

INTELLECTUAL INFORMATION SYSTEM ON ECOLOGY

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Task of making general structure plays an important role for processing data and knowledge using of statutes following from ecological monitoring project in the frame of forming intellectual information system on ecology. There is given general structure of the system and looked on the database and knowledge base and mutual information relations between them in the intellectual information system that gives opportunity to analyze the information got from the monitoring process on the Caspian Sea ecology in the presented article.

As an ecological monitoring complex system with a hierarchical structure is understood that implements evaluation and prognosis on the changes in the environment in result of anthropogenic impacts to the ecosystem. Database is created for storage and processing of information about spilled discharge to the Caspian Sea from the objects that have negative impact to ecology and for storage and processing of information about possible problems caused by ecological situation is created knowledge base.

Database formed on the basis of relation model that reflects information about composition of ingredients on separate zones and sources of polluted flows directly or indirectly to the Caspian Sea from the coast according to conceptual model. Both factographic and cartographic information are kept here.

In first order organization of knowledge base is based on the character of rules to be kept in it. All before it is a frequently changing knowledge. Rule base define field knowledge with description production model and also in result of activation of these knowledge relations among the data elements. These rules are active and can create new hypotheses on the basis of database [2].

Interaction between database and knowledge base can be carried out in three levels in general: first level – factographic and cartographic information, that is data; second level – description procedures that define the method of factographic information manipulation (Figure 1).

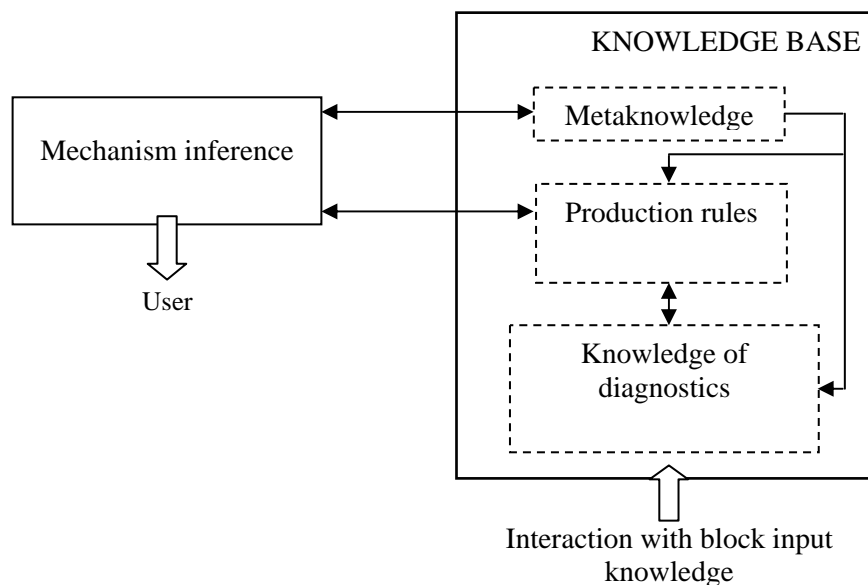


Figure 1. Structure of knowledge base

The third level of presentation of ecological knowledge is a metaknowledge level (knowledge on waste) which is important for the rationalization of operational processes. Metaknowledge – is a totality of knowledge on waste, its composition and structure.

Taking this into consideration knowledge base structure is organized in three main subbase – metaknowledge, production rules, diagnostics.

Knowledge structurization is closely connected with the problem of necessary information search. The best search strategy in all stages of problem solution is the use only suitable part of information in knowledge base. And these simplify the choice of necessary knowledge and search for the problem solution during correct structurization of knowledge base.

User interface is implemented close to limited natural language and also with visual presentation (graphic, table). Knowledge engineer and redactor work responsible for the modification of knowledge base are coordinated and the result of this relation transfer to module of knowledge registration and gathered in knowledge base (Figure 2).

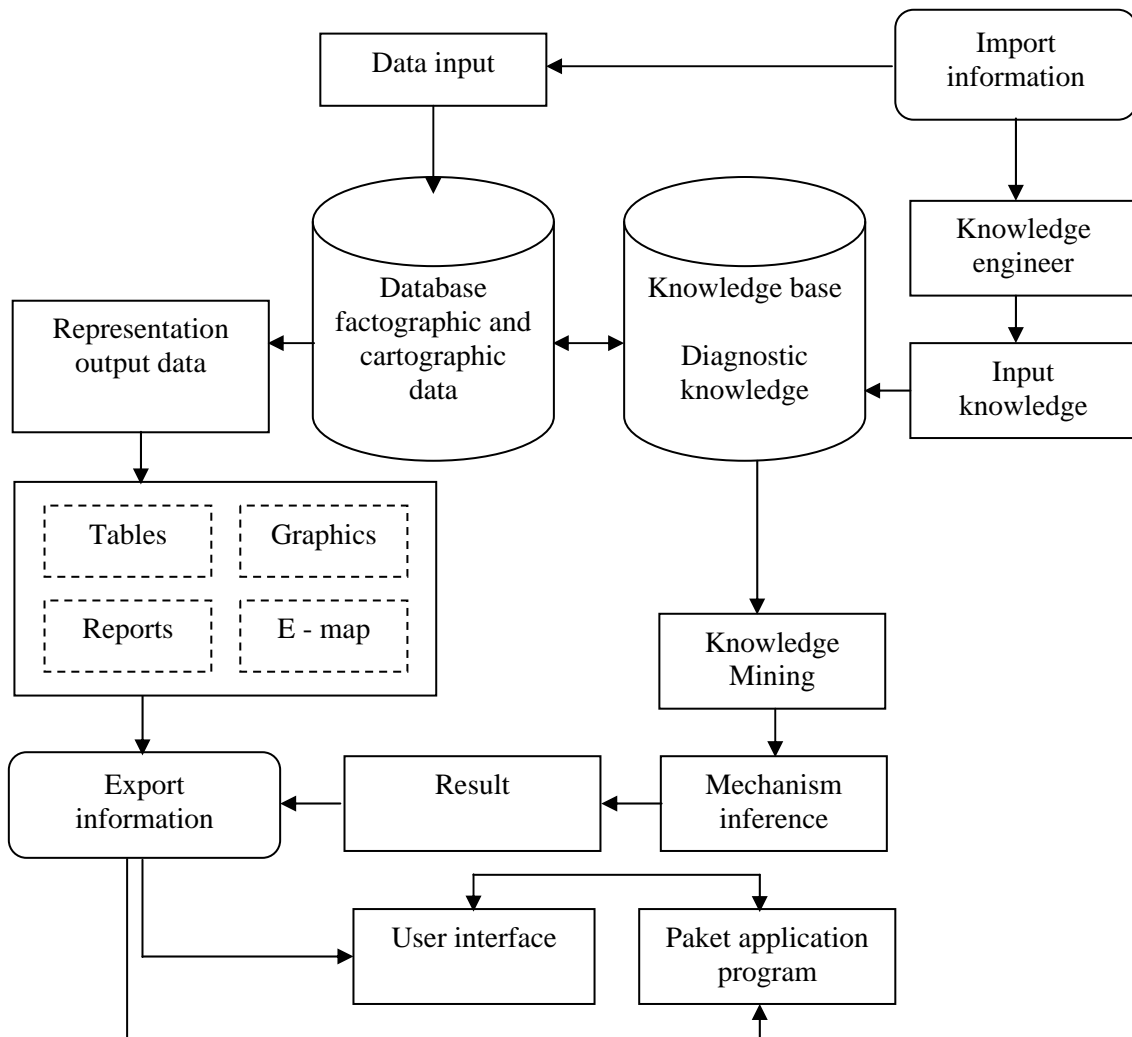


Figure 2. Structure of intellectual information system

On the basis of knowledge mining module of mechanism inference started for the realization of intellectual search and in the next step results obtained and issue information is formed.

Systemized on the basis of real facts and benefited from database of system and data transfer to user is organized in the form of table, graphic, report and electronic map, and realize in output information module.

Correlation with packet application program is used during special operations (import and export of information).

Neither of existing ecological information systems don't cover all of the enumerated components. Besides the existence of this elements are not abstract, but reflect realization of different functions of system pretending for the intellectuality in application aspect. Entry of this component and relations to the intellectual system are defined depending in some level of its purpose, functions, subject field and correlation form during processing.

Literature

1. Salski A. Fuzzy logic approach to data analysis and ecological modeling // www.erudit.de/erudit/events/esit99/12571_p.pdf
2. Salski, A., Fuzzy knowledge-based models in ecological research //, Ecological Modelling, 1992, p. 103-112
linkinghub.elsevier.com/retrieve/pii/S030438009800026X