ONTOLOGY-BASED METHODS OF THERMOPHYSICAL DATA INTEGRATION

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The work analyzes the approaches to the problem of thermophysical data integration using modern information technologies (IT). To implement this task, the authors proposed a combined use of methods of Semantic Web and Big Data, which ensures that the variability of the data structure and the coverage of large numerical arrays typical of thermophysical data are taken into account [1]. Application of ontologies for description of metadata of the integrated distributed sources and JSON-format files for thermophysical data storage are offered. In order to organize the data management of such a two-layer system, the Apache Spark [2] toolkit was used from the Big Data technology stack.

A number of existing data integration platforms based on similar methods have been studied [3–5]. At the same time, a number of proposed components and IT solutions are worthy of attention and in the future can be used for the thermophysical data integration.

The test results of the developed integration tools for working with the THERMAL database are presented. The stages of data preparation and conversion into a new format are demonstrated.

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2. Apache Spark, `http://spark.apache.org/docs/` (available at 22.04.2018)
3. Open Semantic Framework (OSF), `http://opensemanticframework.org/` (available at 22.04.2018)
4. MOMIS DataRIVER, `http://www.datariver.it/data-integration/momis/` (available at 22.04.2018)
5. Karma: A Data Integration Tool, `http://usc-isi-i2.github.io/karma/#pub` (available at 22.04.2018)