

# Development of Interregional Cooperation in the Field of Tourism on the Basis of Intangible Cultural and Historical Resources in the Regions of the Central Black Earth Economic Region

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**ABSTRACT:** Cooperation in the field of tourism is determined by the fact that main categories of tourism are mainly places to visit and carry cultural functions. In this regard, the representation of tourist complexes in the global space, which is characterized by both globalization and the localization of individual territories and unique natural tourist complexes, becomes important. The novelty of the study is determined by the fact that the paper highlights the aspects of tourism development as part of the digital development of the region. The authors demonstrate the possibility of creating a holistic product on the basis of the digitalization of the tourism industry and form the necessary infrastructure, which allows to integrate the tourism development process into digital tourism development programs. This aspect fully reflects the requirements for the development of tourism, not only on the basis of intangible cultural and historical resources, but also increases interest in the region at large. The practical significance of the study is determined by the fact that due to the development of the tourist complex, the attractiveness of the tourist region for investment and the growth of gross product, which is determined by a set of functions and indicators, is formed. The paper reveals the aspects of organizational, technical and information support for the development of the tourism industry.

**Keywords:** tourism industry, digital platform, development of the tourism complex, cadastre, development of geographic information technologies.

## INTRODUCTION

Tourism is a global industry with an annual turnover of more than a trillion dollars, which affects the structure and policies of many states and regions (Bala, 2014). The interests of economics and culture, security and international relations, ecology and

employment of the population, hotel business, transport, including public catering are closely connected in the tourism system. Almost the entire territory of the country is characterized by very favourable climatic conditions and the presence of various types of recreational and tourist resources for the development of not only domestic tourism, but also international tourism (Teo, 2001). Tourism development significantly affects such sectors of the economy as transport, trade, communications, construction, agriculture, consumer goods production, and is one of the most promising areas of economic restructuring (Bogoviz et al., 2019a).

Tourism has been declared one of the priority sectors of the national economy, business, cultural and spiritual life of the country (Chakpitak et al., 2018). In particular, provisions are made for the creation of a unified information system with a database of tourist resources, maintenance of a state cadastre of recreational resources and objects of tourism infrastructure; determination of tourist and recreational areas, new tourist routes, international transport corridors; improvement of the tourism education system, introduction of the new forms of postgraduate education and advanced training for tourism industry workers; and at the same time, promotion of the comprehensive development of the state, provided that the ecological balance and the cultural legacy are maintained; assurance of sustainable development of the tourism industry; improvement of the image of the country (Belitskaya, 2018). We should note that achieving this goal is impossible without the use of GIS technologies and introduction of geospatial data infrastructure (Lee-Makiyama and Verschelde, 2016). Increasing the speed and spread of broadband Internet access, the spread of mobile devices and applications form new types of businesses, which are commonly called virtual, information, digital, and network businesses (Androniceanu, 2019). However, over the past decade, virtual business tendencies have changed from the partial continuation of the business model in the internal entrepreneurial network to the full coverage of business models by the global Internet network (Bogoviz et al., 2019b).

It should be noted that the introduction of the digital economy both in the world and in Russia was preceded by the information economy, which prepared the information and telecommunication infrastructure that provided access to information technology training and its implementation in all spheres of life (economy, trade, business, management, etc.). Scientists consider platforming and distribution to constitute the essential signs of identifying a modern economy, revealing not technical solutions, but features of economic interaction and the priority of managerial decisions. Distribution is focused on the advantages of the digital economy in the Small Data format, based on market freedom, market relations and the independence of market agents; platform characterizes the possibilities of digitalization to reduce transaction costs and monetize communication relationships.

## LITERATURE REVIEW

The digital economy is transforming the conventional types of economic activities and human lifestyles, relationships in the digital world even more, focusing on security and trust between transaction participants, creating fundamentally new business models and constantly improving them by introducing cloud technologies, artificial intelligence, new virtual reality, it accumulates huge amounts of data (Big Data), which, upon reaching a critical mass, become an important capital of the digital economy (Syrova, 2020). The phenomenon of the “digital platform”, the phenomenon of

“platforming” were facilitated by the emergence of new business models, transborder processes, network effects, sharing patterns, the potential of financial technologies, shortening investment cycles, transformation of trade, production and logistics chains, the life cycle of digital assets and open innovation (Buevich et al., 2019).

The term “platform” is widely known and used in various sciences: geography, geology, political science; used in industry (oil platform), transport (railway platform), etc. The content of the concept of “platform” comes from French and means “flat form”, a generalization of the content of the use of this concept in various sciences and fields is reduced to one thing: the foundation (surface, position, substantial part of the set of different parts) (Bogoviz et al., 2019c). Platforms and collaborative networks are at the heart of the new digital economy: 60-70% of the new value created in the next decade are expected to be based on digital platforms. Platforms include not only social networks, but also platform environments in industry, supply chains, employment, financial services and healthcare, etc. The increasing role and influence of platforms creates a number of trade-offs that challenge the traditional understanding of business and politics (Mingaleva and Mirskikh, 2019). This changed the rules of business organization and led to the introduction of new forms of construction master plans: technological digital platforms (including network platforms based on sharing economy), which are common in many areas of the economy and caused a change in the paradigm of consumption and, consequently, regulation at large. The emergence of a new format of sharing economy in the world took place in 2007. Further development of the concept of shared consumption is associated with the research of Rachel Botsman and Ru Rogers in the book “What's Mine Is Yours: The Rise of Collaborative Consumption” (Mingaleva and Mirskikh, 2019).

The main business unit and business model of the digital economy (including the sharing economy) are technology platforms that are present in almost all sectors of the economy and perform various functions (Bogoviz et al., 2019d). Most services related to the tourism economy use digital platforms to achieve a more efficient use of resources, to ensure adequate supply and demand on a large scale (Przhedetsky et al., 2018). Sometimes, in the scientific literature, the concept of a digital platform is employed in the meaning of an information and communication platform (hubs) for communication, exchange of views, ideas, which is available on the website, contains information-dense content, helps to consult and coordinate stakeholders in solving many issues (business platform, science platform, smart strategy platform, etc.) (Bogoviz et al., 2019e). However, a digital platform is a complex information system that provides a specific way to perform a specific function and is open to use by customers and partners, including application developers, merchants (a program for paying for online services) and agents (Savinova et al., 2020). It can be used directly or through applications created on its basis by owners or third parties (Lane, 1999). In this regard, it is necessary to determine the main development measures for the use of digital platforms in tourism as well. Since the business segment also includes offline sites, we should address the partial platform integration and construction of an infrastructure in the tourism business segment.

## MATERIALS AND METHODS

A platform is understood as a virtual trading floor, and the totality of its users, and software, hardware and network systems, a business model and an enterprise implementing it. Diversified platforms outperform conventional food companies and

form value chains (Breznitz et al., 2011). The structure of digital platforms is quite complex, it has several main components and the totality of multilateral relations between them, including a number of interrelated factors of their activity, presented diagrammatically in Figure 1.

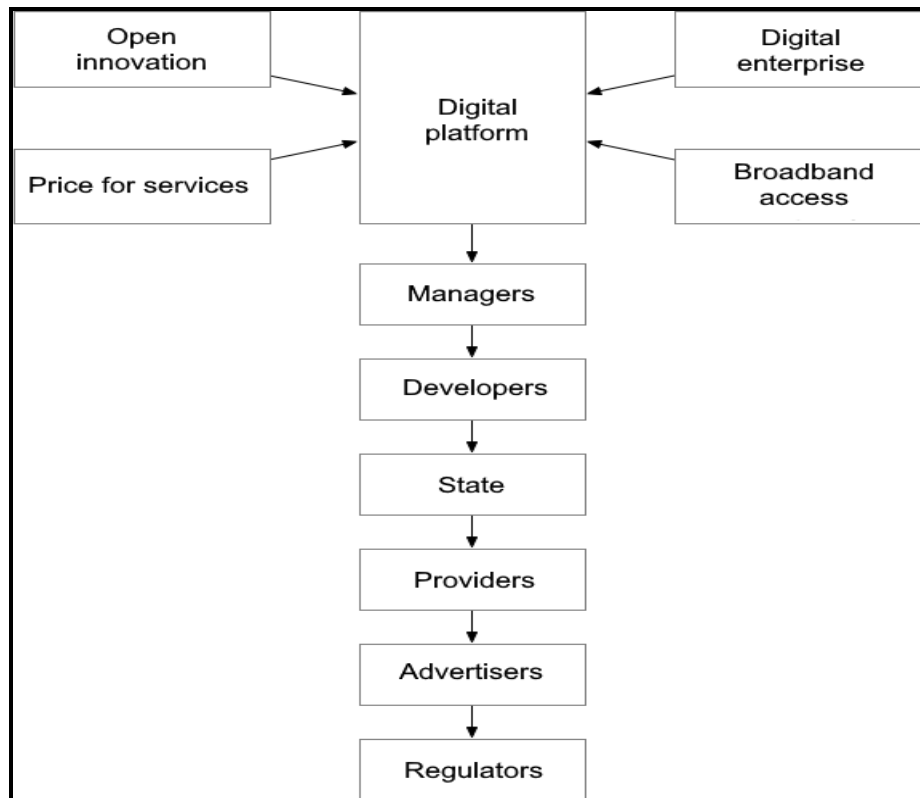


Figure 1. Digital ecosystem structure

A case in point here is the fact that different type of platform solutions can provide the development of a tourism complex, which in turn provides the opportunity for multilateral development of tourism industries. In particular, it should be stated that provision of a tourist complex should be based not only on assessing the development potential, but also on the readiness of the infrastructure to receive the indicated number of guests. In particular, this is also associated with the number of employees and available labour resources, and the opportunities to increase the overall labor productivity (Leonardi, 2016). In this regard, it is necessary to clarify that the dynamics of the development of a digital service is much faster than labour productivity and, therefore, the development of individual services can be suspended or postponed (Zaitseva et al., 2017). Subsequently, this will lead to the full development of separate tourism industries (Zaitseva et al., 2018). The existence of multifunctional digital platforms and continuous improvement conditioned their typology: transactional, integrated, innovative, investment. A transaction platform is a technology, product or service that acts as a channel (or intermediary), which facilitates the exchange or operations between various users, customers or suppliers. An innovative platform is a technology, product or service that serves as the foundation on which other firms (freely organized into an innovative ecosystem) develop additional technologies, products or services (Pfriemer, 2017).

An integrated platform is a technology, product or service that is both a transaction platform and an innovative platform. This category includes companies such as Apple, which has both corresponding platforms, such as the App Store, and a large ecosystem of third-party developers that supports the creation of content on the platform. Investment platforms consist of companies that have developed a platform portfolio strategy and act as holding companies, an active platform investor, or combine both functions. Since over 90% of all enterprises will be digitalized in the upcoming years, the issue of technology responsibility should be addressed in all sectors. Trust is affected by various factors, including the nature of the goods and services, the way companies process personal information, the security of data records and the 50 billion devices that will be connected to the Internet in the coming years, including other factors such as transparency and access to process regulation. In addition to the actions undertaken by individual companies, the business has the opportunity to undertake a leading role in promoting overall social outcomes using technical regulatory standards via enhanced collaboration with the public sector and civil society.

Thus, the digital economy is an information and economic model aimed at transforming the capital economy from a liability to an asset by using a combination of mechanisms for joint ownership, rent, leasing, etc. It is founded on the basis of behavioural economics, which states that the psychological factors that lead to irrationality and the altruism of human activity determine the key influence on the implementation of economic activity. For the tourism industry, this means that digitalization of the industry, apart from using online booking services or websites, also requires the integration of GIS technologies to develop a common monitoring system. All this should be combined with the implementation of global GIS environmental monitoring. Undoubtedly, the use of ready-made products for Russia is quite difficult, since not all systems can factor in the specificity of the country in the context of infrastructure and location. In this regard, the formation of a domestic GIS for the formation of tourism infrastructure is extremely relevant.

## RESULTS AND DISCUSSION

Upon considering the local regional product that determines the development of the tourism complex, the indicators that are determined in the rating form by the World Tourism Organization are analysed. In particular, these include indicators such as the region's attendance rating, revenues that are defined as a percentage of the national budget expenditures. The position of Russia relative to other countries by the indicated metrics is presented in Table 1.

*Table 1. The position of Russia in the world by certain indicators of the tourism industry*

Metric Name	Units	Indicator in Russia	Indicator, total in the world	Position of Russia, ranking	Share of Russia in the world	Top 5 countries in the ranking
Rating of the most visited countries, 2016	million visitors	24.6	1,245	15 (of 174*)	2.0%	France
						USA
						Spain
						China
The volume of income from	billion dollars.	12.8	1,393	26 (of 160*)	0.9%	USA
						Spain



international tourism (export of tourism services), 2016						Great Britain Thailand Germany
Cost of international tourism (import of tourism services), 2016	billion dollars	27.7	1,362	9 (of 158*)	2.0%	China USA Germany Great Britain France
Travel and tourism competitiveness index, 2017	index	4.15	-	43 (of 136)	-	Spain France Germany Japan

Over several years, profitability has increased to 3.4% of GDP. In general, this can be regarded as decent growth. Since this is determined not only by external demand, but also by the growth of external interest in those tourist sites that have been modernized with the support of the state budget. For organizations and individual categories, the data are presented in Table 2.

Table 2. General statistics on the tourism industry in Russia

Indicator	Units	Year				Change 17/16, %*
		2014	2015	2016	2017	
The number of incoming tourist trips of foreign citizens to Russia	million units	25.44	26.85	24.57	24.39	-0.8
Number of collective accommodation facilities	thousand units	15.59	20.14	20.53	25.29	+23.2
Number of visas issued, of which:	million units	2.47	2.30	2.50	2.69	+7.6
Business	thousand units	704.7	637.2	615.2	642.2	+4.4
Private	thousand units	136.8	158.3	166.0	161.5	-2.7
Tourist	thousand units	1183.0	1123.7	1356.5	1495.0	+10.2
Export of services in the Travel category, of which:	billion dollars	11.76	8.42	7.79	8.94	+14.8
Business	billion dollars	5.98	3.81	3.39	4.22	+24.5
Personal	billion dollars	5.78	4.61	4.39	4.72	+7.5
Import of services in the Travel category, of which:	billion dollars	50.43	34.93	23.95	31.06	+29.7
Business	billion dollars	1.64	1.29	1.24	1.48	+19.4
Personal	billion dollars	48.79	33.64	22.71	29.58	+30.3
GVA of the tourism industry	trillion roubles	2.31	2.45	2.60	...	+6.1
GVA share of the tourism industry in GDP	%	3.30	3.30	3.40	...	+3.0

It is noted that the main countries that have contributed to the growth of tourism are identified from the number of regions of the developed countries of the EU and North America. Significant growth is shown by citizens of China – the total growth is up to 30%. For annual growth, this is an extremely significant increase. The differentiation is shown in more detail in Table 3.

Table 3. Inbound tourism rates by major countries

Country	Number of issued tourist visas, 2017, thousand units	Number of citizens who entered Russia in 2017 for the purpose of tourism, thousand people	Number of citizens serviced by travel agencies in 2017, thousand people	Main types of transport used (for all travel purposes in 2017)
China	138.9	1,106.5	370.2	Air – 55.3% Auto – 24.6% Water – 14.0%
Germany	238.0	408.6	32.1	Air – 63.3% Water – 26.2% Auto – 9.6%
The Republic of Korea	0.8	236.4	3.3	Air – 77.1% Auto – 11.1% Water – 8.6%
The USA	68.2	223.6	15.0	Air – 47.5% Water – 47.5%
Israel	0.3	147.9	7.9	Air – 90.6%
Great Britain	64.3	125.7	3.8	Air – 59.6% Water – 37.5%
Italy	89.5	115.9	16.2	Air – 82.6% Water – 14.2%
France	102.4	110.9	16.2	Air – 91.4% Water – 5.6%
Spain	57.0	88.1	19.6	Air – 70.2% Water – 26.5%
Iran	70.1	69.5	n/a	Air – 95.3%
Other countries	665.6	1,176.7	110.1*	Auto – 60.5% Air – 20.2% On foot – 10.2%
Total	1,495.0	3,809.7	594.4	Auto – 54.7% Air – 25.7% On foot – 9.0%

Together with this growth, it is determined that the main part is proposed for the appearance in the growth structure of the load of regional tourist sites. This provides economic growth at large by 5-10% in the quarterly period (Fig. 2).

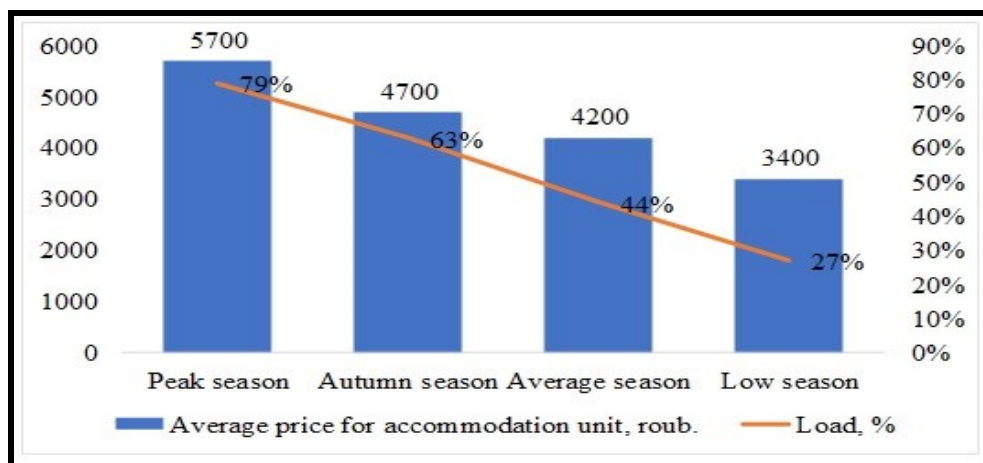


Figure 2. Average workload and average prices of Russian collective accommodation facilities, broken down by season, according to experts

The average length of stay of foreigners in Russia in 2017, according to experts, was 8 days. Predominantly, for a period of more than 8 days, they arrived either for tourism or for treatment. On average, living expenses in 2017 amounted to about 23% of the costs of foreigners traveling to Russia, among the other major expense items – international transportation (24%), meals (19%) and domestic passenger transportation (9%). The average value of the total costs of one foreign tourist to visit Russia was estimated by experts at 144 thousand roubles. (This refers to the average cost per trip as a whole). The main goal of trips of foreigners to Russia is tourism (39.3% of visitors), second place is business travel (business trips) – 31.1% of visitors, and third place is transit passengers (6.6%) (Fig. 3).

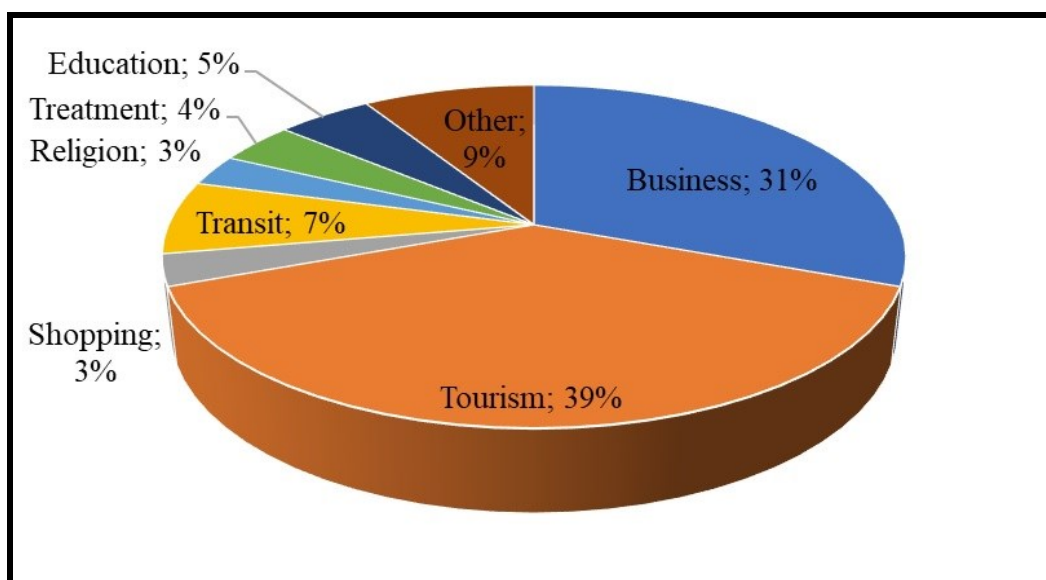


Figure 3. The distribution of foreigners who entered Russia in 2017, by shares, depending on the purpose of the trip

We shall consider a detailed classification of tourism by M. Karchilo (Fig. 4). Tourism as such is classified depending on the categories of persons making tourist travels (trips, visits), their goals, objects that are used or visited, on the level of mobility and travel mode, the intensity of tourist flows and their duration, including on the nature of the organization.



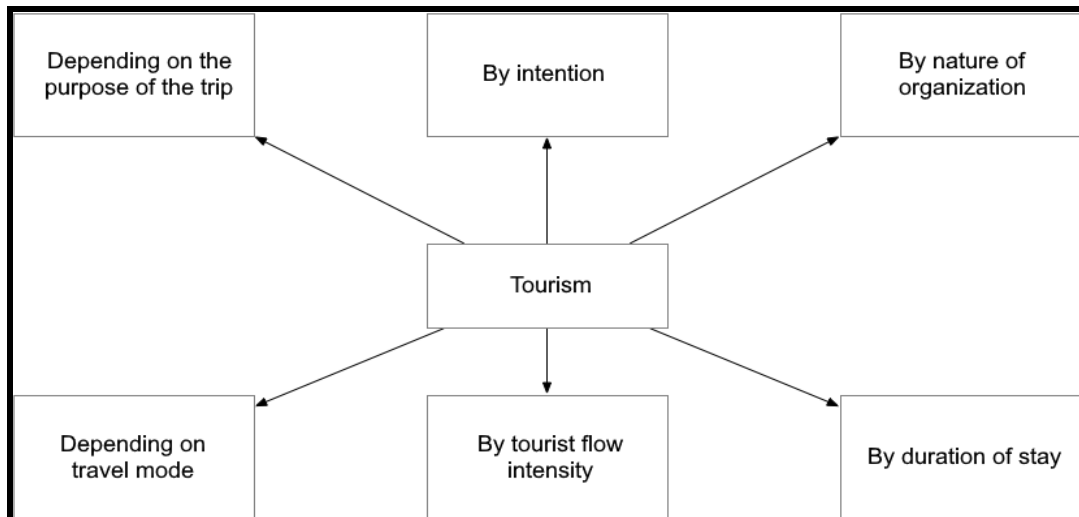


Figure 4. Tourism classification

The development of new geoinformation technologies caused the expansion of the geospatial data beyond purely geographic problems, increasing their volumes many times, which, in turn, has led to the emergence of new technologies and industries that support the processes of mass production and use of geospatial data, including contribution to the formation of the market geoinformation products and services. For example, the rapid development of geospatial tourism data, based on the use of satellite positioning tools, Web/GIS technologies, GIS/ERS technologies, special databases and digital maps, has led to the mass production of tourist geographic information portals, catalogues, navigation maps, etc. Another aspect of the mass distribution of GIS is the use of geospatial data by state and local authorities in order to create and maintain cadastres of natural resources and real estate, including in information systems for urban planning, environmental monitoring and in decision support information systems. That is why we associate the preservation of tourist and recreational potential, its further development with the widespread use of modern information technologies (Fig. 5).

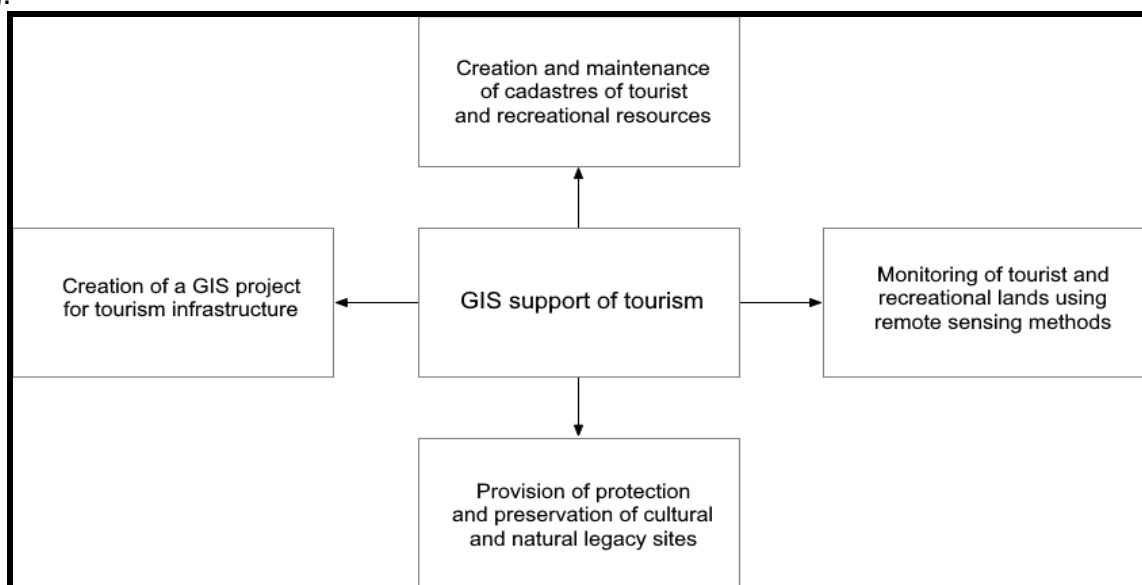


Figure 5. Modern information technologies as a geoinformation support for tourism development

Introduction of GIS technologies in the tourism and recreation industry will ensure the following:

1. Creation and maintenance of a cadastre of tourist and recreational resources.
2. Monitoring of tourist and recreational lands by means of GIS and remote sensing will provide control over the use of tourist resources and compliance with environmental legislation, within the objects of the nature reserve fund.
3. Creating a geographic information system for tourism infrastructure will solve the main issues in the industry:
  - provide sales of services over the Internet;
  - organize electronic workflow;
  - perform marketing and advertising activities;
  - organize consumer awareness tourism services and tourism products;
  - ensure the safety of tourist routes;
  - ensure constant international contacts and international cooperation;
  - conduct real-time analysis of industry statistics.
4. Implementation of information support for measures to protect and preserve cultural and natural legacy sites that undergo significant negative impacts on technologically overloaded territories. The availability of operational information on the state of the geological environment (flooding, the threat of landslides, subsidence, coastal abrasion. etc.), which can be obtained by remote sensing or contained in environmental GIS, will allow more efficient implementation of complex measures for the engineering protection of architectural and historical monuments, justify the value of technogenic impacts, in particular, the volume of tourist load, the reconstruction and development of resort infrastructure.

It is good practice to conclude an agreement on cooperation in the application of modern information and satellite technologies. The agreements stipulate that executive authorities should make every effort to introduce modern information and satellite technologies in the tourism industry in order to solve problems more efficiently. This gives reason to be optimistic about the prospects for the use of such technologies in recreational and tourist activities. One of the main functions of GIS for the development of tourism is the creation and use of electronic maps, atlases and other cartographic products. An important feature is the study within the GIS of not only geographical information, but also of all other processes and phenomena on the earth's surface, in the economy and in society. We shall define the factors that significantly affect the development of the tourism industry:

- regulatory support;
- information support (assistance in obtaining regulatory information, development of information and communication technologies at the regional level);
- financial support;

- organizational and logistical support (coordination of the activities of all structures to support tourism, the creation of coordination councils on tourism development under state administrations, etc.);
- staffing (training and retraining of personnel using international financial and technical assistance, training in the basics of tourism).

A necessary condition for tourism activities is to factor in its spatial aspect, which the modern GIS and Web-technologies are able to provide now. The tasks of optimizing the tourism industry using a geographic information system should be performed at the following levels:

- national (territory of the country);
  - regional (at regional or district level);
  - local (single settlement or group of settlements);
  - object (large tourist site: national natural park, historical and cultural reserve)
- (Fig. 6).

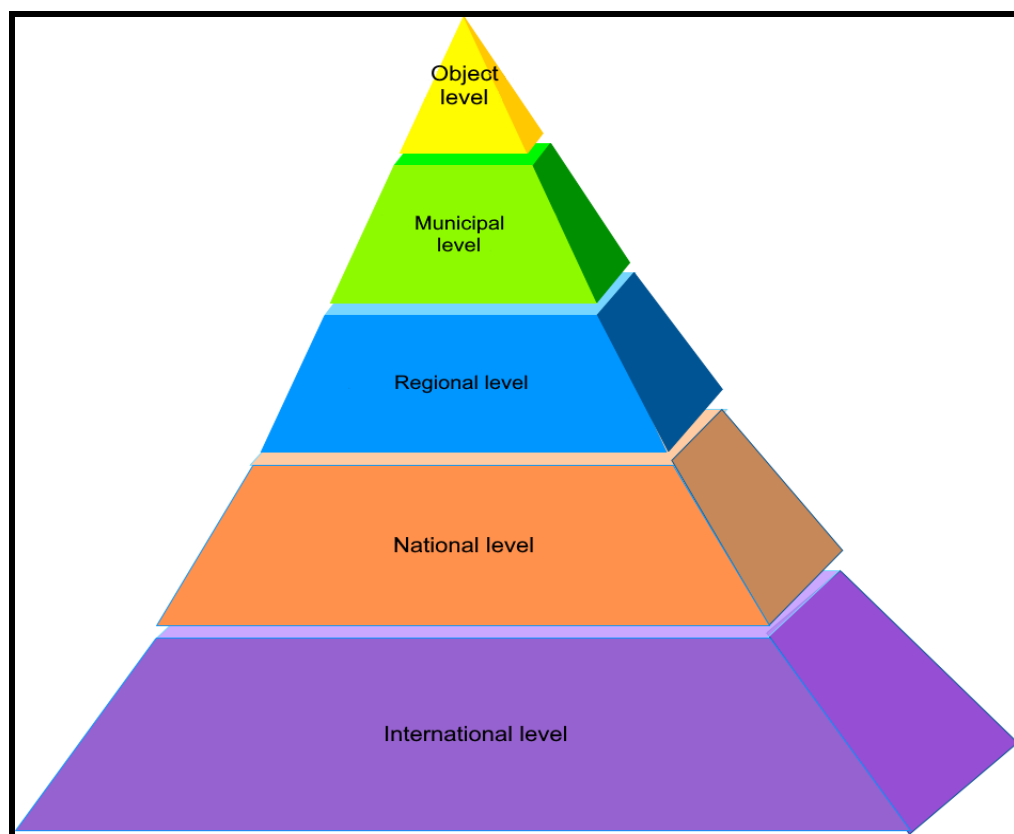


Figure 6. Tourism industry development levels

Considering the above, including analysing the structure of tourism management in the state, we propose a functional model of the regional tourist geoinformation system (Fig. 7).

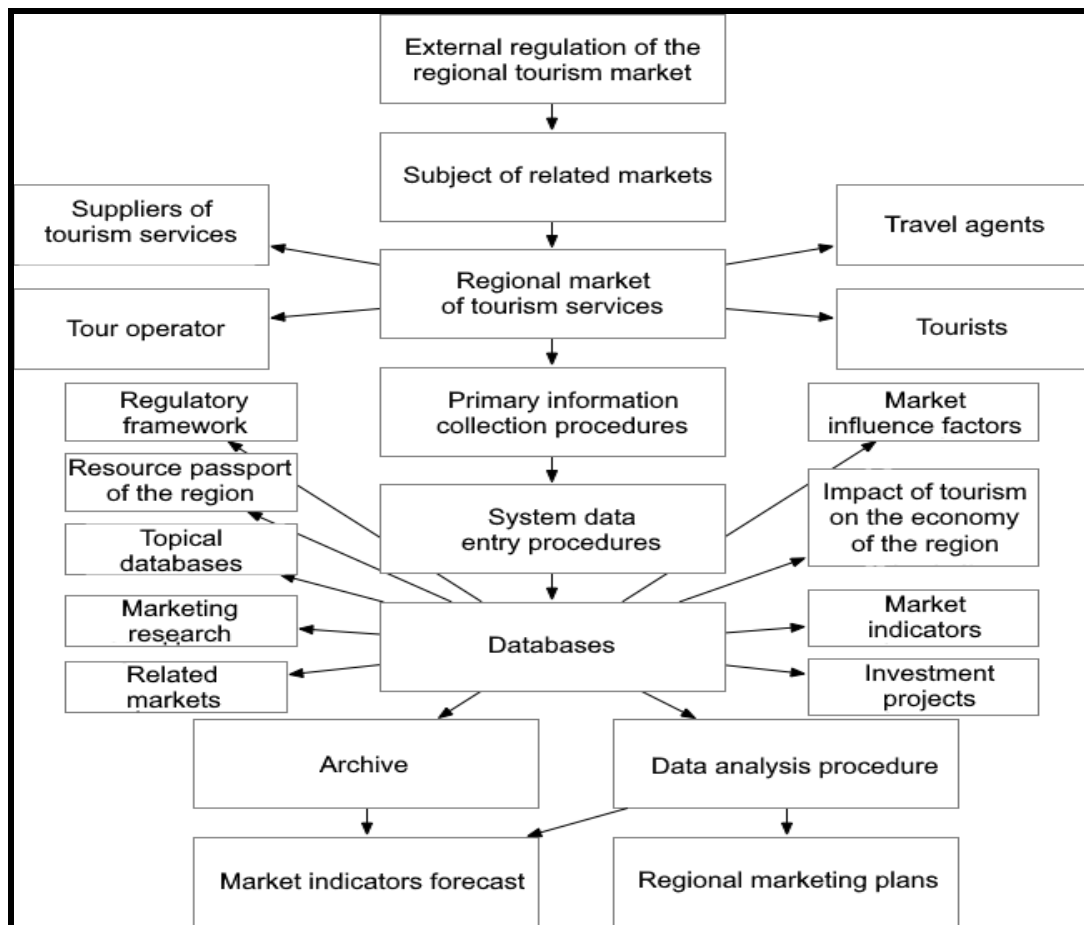


Figure 7. Functional model of the regional tourist geoinformation system

According to the diagram, it is assumed that the regional market for tourism services consists of manufacturers of tourism services, tour operators, travel agents and tourists who provide the procedure for collecting primary information. On the basis of the data entered, expert assessment and modelling of tourist events is performed, including creation of regional marketing plans and forecasts of market indicators.

In almost all geospatial data infrastructure projects at the national and international levels, the international standard ISO 19115 "Geographic Information. Metadata" is used as the basis for regulations for creating and supporting metadata, which defines the composition and structure of metadata for describing geographic information, including the Technical Requirements of ISO 19139, which establish the rules for encoding and representing metadata using XML. According to the standard, metadata is formed as a set of thematic blocks (sections), each of which contains information about certain characteristics of a set of geospatial data, namely:

- the content of metadata, information about the spatial reference of the territory represented in the data;
- data quality, organization and structure of geospatial data;
- reference information about data sources, date of conformity of local data, contacts with manufacturers and suppliers of data.

Metadata sets have a hierarchical structure. The upper level contains generalized data of topical blocks (sections) according to the ISO 19115 standard and is placed in

search information systems, in particular, on the web servers of clearing centres. The lower level metadata provides detailed information about the structure, the classification and coding system of geospatial data. Metadata at these levels is hosted on the servers of providers and producers of geospatial data. The lowest level of metadata is located directly in the geospatial database and contains information about the accuracy, relevance and source of data for each object in the geospatial data set. An example of the metadata structure for selecting a tourist destination is provided in Table 4.

Table 4. Structure of metadata levels for tourism information support

<b>Upper level</b>
<ol style="list-style-type: none"> <li>1. Type of tourism</li> <li>2. Location of the tourist base</li> <li>3. Name of the recreation centre</li> <li>4. Comfort level</li> <li>5. Form and type of structures (internal and external)</li> <li>6. Purpose of the city, acquired by it during the historical development</li> </ol>
<b>Lower level</b>
<ol style="list-style-type: none"> <li>1. Classification code for tourism type</li> <li>2. Classification code for tourist base location</li> <li>3. Unique identifier of the tourist area</li> <li>4. Classification code for comfort level</li> <li>5. Classification code for the form and type of structures</li> <li>6. Classification code acquired through historical development</li> </ol>
<b>Lowest level</b>
<ol style="list-style-type: none"> <li>1. Cultural legacy, museums, theatres</li> <li>2. Transport</li> <li>3. Catering</li> <li>4. Hotels</li> <li>5. Tours</li> <li>6. Ecological state</li> <li>7. Healing resources</li> <li>8. Data on the organization and conduct of entertainment</li> <li>9. Weather conditions</li> <li>10. Terrain characteristic</li> </ol>

However, considering the state significance of metadata and the organization of a clear scheme for their formation, it is advisable to combine the tasks of updating basic geospatial data sets and maintaining metadata databases in a specific territory or subject area in one authorized centre, to which the corresponding territory or subject area is assigned. For example, in the territory of the region in a single main centre, for example, you need a centre that allows you to observe and receive data from tourist places (Fig. 8).



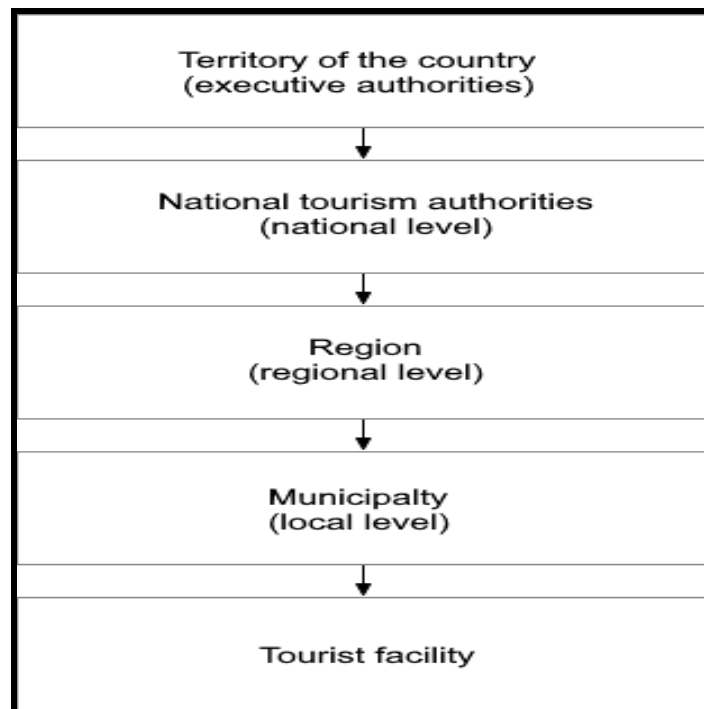


Figure 8. Tourism management hierarchy

Considering the role of metadata, it is advisable the very first stages of spatial data deployment to create and maintain metadata catalogues and introduce data exchange between public authorities and local governments using the Internet. This will significantly reduce duplication of work on the creation of geospatial data and provide access to all interested citizens and organizations.

## CONCLUSIONS

Modern tourism industry is one of the priority sectors of the national economy, business, cultural and spiritual life of the country. In current conditions, the tourism industry is in its infancy as an independent sector of the economy. Nowadays Russia is at the initial stage of the formation of a geospatial data infrastructure. Further work and development of the state in this direction are extremely important, since they can significantly increase production efficiency, as evidenced by the experience of developed countries.

1. For the further development of tourism, it is necessary to:
  - use modern information technology;
  - create a geospatial data infrastructure for sustainable tourism development;
  - proceeding from international experience, improve national policy in the field of formation and use of geoinformation resources based on the creation and development of a national geospatial data infrastructure.
2. The country is at the initial stage of the formation of a national geospatial data infrastructure – work is just beginning to introduce geodata sets in various fields of activity. That is why this issue is relevant and deserves attention.
3. A functional model of the regional tourist geographic information system is built.

The use of GIS technologies and geospatial data infrastructure is a rather effective direction in the development of industries. Tourism should not be an exception. The use of geoinformation databases, geospatial data sets and network data exchange methods can greatly facilitate tourism management and ensure its sustainable development.

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