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Methods of Semantic Integration in Distributed Information Systems: Challenges of Application

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Semantic assets are fundamental for data collection, search and analysis together with data visualization based on semantic properties as well as for semantic interoperability of distributed information systems in general. While the technical and organizational interoperability levels are well developed, the semantic interoperability, which is quite essential for heterogeneous environment of distributed systems, still meets some challenges. The ability of information systems to interact on the semantic level can be achieved by joining the efforts of IT-specialists and domain experts. Ontologies, thesauri and glossaries, created by the experts for the domain formalization, should be transferred from paper documents into machine-readable format. Without that, the dissemination of knowledge outside of a particular information system is difficult and insufficient for the "understanding" and the (re)use by other interacting systems.

This report marks the main challenges in the application of semantic integration methods, especially the synergies between IT-specialists and domain experts. Sematic integration collaboration platform is represented as a solution, which provides the formalization of the domain based on the (re)use of semantic assets for modeling of interoperable distributed information systems, transformation of open data to linked open data and for improving the quality of scientific and technical information search.

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