ГЕОМААЛЫМАТТЫК МААЛЫМАТ МОДЕЛИ КУРУЛУШ ӨНӨР ЖАЙЫНЫН ИШКАНАЛАРЫ

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Аннотация: *Курулуш өнөр жайы компаниялар геомаалыматтык системасынын жардамы менен чечүү зарыл милдеттерди көп сандагы бар. ГИС түшүнүктүк архитектура алкагында уюштуруу ыкмасын иштелип чыккан мейкиндик базаларын маалымат базасы жана ГИС өнүктүрүүнүн келечектүү багыттарын сунуш катары. Архитектура жана милдеттерин баяндайт курулуш тармагын өндүрүүнү көзөмөлдөө .*

Өзөктүү сөздөр : *санариптештирүү, геомаалыматтык маалымат системасы, тематикалык катмары, багытталган көйгөй системасы, курулуш индустриясынын*

ГРАФИЧЕСКАЯ ИНФОРМАЦИОНАЯ МОДЕЛЬ ПРЕДПРИЯТИЯ СТРОЙИНДУСТРИИ

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Аннотация *Предприятия строительной отрасли имеют большое количество классов задач, которые необходимо решать с помощью графической информационной системы. В рамках концептуальной архитектуры ГИС разработан метод организации пространственных баз данных и предложены перспективные направления для развития таких ГИС. Разработана архитектура и описаны ГИС-функции для управления производством строительной отрасли*

Ключевые слова: *цифровизация, графическая информационная модель, тематический слой, проблемно-ориентированная система, предприятие строительной индустрии*

GRAPHIC INFORMATION MODEL OF A CONSTRUCTION INDUSTRY ENTERPRISE

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Annotation T*he construction industry enterprises have a large number of classes of tasks that need to be solved using Graphic Information System. Within the framework of conceptual architecture of a GIS a method of organizing spatial databases has been developed and promising directions for the development of such GIS have been proposed. It is developed architecture and described GIS functions for production management of the construction industry*

Keywords : *digitalization, graphic information model, thematic layer, problem-oriented system, construction industry enterprise.*

УДК: 528

Introduction

Digitalization of a modern building industry enterprise is closely linked to the need for the intellectualization of production based on the introduction of problem-oriented GIS to solve a wide range of problems in the construction industry, allowing to process and analyze not only attributive, but also spatial data on production facilities [1-4].

Problem formulation

The interest to GIS technologies from corporate users is due to the capabilities of geographic information systems to present information on the state and behavior of infrastructure facilities of enterprises in an understandable natural form — in the form of maps and schemes, at different scales, in two-dimensional or three-dimensional representation — and provide means for its processing with the ability to perform spatial sampling of objects and apply original methods of analysis. Geospatial technologies are part of the modern informational mainstream - they support all modern informational innovations: distributed computing, high interactivity, open systems, etc.

Of course, many different problems of enterprise management are solved not only by means of GIS. There is a whole class of information systems designed to manage enterprise resources. Nevertheless, the integration of GIS with such systems allows to solve these problems more efficiently and comprehensively. The set of requirements for a corporate GIS depends largely on the specifics of a particular business.

However, enterprises of various profiles have a number of common tasks, for which the GIS is vital and is actively used now. First of all, this is an asset management task. The assets of an enterprise are tangible and intangible resources, means of production, ideas, technologies, know-how used by the enterprise, which lead to the growth of business in the long term. Effective asset management is the main goal of any company

What is the value of using GIS for asset management? GIS adds new quality to the description of objects and new functions for working with them: information about the position of objects in space; spatial relationships of objects expressed through topological relationships; visual presentation of objects, which may change depending on changes in the state of parameters of objects; spatial analysis.

Proposed solution

To make a decision on the effective management of a modern enterprise for the production of building materials, it is necessary to process a large amount of data dispersed throughout the various services of the enterprise. The article discusses the new approach to working with information. As the interface is a graphical enterprise model.

GIS-technologies contain various databases that give possibility of the wide various works with layers, with methods of analysis and visualization of layers. The content base data allow to form the desired order of layers. In this regard, the GIS technology allows to work with different types of infrastructures separately as shown in the Figure 1.

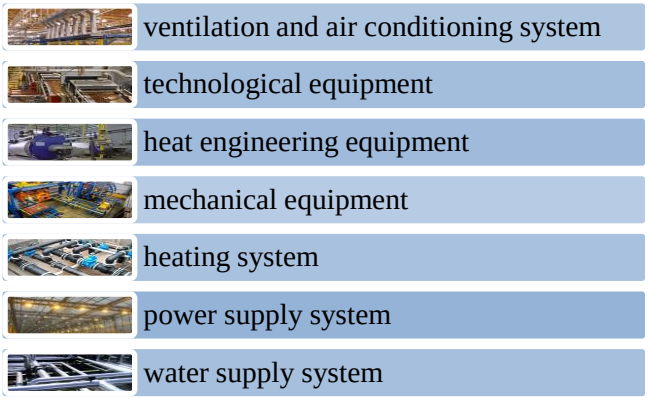

Figure 1 - Thematic layers of GIS

By adjusting the saturation of the graphic model, by means of including on/ turning off layers, it is possible to leave objects of interest and track interactions on a common information platform (Fig.2)

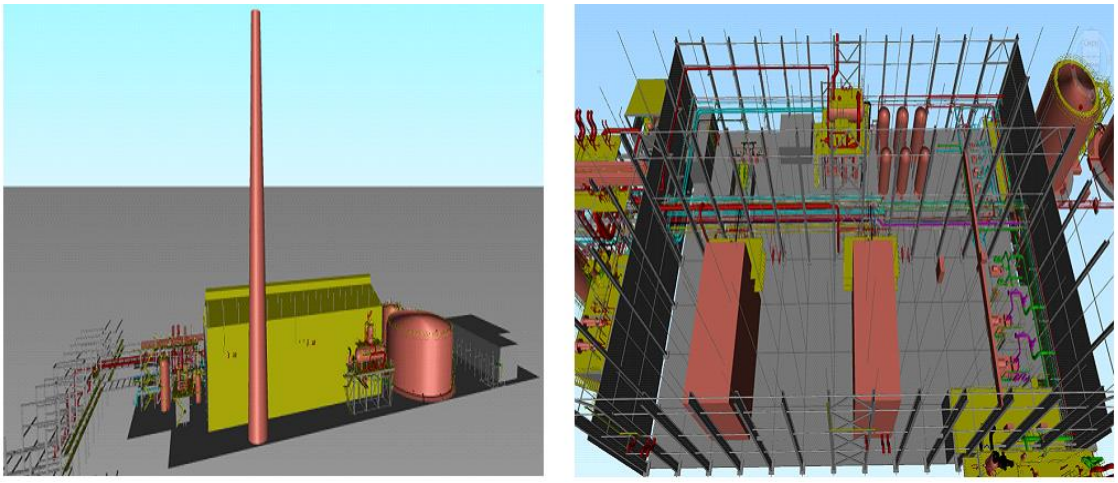

Figure 2- Graphic Information Model of the Enterprise

The organizing an operational change of the model in accordance with the ongoing work during modernization or reconstruction, which occurs constantly at the operating enterprise, it is provided in accordance with the graphic information of the actual configuration of the production facility.

In addition to the general visual presentation of production, production capacity and engineering support, it is proposed to use a graphic model as a basis for structuring information. This approach allows integrating data distributed across various services on a single platform, simplifying the search for information both within services and between different production departments. Work with information is organized as follows. We leave the layers necessary for work. After selected a particular object, we opening its passport (Fig. 3). This equipment is divided into groups. The MAIN section contains data for identifying an object. The OPTIONS section indicates the amount of resources consumed by the equipment, physical and technological parameters. In the REPAIRS section a schedule of planned current repairs and their reports is recorded. Thus, the service history of the selected equipment is formed. An archive of equipment documentation and technical acts of inspections are being created. According to the available data, a request for information is formed both on the object and on the group of objects, and, if necessary, on the enterprise in general.

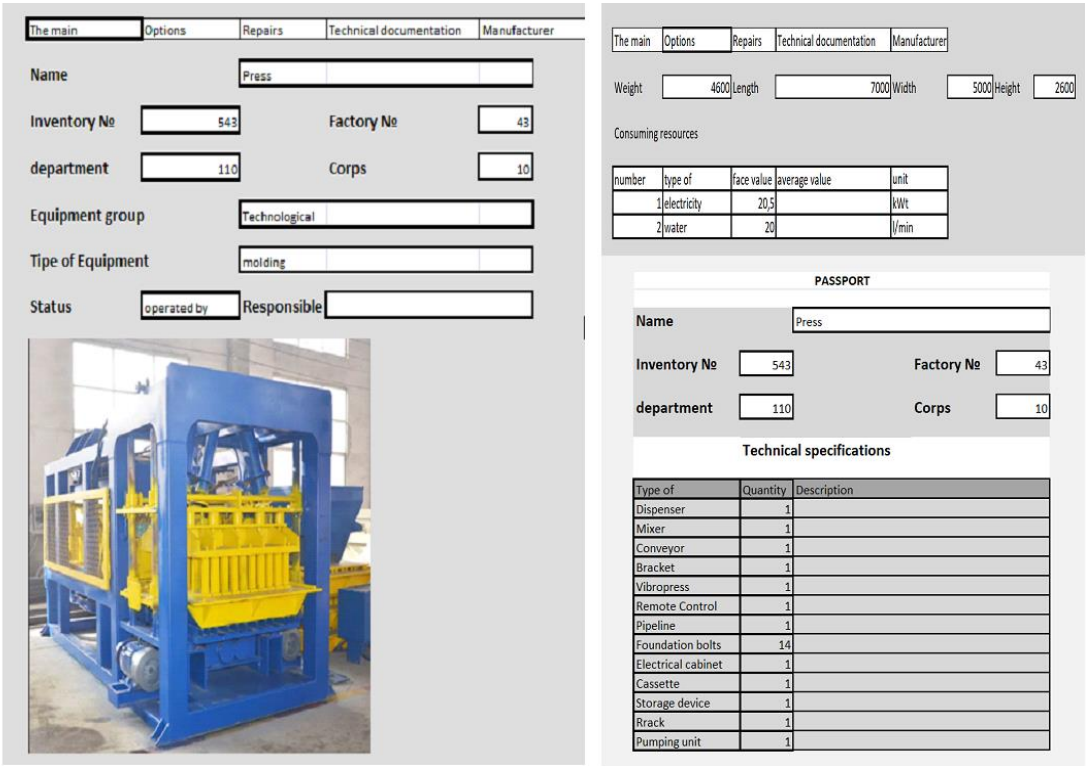

Figure 3- Technological equipment

Figure 3 illustrates the work of a search engine. From the list of equipment selected equipment included in a particular group. The system chosings the equipment that meets the specified parameters. The EQUIPMENT tab shows the selected object. Similar queries can be made to attached databases.

When forming a request for planned repairs of the main and auxiliary process equipment, the system generates a selection of objects of interest, allows to quickly find them and form a file of the necessary information. This is achieved by integrating the graphic base of the system with an external database (Fig.4)

By integrating descriptive information into an external database, we are able to arbitrarily change its configuration without breaking the connection with the graphic model. At the same time, the system consolidates the existing information products of the enterprise. With the help of the report generator, the necessary information is collected for making management decisions for managing assets, business processes, and budgeting. This approach to information significantly increases the efficiency of the management of the building industry enterprise.

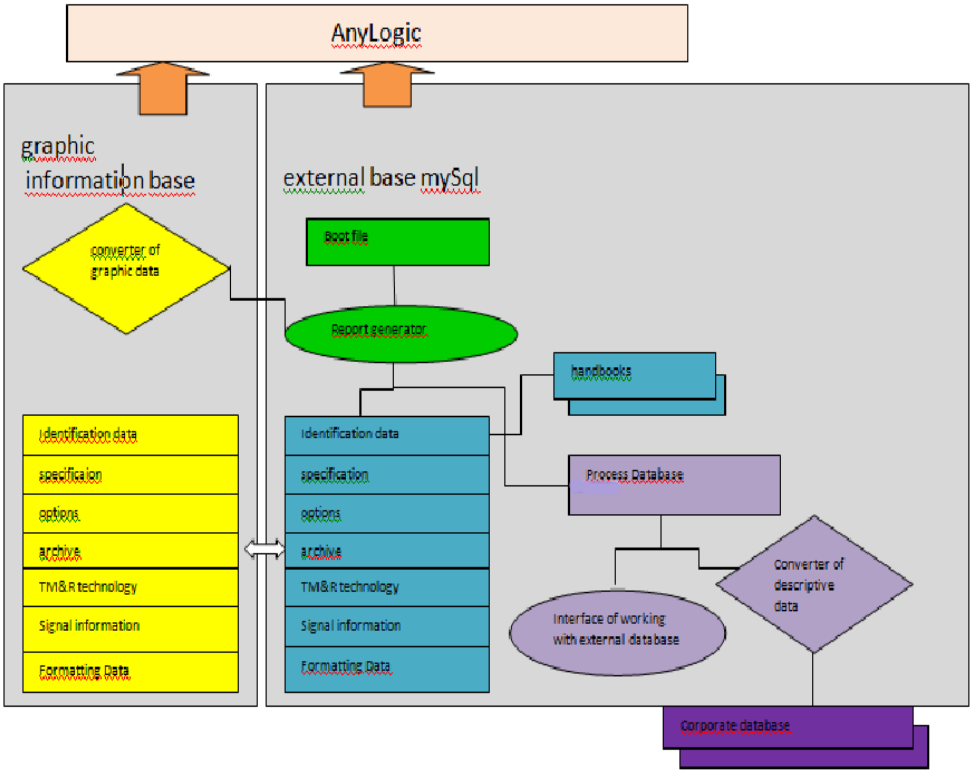

Figure 4- Integration of Graphic Information Model with external database

Conclusion

It is shown that the construction industry enterprises have a large number of classes of tasks that need to be solved using Graphic Information System. Within the framework of conceptual architecture of a GIS a method of organizing spatial databases has been developed and promising directions for the development of such GIS have been proposed. It is developed architecture and described GIS functions for production management of the construction industry. It's realised the analysis of the functionality and architecture of a modern universal graphic informational model for compliance with the requirements of the construction industry enterprises and the identification of promising directions for the development of such systems.

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