# Ontological Approach to Describing the Interaction of Information Processes in Intelligent Systems

Valerian Ivashenko [1],

Daniil Shunkevich [1]

2024

[1]Belarusian State University of Informatics and Radioelectronics, 6 P. Brovki Street, Minsk 220013 Belarus

Keywords: ontology, information process, intelligent system, dynamic subject domain, multi-agent systems, ostis technology, sc-code.

Abstract: The paper considers an ontological approach to describing the interaction of information processes in intelligent systems. A hierarchical family of ontologies is proposed that investigate both fundamental aspects of representing temporal entities in knowledge bases of intelligent systems and higher-level aspects related to describing the interaction of information processes. The hierarchy of such processes from the processes performed within the hardware platform to the processes of problem solving within a distributed system of agents is considered. Approaches to synchronization of such processes are considered. Special attention is paid to the ontology of spatio-temporal entities, which specifies the semantics of concepts describing changes in various entities in time, such as events, situations, cause-and-effect relations, and so on. Of the three levels of information processes, the paper discusses in the most detail the lower level related to the interpretation of information processes within the hardware platform. Two approaches to organizing of the such interpretation are considered.

Ivashenko, V. Ontological Approach to Describing the Interaction of Information Processes in Intelligent Systems / V. Ivashenko, D. Shunkevich // Information Technologies and Their Applications : Conference proceedings Second International Conference, ITTA 2024, Baku, Azerbaijan, April 23–25, 2024 / ed.: G. Mammadova, T. Aliev, K. Aida-zade. – Berlin : Springer, 2024. – Volume 2226, Part 2. – P. 198–212. – DOI: https://doi.org/10.1007/978-3-031-73420-5_17.