set of software and hardware to obtain it).

The above definition should be considered as the first operational approximation to the solution of the problem. The analysis of the works devoted to this problem shows that the subject area is in the stage of formation and approaches to the definition of basic concepts should be creatively discussed.

In particular, a number of functions reflecting the list of tasks to be solved on the basis of the application of geotechnologies can be distinguished in the constructive and geographical support of SUTRAS and regional development programs:

– cartographic visualization of the results of the presentation of data on management objects (and geodata in the broad sense of the term);

– system geoinformation mapping of the territory at all levels of its spatial organization;

– comprehensive geo-ecological, socio-ecological and geo-economic assessment of the state of the territorial managements;

– functional zoning of the territory (for allocation of areas or objects of management homogeneous according to the set criterion);

– creation and maintenance in the functional state of the information basis of the SUTRAS. Part of the data collection unit, the SUTRA includes several types of organizational and activity systems collecting initial data on objects of territorial administration:

– resource-environmental (accounting, state, use of various natural resources and production and technological facilities, factors affecting them, including-8 types of normative approved cadastral and more than 90 different registry systems with a very significant spatial component);

– sanitary-hygienic (sanitary-epidemiological situation, especially dangerous infections as factors of influence on health of the population, etc.);

– socio-economic, the organizational core of which are the regional divisions of the state statistics Committee of Ukraine and various types of departmental statistical reporting

– administrative and territorial administration (including information systems and registers of the tax service, law enforcement agencies, passport control, having developed network databases and data banks);

– environmental monitoring (the state of natural environments, factors of anthropogenic impact on the environment, emergency situations of technogenic-ecological and natural character, the state of health of the population, etc.).

– developing of complex cross-sectoral programs of territorial socio-economic development (the development experience of territorial development programmes by the Government of Crimea has shown that in almost all of these projects on development of mineral-raw complex, recreational complex, ecological monitoring, ecological network, etc. are the schemes of functional zoning of the territories according to the specified characteristic, created GIS database on facilities capabilities and limitations and its local use). Narrowly focused use of GIS in the land cadastre, agriculture in the management of territorial development, allowed to improve the work in these areas, gave new opportunities for monitoring and forecasting, reduced the percentage of errors in working with cartographic materials.

Conclusion

Thus, as a prerequisite for the implementation of urban development projects is the inclusion of urban planning activities in the territorial plans of economic and social development, the processes of urban design and decision-making should be included in the overall continuous process of "project – plan –implementation". The application of geoinformation and WEB technologies to support decision-making in various areas of management should be further considered. Visual cartographic form of information presentation is convenient for state and territorial administration, on the one hand, and useful for analysis of the market of goods and services, on the other.

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Разработка правовой базы для решения спорных вопросов при формировании качественного контента удаленного мониторинга

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Аннотация

Необходимым условием реализации проектов городского развития является включение градостроительной деятельности в территориальные планы экономического и социального развития, поэтому процессы городского проектирования и принятия решений должны быть включены в общий непрерывный процесс «проект – план – реализация». Процесс принятия градостроительного решения выглядит следующим образом: концепция (прогноз) – программа реализации проекта. При таком подходе город рассматривается как элемент региональной системы городского планирования, а прогноз развития города является лишь этапом в региональном прогнозе. Разработка проекта на региональном уровне с использованием современных методов и средств автоматизированного проектирования и информационного обеспечения может осуществляться в течение полутора – трех лет. Этап разработки генеральных планов на уровне программно-целевых и нормативно-целевых моделей может быть завершен в течение двух – трех лет. Таким образом, весь процесс градостроительного прогнозирования можно сократить до пятилетнего периода, что согласуется с традиционным порядком подготовки плановой и проектной документации. Каждые пять лет необходимо повторять весь цикл разработки и корректировки нормативно-целевых моделей со смещением расчетного периода на следующие пять лет и при необходимости пересмотром программно-целевой модели.

Для цитирования в научных исследованиях

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Ключевые слова

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

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