

GEOINFORMATIONAL-COGNITIVE REPRESENTATION OF TERRITORIAL RESOURCES

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The relevance of the study lies in considering the new content and features of a unified geospatial support for the economy and the life of society in the context of digital transformation. The aim of the work is to present the essence, fundamental points, new views and approaches to geospatial activities. Methods of formal logical analysis, linear programming, theory of matrix games with nature are used. A formal interpretation of the assessment and use of territorial resources as objects of a single geospatial activity is proposed. From the standpoint of the structural-functional approach, the essential characteristics of ensuring the life of society with geo-information and geosciences are considered. A formal-logical analysis of ideas about life in the surrounding geospace is given in order to optimize the use of its resources on the basis of an all-encompassing geospatial perspective. The concept of "geofragment" is introduced as an elementary unit of geospace, in which sectoral and / or natural processes take place and objects of different sectoral spaces interact. The role of geospatial knowledge is substantiated and an integrated approach to the processes of preparing spatial solutions for territory management based on a combination of geoinformation and geocognitive spaces is proposed. Geospatial activity in the territorial discourse is becoming an independent factor in the management of territories to ensure the life of society, based on the optimization of the distribution (redistribution) of territorial resources through the complex interaction of industries and clusters. This activity provides geodata, geo-information and geosciences for the diverse processes of interaction between industrial spaces and nature within the framework of a common physical geospace.

Keywords: geodata, geoinformation, geoscience, geoinformation space, geocognitive space, geofragment, geospatial activity, geospatial industry

REFERENCES

1. The Pennsylvania State University. College of Earth and Mineral Sciences. (n. d.). Retrieved from https://www.e-education.psu.edu/natureofgeoinfo/c1_p13.html.
2. Karpik, A. P., & Lisitsky, D. V. (2019). Surveying industry: prospective development directions in the post-industrial era and the digital economy. *Geodezija i kartografija [Geodesy and Cartography]*, 80(4), 55–64. doi: 10.22389/0016-716-2019-946-4-55-64 [in Russian].
3. Karpik, A. P., Lisitsky, D. V., Osipov, A. G., & Savinykh, V. N. (2020). New paradigm of geoinformation space in territorial aspect. *Caderno Suplementar*, 1, 13 p. Turismo: estudos & praticas. Rio Grande do Norte: Univ. do Estado do Rio Grande do Norte. Retrieved from <http://natal.uern.br/periodicos/index.php/RTEP/article/view/544>.

4. Karpik, A. P., & Lisitsky, D. V. (2020). Prospects for the development of geodesic and cartographic production and the new paradigm of geospatial activity. *Vestnik SGUGiT [Vestnik SSUGT]*, 25(2), 19–29 [in Russian].
5. Towards a Spatial Knowledge Infrastructure White Paper Released. (n. d.). Retrieved from <http://www.gsdiassociation.org/index.php/news/global-news/795-towards-a-spatial-knowledge-infrastructure-white-paper-released.html/>.
6. Wallace A. (21 June, 2017). From spatial information to Spatial Knowledge Infrastructure. Written by Jon Fairall. Retrieved from <https://www.spatialsource.com.au/gis-data/spatial-information-spatial-knowledge>.
7. Blog – East View Geospatial. (n. d.). Retrieved from <https://geospatial.com/blog/>.
8. Advancing role of geospatial knowledge infrastructure in world economy and society (n. d.). Retrieved from <https://www.geospatialworld.net/blogs/advancing-role-of-geospatial-knowledge-infrastructure-in-world-economy-and-society>.
9. Training program: advancing role of geospatial knowledge infrastructure in world economy, society and environment. (n. d.). Retrieved from <https://geospatialworldforum.org/advancing-role-of-geospatial-knowledge-in-world-economy.asp>.
10. Colman, A. M. (2016). *Game theory and experimental games: The study of strategic interaction*. Elsevier, 314 p.
11. Dixit, A. K., & Skeath, S. (2015). *Games of Strategy: Fourth International Student Edition*. WW Norton & Company, 712 p.
12. Savinykh, V. N. (2020). *Matematicheskoe modelirovanie proizvodstvennogo i finansovogo menedzhmenta [Mathematical modeling of production and financial management]*. Moscow: "Knorus" Publ., 192 p. [in Russian].

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