

SOME FEATURES OF INFORMATION TECHNOLOGY DEVELOPMENT OF EXPERT SYSTEMS USED IN UKRAINE

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Abstract: *In this paper the analysis of the various functions in the view of features of information technology development of expert systems used in Ukraine is given.*

Keywords: *information systems, artificial intellect, expert systems, ACS.*

ACM Classification Keywords: *1. Computing Methodologies - 1.2 ARTIFICIAL INTELLIGENCE - 1.2.1 Applications and Expert Systems.*

The tendency and function

Characteristic feature of the progress of computer information systems that are relevant to Ukraine is an absolute priority to development of expert systems based on the using of artificial intellect Institute. This trend is substantiated by a factor that expert systems allow the manager or specialist to get expert advice on any problems which have accumulated knowledge of these systems. Artificial intellect is usually described as the ability of computer systems to such actions, which would be called intelligent if it came from the man.

Of course, the solution of special problems requires special knowledge. However, not every company can afford to keep a staff of experts on everything related to her work, problems, or even invite them each time the problem occurred. This, at first glance, the only economic problem, which is inherent in almost every young and poor country such as Ukraine, was the main reason for this: main idea of using the technology of expert systems is to obtain from the expert's knowledge, and download them to your computer, use whenever the need arises.

As one of the major applications of artificial intellect, expert systems are computer programs that transform the experience of experts in any field of knowledge in the form of heuristics rules. Heuristics do not guarantee optimal results with the same confidence as usual algorithms used to solve problems through decision support technologies. However, they often provide sufficiently acceptable solutions to their practical use. All this makes it possible to use expert systems technology as advising systems.

The similarity of the information technologies used in expert systems and decision support systems is that they both provide a high level of support for business decision-making in Ukraine. However, there are three significant differences, rather the features.

The first is that the solution to the problem in the decision support systems reflects the level of understanding of the Ukrainian particular user, his mentality and the ability to obtain and interpret the optimal solution. The technology of expert systems, on the contrary, asks the user to decide which exceeds its capabilities.

The second difference between these technologies is reflected in the ability of expert systems to explain their reasoning in the process of receiving the decision. Very often, these explanations are more relevant to users than the decision itself.

The third difference involves the use of a new component of information technology - general knowledge and expertise.

The main components of information technology used in the expert system

The main components of information technology expert systems are: the user interface, knowledge base, the interpreter, module for creation system.

To enter data and commands in an expert system and receiving output information from her manager (specialist) uses the interface. Teams include the parameters that guide the processing of knowledge. The information is usually issued in the form of values assigned to certain variables.

The manager can use the four methods of data entry menus, commands, natural language and its own interface.

The technology of expert systems provides an opportunity to get as output information is not only a solution, but also the necessary explanations.

We distinguish between the two most important kinds of explanations:

- explanation issued on request. The user may at any time require the expert system to explain their actions;
- explanation of the solution of the problem.

After receiving the decision, you can demand an explanation of how it was obtained. The system should explain every step of his reasoning, leading to the solution of the problem. Although the technology to work with the expert system is not simple, the user interface of these systems is friendly and usually does not cause difficulties in the dialogue.

Facts describing the problem area, as well as the logical relationship of these facts, contains a knowledge base. Of course, central to the knowledge base belongs to the rules. This is usually determines what should be done in this particular situation, and consists of two parts: a condition that can be executed or not, and the action that should be performed if the condition.

All materials used in the expert system rules and form a system of rules, even for relatively simple systems may contain thousands of rules.

All kinds of knowledge depending on the specific subject area and qualification of the designer (knowledge engineer) with varying degrees of adequacy may be represented by one or several semantic models. The most common models are logical, production, and frame-based semantic network.

Part of an expert system that produces in a certain order processing knowledge, which are in the knowledge base, we called the "interpreter". The technology of interpreters` activity reduced to a consistent set of rules of consideration (rule after rule). If the condition contained in the rule is observed, then the appropriate action must be done, and users have the option to solve the problem.

Besides that, in many expert systems it is appropriate to introduce additional blocks: the database, the unit of calculation, the block entry and data correction. The block is needed if solution of the conflict situations must be taken or associated with the adoption of management decisions. An important role is played by a database of planning, physical, settlement, reporting, and other permanent or operational performance. Block entry and data correction is used for quick and timely reflection of current changes in the database.

Create and organize a set of rules are done by module of the system. There are two approaches that can be used as a basis for creating a module of the system: the use of algorithmic programming languages and the use of expert systems shells.

In Russia and Ukraine in order to provide the knowledge base using a specially designed language "Lisp" and "Prologue" are using, although you can use any known algorithmic language.

In most cases, faster and easier compared to programming, to create expert systems using expert systems shell - ready software environment that can be tailored to address specific issues through the creation of a knowledge base.

Decision support systems and stages of their evolution

During its development, decision support systems were the following stages.

The first stage of the evolution of transaction processing systems have appeared (TSP) - a computer system designed to perform routine operations of registration, accumulation, storage and delivery of information in a predetermined manner. As we see, in such decision-making systems provided only information.

The next stage of development of information systems was the concept of automated control system (ACS). In the West, this concept was called MIS. It is a computer system designed to provide timely information for decision-making.

The level of support solutions using this concept - the information, we apply some models and methods for making optimal decisions.

Note, to a large extent the nature of all the generations of systems and their concepts determined by the technical capabilities of processing information available at that time. Office automation systems (OAS) implemented the distributed database. Eliminated excessive centralization. There were local area networks based on the average computer. The level of decision support (information) apply some models and methods for making optimal decisions. OAS - computer system to perform complex operations management system as such.

The next stage - a decision support system (DDS). DDS - interactive computer system, which uses formal rules and the controlled object model in conjunction with the database manager and personal experience to develop and test options for management decisions. As you can see, the system of this kind is not ensured by information and decision-making process, but participate in it.

The peak of the development of information systems are expert system (ES). Expert System - a computer system that uses knowledge of one or more experts, presented in a formal form to decision address (ESS - a variant of DDS decisions to senior management).

There are many members of various types of information systems.

Thus, the decision support system - interactive automated information system that uses rule-making and the corresponding models with databases, and interactive computer modeling process that supports the adoption of independent and unstructured decisions by individual managers and the personal experience of the person making specific implemented solutions to problems which are not amenable to solution by conventional methods.

Recently, DSS are beginning to be applied in Ukraine, in the interests of small and medium-sized businesses (for example, selecting placement of outlets, the choice of candidates for the vacant position, with the option of information, etc.). In general, they are able to maintain an individual style and meet the personal needs of the manager.

Developed and implemented application systems, designed for solving complex problems in large commercial and government organizations in Ukraine, for example: in the airline industry - using a decision support system - Analytical Information Management System. It was created by American Airlines, but its modified versions are used by other companies, aircraft manufacturers, aviation analysts, consultants and associations, including those in Ukraine. This system supports a variety of solutions in this sector by analyzing data collected during the utilization of transport, traffic assessment, statistical analysis of the chart. For example, it allows you to make forecasts for the aviation market for the shares of companies, revenue and profitability. Thus, this system allows

management to make decisions about airline ticket prices, demands for transport. Also it is used to study the degree of urbanization, forestry, railway business, agricultural, etc.

Conclusion

Last time, in Ukraine the recent DSS became more and more actual and applied in the interests of large commercial and government organizations, small and medium-sized businesses.

It is very popular for the small and medium-sized businesses: selecting placement of outlets, the choice of candidates for the vacant position, with the option of information, etc. In general, they are able to maintain an individual style and meet the personal needs of the manager.

Developed and implemented application systems, designed for solving complex problems of large companies are using. For example, in the airline industry a decision support system - Analytical Information Management System is using. It was created by American Airlines, but its modified versions are used by other companies, aircraft manufacturers, aviation analysts, consultants and associations, including those in Ukraine. This system supports a variety of solutions in this sector by analyzing data collected during the utilization of transport, traffic assessment, statistical analysis of the chart. As well as, it allows them to make forecasts for the aviation market for the shares of companies, revenue and profitability. Thus, this system allows management to make decisions about airline ticket prices, demands for transport. Also it is used to study the degree of urbanization, forestry, railway business, agricultural, etc.

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