PROSPECTS OF GEOINFORMATION TECHNOLOGIES IN THE ARMED FORCES OF THE REPUBLIC OF KAZAKHSTAN

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ABSTRACT

This article is written in order to familiarize readers with geoinformation technology in the process of organizing topogeodesic support, as well as to develop recommendations and proposals that will form an effective and complete system of geoinformation support for the Armed Forces, other troops and military formations of the Republic of Kazakhstan.

Applying a General scientific and search approach to the study of the existing causes:

analysis of local wars and armed conflicts;

high-precision weapons and maneuverable combat operations using the most specific means of intelligence, geoinformation systems and communications.

This article presents the historical aspects of the formation and development of geoinformation technology in foreign countries and the Republic of Kazakhstan.

The article provides a brief overview of geospatial support systems using geoinformation technologies in foreign countries and the topographic service of the Armed Forces of the Republic of Kazakhstan.

The article considers the importance of creating a unified state geographical information space, technologies are developing in the direction of spreading geoportals, cloud services and the development of service-oriented architecture systems that will allow creating distributed GIS of various directions. Integration of geographic information systems with rapidly developing remote sensing Systems will dramatically increase the capabilities of modern GIS, allowing real-time updating of spatial information, especially in the field of making important decisions.

KEYWORDS: geo-information system, geo-information data, visualization, electronic map, city plan & special geo-information platform

INTRODUCTION

Analysis of local wars and special operations also shows that in the era of high-precision weapons and maneuverable combat, the most important importance is attached to specific means of intelligence, topogeodesic and navigation support and communication. They provide timely detection and recognition of targets, accuracy and timeliness of striking them with weapons of destruction. Moreover, their joint use allows you to manage the troops in real time.

We will focus in more detail on the process of organizing topogeodesic support (TGO) for combat operations of troops in modern conditions. Studying the experience of conducting special (counter-terrorism) operations in Afghanistan, Iraq, the Chechen Republic, Ukraine and Syria, leads to the conclusion that it necessarily included the following aspects:
timely and complete provision of management bodies and troops with topographic and special maps, advance production of topographic plans of cities;

- preparation of initial astronomical and geodesic data on the positional areas of rocket troops and artillery and bringing them to the appropriate control bodies and troops;

- providing headquarters and troops with additional information about the area in the form of special photographic documents, various reference materials produced in direct preparation for combat operations and during their conduct;

- provision of appropriate systems for command and control of troops, intelligence and guidance with digital electronic maps, digital terrain models;

- organization and timely delivery to the troops of the results of topographic reconnaissance of the terrain of objects and the enemy [1].

Topographic, geodesic and cartographic support is one of the main types of ensuring effective economic development, strengthening the country's defense and security, it is a set of management, production, scientific and educational measures for creating, storing and communicating cartographic and geodetic data to consumers, including the territory and zones of economic interests of the Republic of Kazakhstan, territories of foreign States.

Creation and use of cartographic and geodetic data is one of the most important factors contributing to the solution of key tasks of the state policy of the Republic of Kazakhstan creation of "Digital Kazakhstan", increasing the share of digital products for the management of troops and forces, means in automated control systems.

All this dictates the need to take a new look at the problem of ensuring the country's security, maintaining a high level of combat readiness of the Armed Forces, other troops and military formations of the Republic of Kazakhstan. The solution to some of these problems is seen in the development of operational (combat) support, based on the requirements of modern times.

As you know, one of the types of operational (combat) support is topogeodezicheskoe support, which consists in the supply of geospatial information to the headquarters of the Armed Forces, other troops and military formations of the Republic of Kazakhstan, for effective management and use of weapons.

Recently, geo-information systems (GIS) are considered as an effective tool for analyzing various types of data when studying the features of regional development and developing integrated solutions. They occupy one of the leading positions among various information technologies in the field of management and planning.

One of the most important parts of all types of war is reliable intelligence and operational information about the enemy and its units, obtained in a very short time.

The truth of the above was proved during the conduct of military operations by coalition forces in Iraq. Thus, in the article "electronics today; November 1996", major General Gurbaksh Singh says: "The lessons learned from military history show that victory over the enemy is to be one step ahead of it in terms of timely provision of information, management of subordinate units, as well as the use of information systems. Information systems and weapons control systems can warn the time of attack, and assume the position of the enemy with high probability and fairly accurately, in this case it is easier to take the necessary disposition before the enemy and destroy it" [2].
Preparation and conduct of combat operations is impossible without reliable information about the terrain, which is reflected in the combat regulations of the armed forces of many countries, including the United States.

Currently, the production facilities of the United States provide more than 300 types of geo-information documents not only for its Armed Forces, but also for military contingents of countries participating in joint military operations with the US army. So, after the collapse of Yugoslavia, when fighting with the US army, military units of 33 countries used American state standards in the field of cartography and information documents about the area created by topographers and surveyors of the United States [3].

Management believes that the MO of the United States, in armed conflicts and local wars of the new century to win the one who will be able to collect multifaceted, ever-changing data about a course of action, analyze them, draw the right conclusions, make the right decision and quickly bring it to subordinates. For a guaranteed victory, it is necessary to achieve so-called information superiority over the enemy, which allows you to anticipate it in assessing the rapidly changing situation on the battlefield, making the right decision and planning the course of the operation (combat operations). The description of the current situation should be large-scale, covering all aspects of the battle, sufficiently generalized and intuitive for decision-makers [4].

The development of the modern army, as well as the development of modern society as a whole, is based on the introduction and development of information technologies. The most important component of most technologies is the means of processing digital information about the terrain in conjunction with a variety of data about the enemy and their troops.

Now that the world is entering the new Millennium with an understanding of the advantages of digital image, sound and communication, topogeodesic software simply cannot stay away from technological progress.

It becomes obvious that geoinformation support is topogeodesic support of the XXI century. It includes aerospace, optoelectronic intelligence, satellite communications, digital computer technology, and classical methods of geodesy, cartography, and photogrammetry. The analysis of the tasks solved by topographic services of associations of the Armed Forces of the Republic of Kazakhstan during the preparation and during operations and combat operations, as well as the means and methods of their solution, indicates that there is a serious lag in these issues from the armies of developed countries.

Geoinformation System
A geographic information system (GIS) is a hardware – software human-machine complex that provides the collection, processing, display and dissemination of spatial coordinate data, integration of information and knowledge about the territory for their effective use in solving scientific and applied problems related to inventory, analysis, modeling, forecasting, environmental management and territorial organization of society [4].

Geo-information support involves the circulation of data about the area through channels associated with databases of geographical information systems (GIS). In fact, they are the basis of geoinformation support.

At its core, a GIS is a combination of a geographical or topographic map and a vast array of digitally expressed heterogeneous information, systematized and linked to the corresponding point in the cartographic image. Digital information about the area can be presented in the form of an electronic topographic, survey, geographical, aviation map,
GIS performs two important functions: creating a digital map of the area integrated with an extended database, and converting a digital map into an electronic visualization with the possibility of interactive work with it by the user. Many other functions implemented with GIS are based on these two [5].

The term "geoinformation system", which appeared in the early 60s of the last century, has undergone quite a lot of changes in its meaning, and for a long time did not have a clear and unambiguous interpretation. The number of existing definitions is almost equal to the number of authors who have written on this topic. And since GIS was used by specialists from a wide variety of fields of knowledge and practice (literally from Geology to sociology), considering them from their own positions, the definitions of the essence of systems differ very significantly.

As the science, knowledge about the earth, natural resources, Geology and geography developed, Geoinformatics was previously understood in many countries as "a specialized section of Informatics dealing with geography" [6].

The countries closest to the Republic of Kazakhstan in terms of the area of territory subject to cartographic and geodetic support are Russia, the USA, Canada and China. Kazakhstan is ranked 9th in the world.

The component parts of a GIS

Geographic information systems include five key components: hardware, software, data, performers, and methods.

Hardware. This is the computer running GIS. Currently, the GIS operate on different types of computing platforms, from centralized servers to separate or connected by a network of desktop computers.

GIS software contains functions and tools necessary for storing, analyzing, and visualizing geographical (spatial) information. The key components of software products are:

- tools for entering and operating geographical information database management system (DBMS or DBMS);
- tools for supporting spatial queries, analysis, and visualization (mapping);
- graphical user interface (GUI or GUI) for easy access to tools and functions.

Data is probably the most important component. Spatial data (geographical data) and related tabular data can be collected and prepared by the user or purchased from suppliers. In the process of managing spatial data, a geographic information system combines (or better, combines) geographical information with other types of data. For example, a specific part of an electronic map may be associated with data that has already been accumulated about the population, the nature of the soil, the proximity of dangerous objects, and so on. (depending on the task to be solved using GIS).

Moreover, in complex, distributed systems for collecting and processing information, it is often not the existing data that is associated with the object on the map, but its source, which allows you to track the state of these objects in real time. This approach is used, for example, to deal with emergencies such as forest fires or epidemics.

Performers are people who work with software products and develop plans for their use in solving real problems. It may seem strange that people working with software are considered part of a GIS, but this makes sense. The Point is that for a geographic information system to work effectively, you must follow the methods provided by the developers, so without trained performers, even the most successful development can lose all meaning.

GIS users can be both technical specialists who develop and maintain the system, and ordinary employees (end
users), who are helped by GIS to solve current everyday tasks and problems.

Methods. The success and effectiveness (including economic) of GIS application largely depends on a properly drawn up work plan and rules, which are drawn up in accordance with the specifics of the tasks and work of each organization.

The structure of a GIS usually includes four necessary subsystems:

- **data Entry** that provides input and / or processing of spatial data obtained from maps, remote sensing materials, etc.;
- **Storage and search**, which allows you to quickly obtain data for appropriate analysis, update and correct them;
- **Processing and analysis**, which makes it possible to evaluate parameters, solve computational and analytical problems;
- **Representation (output)** of data in various forms (maps, tables, images, block diagrams, digital terrain models, etc.)

Thus, the creation of maps in the circle of "responsibilities" of GIS is not the first place, because to get a hard copy of the map, you do not need most of the GIS functions, or they are used indirectly. However, both in the world and in domestic practice, GIS is widely used for preparing maps for publication and, to a lesser extent, for analytical processing of spatial data or managing the flow of goods and services [7].

GIS allows you to make decisions based on geographical information. Unlike other types of information processing tools, GIS understands the concept of location, since it is based on information linked to coordinates on the map, and allows you to present it in graphical form for interpretation and management decisions. Geo-information technologies are inextricably linked with GIS.

**Geoinformation Technology**

Geoinformation technologies can be defined as a set of software and technological means for obtaining new types of information about the world around us. Geoinformation technologies are designed to improve the efficiency of: management processes, storage and presentation of information, processing and decision support [8].

The main feature of GIS, which determines its advantages in comparison with other analytical information systems (AIS), is the presence of a geo-information base, i.e. digital maps (CC) that provide the necessary information about the earth's surface. At the same time, the Central Committee must ensure:

- accurate linking, systematization, selection and integration of all incoming and stored information (a single address space);
- complexity and visibility of information for decision-making:
  - possibility of dynamic modeling of processes and phenomena;
  - possibility of automated solution of tasks related to the analysis of territory features;
- ability to quickly analyze the situation in emergency cases.

Geo-information technologies, offering new effective approaches to the analysis and solution of territorial problems, continue to gain increasing popularity and official recognition in our country, and digital spatial information is beginning to play an increasingly important role in the tasks of socio-economic, political and environmental development.
and management of natural, industrial and labor potential in the national interest.

Foreign experience in the operation of various GIS shows that the need to analyze the geographical location of phenomena and objects, their quantitative and qualitative characteristics using the map arises for representatives of the armed forces and various sectors of the national economy [9].

The analysis of the forms and methods of combat use of troops (forces) in special operations in the North Caucasus, in Iraq, Syria leads to the conclusion that the purpose of the survey support (hereinafter MSW) should be in the preparation and timely communication to the staff and troops of accurate and reliable survey information to the extent required, contributing to the creation of necessary conditions for solving the following tasks:

- keeping troops (forces) in constant combat readiness;
- timely covert deployment (creation) of groups of troops;
- performance of assigned tasks by the troops;
- ensuring the effective use of weapons and military equipment.

The process of organizing TGO in combat operations of troops in modern conditions necessarily includes a number of aspects, which were discussed in the introduction.

At the same time, the analysis of providing geospatial information to the armed forces of the Republic of Kazakhstan in daily life, during training and during exercises, indicates a serious lag in these matters from the armies of developed countries. The military authorities receive information about the area in the form of the same topographic map and the same scheme as fifty years ago. Preparation of applications to the complaining authority, their processing in the warehouse of topographic maps, then a set of maps, delivery, gluing, application of service labels and furniture.

At the same time, it should be noted that the topographic map in analog form is the main working document of the commander and staff, used in planning operations and combat operations, when setting tasks to subordinate troops and monitoring the progress of the troops ’ tasks.

The experience of armed conflicts in foreign countries shows that topographic maps on a paper basis, in the conditions of active influence on the weapons and equipment of the enemy's electronic suppression means, are the main information document.

Consequently, the activity for creating, storing and making available to the troops paper cards will retain their value along with the creation of digital cartographic databases.

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Geo-information support involves the circulation of data about the area through channels associated with databases of geographical information systems (GIS). In fact, they are the basis of geoinformation support. At its core, a GIS is a combination of a geographical or topographic map and a vast array of digitally expressed heterogeneous information, systematized and linked to the corresponding point in the cartographic image. Digital information about terrain can be represented in the form of electronic topographical, survey-geographic, aerial map, city plan, schematic, electronic fotoplan, matrices of heights, matrices, terrain features, etc.

GIS performs two major functions: creation of digital maps integrated with the enhanced database, and conversion of digital maps in electronic visualization with an interactive operation with the user. Many other functions implemented with GIS are based on these two [10].

Geospatial information generated on the basis of the collection and analysis of cartographic, geographical, climatic, hydrological, aerological, administrative data and information about the infrastructure features of territories plays an increasingly important role in ensuring the military and public security of the state.

Modern technologies allow you to generalize and link geospatial data, provide an opportunity for its visualization and interactive access to them, and provide support for management decisions.

Analysis of the development of modern geospatial support systems for foreign armies and prospects for their development allows us to conclude that the practical effect of increasing the combat capabilities of troops is achieved not only by increasing the firing, maneuvering and other characteristics of weapons platforms, but primarily by reducing the cycle of combat control and decision-making based on geoinformation components of the combat space.

For example, in the armed forces of the NATO bloc, the implementation of a new concept of providing geospatial information, designated by the term Situational Awareness, becomes possible through the use of the neogeography method, which assumes, in particular, that the user is "inside the data" in the real space-time continuum, instead of necessarily mediating cartographic conventions.

The problem of defining a single special geoinformation platform arose due to the heterogeneity of geo-spatial information used in the Armed Forces, other troops and military formations issues of intra-departmental information interaction and analytical support for decision-making based on geo-information data are implemented using various software tools.

Currently, geospatial data is partially created on the ArcGIS software platform:

in the Ministry of internal Affairs of the Republic of Kazakhstan as part of the deployment of the "geo-information system module " of the operational management Center (presentation attached);

in the kchs of the Ministry of internal Affairs of the Republic of Kazakhstan as part of the deployment of the GIS subsystem "corporate information and communication system" (presentation attached).
In MO RK created a large amount of cartographic materials in the format of "Mapinfo".

Thus, from 2002 to 2016, plans and topographic maps in analog and electronic formats of scales 1:10,000 – 1:1000,000 were produced on the territory of the Republic of Kazakhstan, border States, military ranges, as well as on the territory of regional centers and major cities, covering 8034 nomenclature sheets.

In addition, single materials of large-scale topographic maps on the territory of military polygons were produced in the ArcGIS format on 164 nomenclature sheets.

However, geospatial data is converted from one format to another with a loss of material quality.

In addition, the implementation of the sgip project is of particular relevance in connection with the sanctions ban on the granting of licenses FOR "ArcGIS" and "MapInfo" as well as the provision of technical support (including supply of updates FOR the existing technical support) a number of defense and oil and gas companies.

At the same time, ESRI GIS refers to the relevant order of the Department of foreign assets control of the us Department of the Treasury and the Bureau of industry and security of the us Department of Commerce.

For all the above tasks and programme officers at the National defense University named after the First President of the Republic of Kazakhstan – Leader of the Nation participated in the implementation of scientific, scientific-technical programmes in the framework of the program target financing on the topic of the scientific-technical program (hereafter – program): "Development of a special geo-Information platform in the interests of defense and security of the Republic of Kazakhstan" which will be based on the integration of large arrays of cartographic materials, other geospatial data, infrastructure information of operational equipment of the territory and mobilization resources for economic sectors, detailing materials for the certification of objects vulnerable to terrorism and will be the basic platform for information systems to support decision-making of the Armed Forces, other troops and military formations, state bodies and organizations whose joint activities are aimed at solving the tasks of ensuring military security of the Republic of Kazakhstan.

Research Problem

- development of a prototype of a unified software platform for the collection, accumulation and visualization of GBD, with the functions of performing GIS applications that solve the range of tasks of terrain analysis, with the ability to create geospatial products for various purposes and the publication of topographic and special maps;
- creation of an electronic Bank of geospatial information;
- development of geospatial engineering products;
- development of converters for re-registration of the CMM in a single format of the GIP platform.

At the research stage, the goal was to analyze the views of domestic and foreign experts on the development of geoinformation platforms and develop the structure of a special geoinformation platform for the armed forces of the Republic of Kazakhstan.

Based on this goal, the following tasks were defined:

- study of world experience in the development of geoinformation platforms;
- formation of the structure of a special geoinformation platform;
• development of a technical specification for the development of a special GIP program.

Completing the tasks and achieving the goal at this stage provides the basis for further research and contributes to the justification of the novelty and significance of the research.

Scientific novelty and significance of the research

The GIP will be a domestic software product based on the integration of a large number and scale of cartographic materials, geospatial data of the military state and operational infrastructure information.

Forming the structure of the SSIP, developing technical specifications, purchasing the necessary software and developing special programs will allow you to:

• quickly display and use any area of the area in demand from a large volume of source databases of geospatial information (satellite images, cartographic materials);
• along with electronic maps, create geo-information products that are visualized in the form of map layers and tabular information;
• ensure the unity of requirements for protocols for the exchange of geospatial information between users of the GIP;
• ensure the formation of electronic documents (orders, directives, orders) and issuing commands when conditions change;
• as well as in General to create a unified information space based on the integration of generally applicable data and their descriptions by type of functional activity at all levels (links) of the Armed Forces management.

The development of the GIP will contribute to the achievement of the goals of creating a modern combat-ready army, effective use of geoinformation technologies in the implementation of combat control of troops and weapons.

Analysis of foreign specialists in the development of Geoinformation Platforms

Due to the variety of GIS platforms, only the most common ones were selected for analysis.

The ArcGIS platform is the optimal solution for building corporate GIS, the Foundation of an information system for effective management of large government and commercial enterprises.


"ArcGIS" - produced by the American Corporation "ESRI", one of the few GIS platforms that supports full-fledged work with the topological model of data representation, as well as storage, processing and visualization of three-dimensional representation of spatial data. It has an open architecture (more than 800 standard additional target applications), but the source code is not passed to users.

Using this GIS platform will require converting the entire range of maps to the "ArcGIS" format, while the work will require a lot of manual labor and financial expenses.

Pricing policy: for One ArcView license - 600,000 tenge, ArcEditor-1 - 2 000 000 Tg., ArcInfo-2 - 1 500 000 tenge, runtime libraries-300,000 tenge, development tools-2,100,000 tenge. for one year. The price of a GIS is not fixed.
"MapInfo" is produced by the American company Pitney Bowes Software and is intended for collecting, storing, displaying, editing and analyzing spatial data. MapInfo is used in 130 countries around the world. Thanks to its ease of development, rich functionality and moderate cost, MapInfo has become the most popular GIS.

The entire range of electronic maps for the armed forces of the Republic of Kazakhstan has been created on the basis of this program.

Pricing policy: GIS MapInfo Professional for Windows-900,000 tenge, GIS MapInfo Professional for Windows (Russian version) including technical support for 1 year-600,000 tenge.

"ArcGIS" and "MapInfo" have an open architecture, but the source codes of these GIS platforms are not transmitted to users, so it is not possible to check for undeclared functions.

Functionality, ease of use and adequate technical support at a high level, however, high complexity of development, due to the fact that not all messages and modules are translated into Russian.

Free legitimate distribution is practically impossible.

High level of technological dependence on foreign manufacturers.

Due to the lack of ready-made GIS solutions on the domestic market, GIS developments in Russia and Belarus, which have their own GIS platforms in the CIS, were considered.

For the purpose of objectivity of the analysis, the opinions of both GIS producers and competent users were taken into account.

In the post-Soviet space, the most common are the developments of Russian manufacturers.

GIS "Integration". Developed by ZAO KB Panorama for FSUE research Institute of TP.

Positive Aspects:

- adopted by the armed forces of the Russian Federation and is a product of military use.

Negative Aspects

- does not meet the security criteria due to the inability to transmit source codes for checking for non-declared functions.
  - technical support at a low level, the system is poorly developed, the last update was carried out in 2005, there is a lack of compliance with the requirements of the troops;
  - all system improvements can only be made by the developer;
  - the threat of technological dependence on foreign manufacturers.

Despite the decisions taken by the Council of defense Ministers of the CIS on the Concept of creating a unified GIS for the armed forces of the CIS, repeated requests to the General staff of Russia for the transfer or sale of GIS "Integration" were ignored since 2004.

Geo-information system "Operator" was accepted for supply to the armed forces of the Russian Federation by order of the Minister of defense of the Russian Federation No. 598 of August 15, 2013. A set of programs developed by JSC KB Panorama allows you to organize topogeodesic support based on the principles of network-centric technologies in
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advanced automated systems and control tools in law enforcement agencies. [12].

Developed by ZAO KB Panorama.

Positive Aspects:

Based on the results of comparative tests of geographic information systems, GIS "Operator" in 2012 was recognized as the most fully compliant with the requirements of the armed forces for military GIS and in 2013 was adopted by the armed forces of the Russian Federation;

ability to pass source codes for checking for non-declared functions;

the system is constantly developing, and the developer responds to user requirements in a timely manner;

maps created by the VTU GSH of the armed forces of the Russian Federation are made on the software complexes of ZAO KB Panorama.

Negative Side:

The inability to distribute freely, i.e. the expansion of the user base entails additional license costs, and all system improvements can only be made by the developer;

the product is quite complex to learn and maintain, and is focused on professional use of the system;

the threat of technological dependence on foreign manufacturers.

Pricing policy: GIS "Map 2011" – 95 000 tenge, professional GIS "Map 2011 " with development tools-270 000 tenge.

GIS "Horizon". Developed by the Federal state unitary enterprise "NIIAA" named after Semenikhin.

Positive Side

The ability to transfer source code to test for the presence of not declared functions;

the ability to "freely distribute GIS", i.e. the user's right to freely launch, copy, distribute, study, modify and improve it;

possibility to create a domestic GIS on a ready-made platform, i.e. technological independence from foreign and private GIS manufacturers;

there is an official partner in the Kazakhstan market.

Negative Aspects:

The system has not been adopted by the Russian armed forces;

there is no information that the system is being updated and developed.

Republic of Belarus.

Despite the fact that Russia is a strategic partner not only in political but also in military terms, in addition to operating Russian GIS platforms, Belarus is actively developing a GIS of its own design – "military GIS", created on The software core of the panorama design Bureau.
Developed by the Joint Institute for the study of computer science of the Belarusian Academy of Sciences.

Positive aspects:

- adopted by the armed forces of the Republic of Belarus;
- the ability to transfer source code to test for the presence of not declared functions;
- the ability to "freely distribute GIS", i.e. the user's right to freely launch, copy, distribute, study, modify and improve it;
- the ability to create a domestic GIS on a ready-made platform.

Negative side:

- It is not a full-fledged GIS, but is used as a tool for decision support.
- Pricing policy: no information.
- Of all the programs listed, they are actually adopted and used as GIS platforms for automated control systems of the armed forces:

In NATO countries, including: the United States of America, France, Germany, as well as from the CIS countries in Ukraine – Russia.

Turkey, as a NATO member, simultaneously uses A GIS platform of its own development-Netcad.

In Sweden, ArcView GIS and MapObjects derived from ArcGIS are used.

In Russia and Armenia, the GIS "Integration" is used, and the GIS "Operator" is being prepared instead.

Belarus, in addition to GIS "Integration" uses a GIS platform of its own development-GIS for military purposes.

Israel-ArcGIS, Adlib;

Uzbekistan - uses ArcGIS in the field of communications and information technology;

China-no data;

In the Republic of Kazakhstan, the situation among government agencies is as follows:

ArcGIS is operated by the KNB, EMERCOM, MOE, KTZ, NC KMG;

MapInfo is operated by the MO, MRR, and NG MVD.

The results of the analysis were discussed at a scientific seminar on August 20, 2018.

Suggestions for creating a GIS platform

One of the ways to solve the problem of heterogeneous software products is to create unified standards for the modeling space description language [13].

However, the lack of work on standardization of operational and tactical environment objects, control languages and other elements of information support does not allow us to solve this problem. The choice of a single basic GIS platform should be the first step in creating a single information space of the state.
To select a single GIS platform for the armed forces of Kazakhstan are invited to: develop their own software products with similar functions existing in the best examples of foreign GIS, which will form the basis of the unified information platform for law enforcement agencies of the RK; to intensify cooperation with the Ministry of transport and communications, as responsible authority for the implementation of "electronic government" and JSC "National information technologies" as the project integrator of infrastructure of "electronic government". When choosing a GIS platform for the armed forces of the Republic of Kazakhstan, use the results of the development of technical documentation for the creation of a national GIS; organize pilot operation of software and hardware GIS of JSC "KB Panorama" on the basis of JSC "Kazakhstan GIS Center" and determine the feasibility of defining it as a GIS platform.

Based on the formed structure of THE ssip, research of domestic and international experience in creating various GIS systems, the research group developed a Technical specification for creating its own special software products that form the basis of the SSIP platform [14].

The technical specification defines and describes the structure and functioning of the GIP, and describes the functionality of each software module.

Thus, development of sgip is to contribute to achieving the objectives of creating a modern efficient army, efficient use of geoinformation technologies in the implementation of combat command and oрогами will ensure the unity of requirements to protocols of exchange of geospatial information between users of sgip various law enforcement agencies and government agencies.

CONCLUSIONS

The development of the GIP will provide managers of all levels of government agencies and organizations, whose joint activities are aimed at solving tasks to ensure the military security of the Republic of Kazakhstan, with objective and operational geospatial information, increase the efficiency of decisions by reducing the time to collect information about the terrain, assess it and bring up-to-date geospatial data to the troops. This will help to achieve the goals of creating a modern combat-ready army and the effective use of geoinformation technologies in the implementation of combat control of troops and weapons.

The development of special programs allows you to:

- quickly display and use any area of the area in demand from a large volume of source databases of geospatial information (satellite images, cartographic materials);
- along with electronic maps, create geo-information products that are visualized in the form of map layers and tabular information.

In General, it will contribute to the creation of a unified information space based on the integration of generally applicable data and their descriptions by types of functional activities at all levels (links) of management of both the Armed Forces and other troops and military formations of the Republic of Kazakhstan.

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