

WEB CARTOGRAPHY AT THE CURRENT STAGE OF DEVELOPMENT OF GEOINFORMATION RESOURCES

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ABSTRACT

Possibilities of new services and increased availability of the Internet is largely changed the face of modern cartography. The era of the publication of maps on the Internet is started. This paper gives an overview of the state of web-mapping and marked problems of development. Solving problems of web-mapping is important for the development of uniform geoinformation environment.

Keywords: web cartography, geoinformation environment, software, web technology, mapping application, graphic data.

Абстрактный

Возможности новых сервисов и возросшая доступность Интернета во многом изменили облик современной картографии. Начинается эра публикации карт в Интернете. В данной статье дается обзор состояния веб-картографии и отмеченных проблем развития. Решение задач веб-картографии важно для создания единой геоинформационной среды.

Ключевые слова: веб-картография, геоинформационная среда, программное обеспечение, веб-технология, картографическое приложение, графические данные.

ABSTRAK

Yangi xizmatlarning imkoniyatlari va Internet mavjudligining oshishi zamonaviy kartografiyaning qiyofasini sezilarli darajada o'zgartirdi. Internetda xaritalarni nashr qilish davri boshlandi. Ushbu maqolada veb-xaritalash holati va rivojlanishning sezilarli muammolari haqida umumiy ma'lumot berilgan. Yagona geoaxborot muhitini rivojlantirish uchun veb-xaritalash muammolarini hal qilish muhim ahamiyatga ega.

Kalit so'zlar: veb-kartografiya, geoaxborot muhiti, dasturiy ta'minot, veb-texnologiya, xaritalash ilovasi, grafik ma'lumotlar.

The beginning of the 21st century was marked by a sharp leap in the development and popularization of web technologies. Opportunities for new services and increased availability of the global network in significantly changed the face of modern cartography. The era of publishing has begun cartographic materials on the Internet, which opened access to them to a wide range of consumers and allowed to start creating a single geoinformation space. Ordinary users received modern tools for working with cartographic information, using convenient software products for searching, view and analyze without having anything on your computer other than a standard web browser and access to the Internet. Numerous evolving web mapping services (FAC) are used in everyday life by an increasing number of people. The idea of publishing map data on the Internet has been around for a long time, but Indeed, such an opportunity presented itself relatively recently. It became possible thanks to the emergence of high-throughput communication channels, the development of microelectronic base Computers and new approaches to the transmission of spatially coordinated graphic data (which are cartographic materials).

Despite the fact that for most Internet users, the emergence of web mapping is directly associated with the entry into the market of Google products in 2005, in reality, Internet mapping applications appeared much earlier. The actual date of birth of web cartography can be considered 1993, when it was first the Xerox PARC Map Viewer web service was launched, allowing users to interactively mode to send requests from the browser to the server and receive a map fragment in GIF format. It was this application and its functional concept that became the ancestor of most later versions of web mapping services.

When it comes to agriculture and monitoring, web maps are an essential tool for visualizing and analyzing data. Web mapping platforms, such as Google Maps and ArcGIS Online, provide an easy-to-use interface for displaying data on a map and performing geospatial analysis. In agriculture, web maps can be used for crop monitoring, yield estimation, and mapping of land use and land cover. They can also be used for monitoring environmental factors such as temperature, precipitation, and soil moisture. With the help of remote sensing data, web maps can provide valuable insights into the state of agriculture and the environment, allowing farmers and policymakers to make informed decisions.

At the same time, the concept of a geoportal was formulated for the first time - within the framework of the national US Spatial Data Infrastructure, NSDI Clearinghouse Network. Appear the first electronic atlases and atlas information web systems, for example, the first version National Atlas of Canada, which provide controls for parameters cartographic compositions, construction of spatial correlations, queries to geographical data, etc.

In the early stages of the development of web cartography (Table 1), a distinctive feature most of the services was their locality and narrow focus, focused on professional needs of individual groups of users. This severely limited the range of their potential users.

One of the first steps to popularize web mapping was taken in 1998 in Great Britain when the website "www.streetmap.co.uk" was launched. This service, unlike of its predecessors, was not focused on visualizing a local area of the earth surface and saturating it with narrowly thematic information. It provided users the simplest topographical information and covered the entire territory of Great Britain. Thousands of people were able to determine the location of the desired object, knowing only a postal code, and then print out the finished map. In 1998

appeared special software that allows you to be able to create networks own cartographic web services on the Internet - "Mapserver". About the same time, understanding the perspective of the Internet offer to what a large company It will be necessary to make a decision on the development of a special hosting applications and hosting map services on the network.

In these years, the concept of web cartography and geographic information web systems has been formed, relevant software and technological solutions: open and commercial web GIS, libraries of programs and functions, user and programming interfaces. Large manufacturers of the IT industry, leading developers of commercial professional GIS begin to pay attention to web mapping technologies; cartographic web interfaces become popular and accessible.

When Google launched two global mapping services: Google Maps and Google Earth. None of the previously launched services could not boast of such a "broad" geographical focus. In addition, there was used a fundamentally new approach to the organization of the service: instead of the classic approach, when the user sends a request to the server, waits for processing and receives back generated image, all data is prepared and processed in advance, which allowed to achieve fast work with maps and "seamlessness" of data during navigation.

Table 1

Data	Event
1993 – 1994 years	Release of the first early-generation web mapping applications (Xerox PARC Map Viewer, National Atlas of Canada)
1996-1999 years	Emergence and rapid development of interactive cartographic web systems (Mapquest, MultiMap, Geomedia WebMap 1.0, UMN MapServer 1.0, Terraserver USA). Further Development of Early Generation Systems (US Online National Atlas Initiative). The entry of the giants of the global IT industry into the web mapping market (the Terraserver USA project was created and implemented with active participation of Microsoft and HP)
2000-2003 years	The Beginning of the Age of Distributed Web Mapping Platforms (UMN MapServer 3.0-3.5-4.0, ESRI)
2004 year	In April, Steve Coast launched the Open Street Maps project. Google and Yandex started developing their distributed mapping web services
2005 year	The first release of the mapping web service Google Maps has been released, providing access to zoomable maps of the entire globe via interactive navigation interface. First release out Microsoft Virtual Earth mapping platform and its web interface
2006 year	In May, Andrey Koryakin and Evgeny Savelyev launched the WikiMapia project. In November Microsoft for the first time in the field of web mapping added the ability interactive viewing of three-dimensional images of objects on the map in 172 your web service
2007 year	In May, the web service Yahoo! Map
2008 year	Earlier this year, Microsoft renamed its web mapping service Live Search Maps while integrating it into its global Live Search web services system. In April 2008, the founders of the Open Street Maps community received investment to grow Cloudmade. Cloudmade's mission is to build a wide range of mapping applications for desktop and mobile devices using data and infrastructure from the Open Street Maps community. images to your web solutions. In September, Yandex announced the support of its Yandex Maps service for maps of the whole world.

Around the same time, similar cartographic services appeared on portals other companies: Microsoft, Yahoo, Yandex, OpenStreetMap and others. Become public accessible high-resolution satellite images, navigation services, information about traffic jams, etc. There are software and development tools that needed to create such systems. It should also be said that the authoritative organization OGC (Open Geospatial Consortium - an open geospatial consortium) approximately by this point in time, the formation of a set of basic technical Web Mapping Standards and OGC Web Mapping Services.

The following years, up to the present, are characterized by a large a surge of interest in web mapping and its capabilities in general and a significant increase the number of services in one form or another using web mapping technologies. The most important trends observed in the last one and a half to two years are:

- the emergence of a large number of free projects that implement the concept providing pre-processed data;
- increase in the possibilities of personalization of services;
- opportunities for integrating own data with existing services;
- global scope of services;
- integration of web services into everyday life;

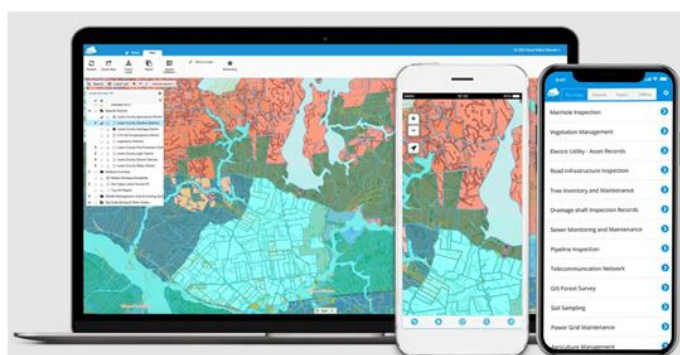
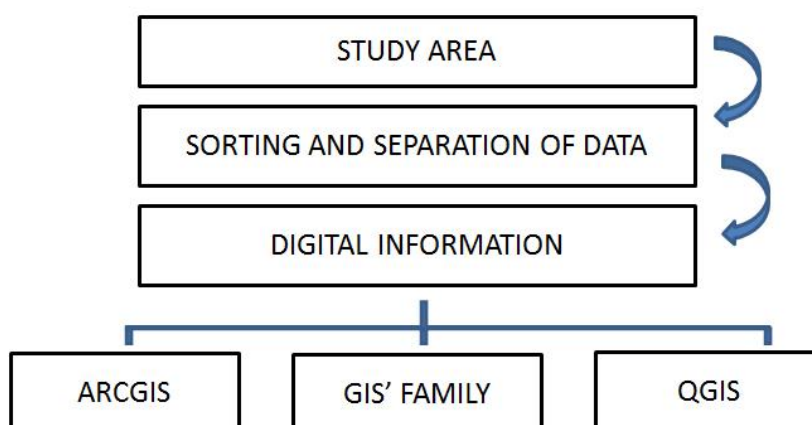


Figure 1. create maps using available statistical data.

Combining a new generation of web mapping systems and services with technology "Web 2.0", the emergence of a new class of mobile devices - netbooks and ultrabooks, smartphones and

tablets, has led to a significant increase in developments in this area, interest in them from ordinary users and a breakthrough in publishing technologies map data on the web.

To date, one of the latest is the technology of combined viewing. cartographic and associated attribute information. For this, special vector formats have been developed. This technology implies the presence on the client place of a powerful computer and a high-speed communication channel. The server must provide only high speed of conversion and issuance of initial graphic information to clients, but also high-speed processing of attributive information stored in the database data.

Unfortunately, despite the intensive development of developments related to the publication cartographic data on the Internet, there is still a lack of scientific and theoretical bases of using web technologies in cartography. There is no systematization of theoretical knowledge and existing practical experience [Pisarev, Kikin, 2012]. In our opinion, this is due, first of all, to the fact that the methods of publication cartographic data in the global network are built mainly on information technologies.

The developers of such mapping systems are usually specialists in the field of web technologies and are not directly related to cartography and science, and in their implementation do not affect theoretical and methodological issues. Among the consequences of the "theoretical dystrophy" of the subject area, one can single out the following:

- lack of a well-established terminology base;
- lack of scientific and theoretical foundations;
- lack of methodological foundations.

Among the terms associated with web mapping, the most commonly used "mapping web service", "web map", "web mapping". Despite the fact that these new terms in cartography have firmly entered the vocabulary and are often used in journalistic and scientific materials for more than a year, their precise and unambiguous definition, unfortunately, has not yet been formulated, which often leads to their arbitrary interpretation by different authors.

CONCLUSION

Web cards are used in different areas. For example, the subject of my scientific work and the area under study consists of monitoring the activities of agricultural sectors, clusters, through web cards. if the question is asked why there are enterprises operating in the cluster method, their export and import volumes, from agriculture to production, can be taken into account. In particular, the cluster method of production in agriculture has been established, the size of the agricultural areas divided into clusters by crop types is 67 percent in cotton and textiles, 8 percent in animal husbandry, 7 percent in fruit and vegetable growing, It is 5 percent.

In addition, the very term "web mapping" is often is used in different contexts, and in various publications one can find significantly different interpretation of this term. In addition to the term "web mapping", the term "web GIS" is often used. Web GIS is closely related to web mapping, but focuses on analysis and processing functions spatial data. However, the two terms are often confused and used as synonyms. Based on the analysis of foreign literature, it can be concluded that that in the world community the use of this term is almost never found, and instead of it the term "web-mapping" is used, meaning web mapping.

The lack of scientific and theoretical foundations is clearly manifested in the absence of an established classification of existing cartographic web technologies. At the same time, existing web technologies used in cartography have different purposes in relation to cartography. With all the variety of CBCs that exist on the Internet, there are no common basic principles of their functioning. There are no complete methodological solutions for publication and use of cartographic data in the global network.

Filling these scientific gaps requires research existing cartographic web technologies, systematization of existing knowledge, as well as development of terminological bases.

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