

# BASIC PRINCIPLES AND STRATEGY OF ACQUISITION AND KNOWLEDGE MANAGEMENT BASED ON THE EVOLUTIONARY PARADIGM<sup>□</sup>

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*The article is devoted to the description of the theoretical foundations of the acquisition and knowledge management, differing in a new interpretation of the concept, strategy and principles for solving the problems of knowledge semantic search, classification, structuring and integration in the face of uncertainty and information overflow based on the evolutionary paradigm.*

*According to the basic tenets of evolutionary epistemology, knowledge grows through evolution. Classical understanding of evolution is carried out by means of replicators variation and selection. In wildlife, replicators are genes that are subject to mutation and recombination processes, and the selection of which depends on the success of reproduction. Replicators in the evolution of knowledge are ideas that are transformed through the human imagination, fantasies and emotions. The scientific community has greatly succeeded in effectively implementing the evolutionary processes of modern science. The development of scientific schools and the communication between them contribute to the processes of ideas replication, variation and selection. Thus, the evolutionary development of knowledge is based on the processes of ideas variability, replication and selection produced on a variety of knowledge distributed heterogeneous sources.*

*The application of the theoretical foundations described in the work allows to increase the volume fraction of structured knowledge in the global information space and to intensify their improvement and application. When assessing the relevance of the knowledge elements, the semantics of the analyzed information resource is taken into account, which allows you to identify implicit dependencies and patterns on a variety of systemically significant relationships.*

**Keywords:** knowledge acquisition and management; semantic search; classification; structuring; integration; evolutionary mechanism.

## REFERENCES

1. Tuzovsky A.F., Chirikov S.V., Yampolsky V.Z. *Sistemy upravleniya znaniyami (metody i tehnologii)* [Knowledge management systems (methods and technologies)] / General editorship V.Z. Jampolsky. Tomsk: Izd-vo NTL, 2005. 260 p.
2. Russel S., Norvig P. *Iskusstvennyj intellekt: sovremennyy podhod* [Artificial Intelligence: A Modern Approach]. 2-e izd.: per. s angl. [2-nd edition, translated from English]. M.: Izdatel'skiy dom "Vil'jame", 2006. 1408 p.
3. Kravchenko Yu.A., Kureichik V.V. Knowledge management based on multi-agent simulation in informational systems // (2014) 8th IEEE International Conference on Application of Information and Communication Technologies, AICT 2014. Pp. 264-267.
4. Kravchenko Yu.A. *Sintez raznorodnyh znaniy na osnove ontologij* [Synthesis of heterogeneous knowledge based on ontologies] // [Southern FU Herald. Technology sciences] / Izvestija JuFU. Tehnicheskie nauki. Taganrog: Izd-vo TTI JuFU, 2012. № 11 (136). Pp. 216-221.

5. Kravchenko Yu.A. *Mnogourovnevaja arhitektura scenarija upravljenja znanijami na osnovu ontologicheskogo analiza* [Multilevel architecture of an ontological analysis knowledge management scenario] // [Southern FU Herald. Technology sciences] / Izvestija JuFU. Tehnicheskie nauki. Taganrog: Izd-vo JuFU, 2015, № 2 (163). Pp. 186-195.
6. Kureichik V.V., Kravchenko Yu.A., Bova V.V. Decision support systems for knowledge management // (2015) *Advances in Intelligent Systems and Computing*, 349. Pp. 123-130.
7. Osuga S. *Obrabotka znanij* [Knowledge processing]. M.: Mir, 1989. 292 p.
8. Borodaky Yu.V., Lobodinsky Yu.G. *Evoljucija informacionnyh sistem (sovremennoe sostojanie i perspektivy)* [The evolution of information systems (current status and prospects)]. M.: Gorjachaja linija / [Hot Line] / Telekom, 2011. 369 p.
9. Norenkov I.P. *Ontologicheskie metody sinteza elektronnyh uchebnyh posobij* [Ontological methods for the synthesis of electronic textbooks] // *Nauchno-prakticheskij zhurnal «Otkrytoe obrazovanie»* [Scientific-practical Journal “Open Education”]. M.: CAPITALPRESS, 2010, № 6. Pp. 39-44.
10. Kravchenko Yu.A. *Zadachi semanticheskogo poiska, klassifikacii, strukturizacii i integracii informacii v kontekste problem upravljenja znanijami* [Tasks of semantic search, classification, structuring and integration of information in the context of knowledge management problems] // Izvestija JuFU. Tehnicheskie nauki / [Southern FU Herald. Technology sciences] / Taganrog: Izdvo JuFU, 2016, № 7 (180). Pp. 5-18.
11. Ackoff R. *Iskusstvo reshenija problem* [The art of problem solving]. M.: Kniga po trebovaniju / [Book on Request] /. 2012. 221 p.
12. Kolesnikov A.A. *Osnovy teorii sinergeticheskogo upravljenja* [Fundamentals of Synergetic Management Theory]. M.: Firma «Ispo-Servis», 2000. 256 p.
13. Kureichik V.V. *Evoljucionnye, sinergeticheskie i gomeostaticheskie metody prinjatija reshenij: monografija* [Evolutionary, synergetic and homeostatic decision-making methods. Monograph]. Taganrog: Izd-vo TRTU, 2001. 99 p.
14. Popper, Karl R. *Objective Knowledge: An Evolutionary Approach*. Oxford University Press, London (1972). P. 201.

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