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Intellectual Solutions for Development of Information Technologies

With the development of computer technologies, the meaning invested in the notion of an information system changed. A modern information system is a set of information technologies aimed at supporting the life cycle of information and includes three main processes: data processing, information management and knowledge management. In conditions of a sharp increase in the volume of information, the transition to work with knowledge based on artificial intelligence is, in all probability, the only alternative to the information society.

The modern level of information technology development allows today to implement in practice the fundamental solutions in the field of artificial intelligence developed in the last decades of the last century, creating not just corporate information systems, but intelligent enterprise management systems. At the same time, increasing the level of "intelligence" of corporate information systems meets the needs of the business - the manager needs intelligent systems that allow to transfer the management solutions worked out by many years of practice into the field of computer technologies, freeing up intellectual potential for strategic thinking, determining the directions of the enterprise development and solving non-standard tasks that require not artificial but natural intelligence.

Let's consider the most promising technologies for the development of information systems:

- Neural networks

This direction stably holds in the first place. The improvement of algorithms of training and classification in real time, the processing of natural languages, recognition of images, speech, signals, as well as the creation of models of an intelligent user-friendly interface are being continued. Among the main applied tasks solved with the help of neural networks are financial forecasting, data mining, system diagnostics, network control, data encryption. In recent years, there has been an intensified search for efficient methods of synchronizing the operation of neural networks on parallel devices.

- Evolutionary calculations

The development of the field of evolutionary computing was significantly influenced primarily by investments in nanotechnology. Evolutionary calculations touch upon the practical problems of self-assembly, self-configuration and self-healing of systems consisting of a set of simultaneously functioning nodes. At the same time, it is possible to apply scientific achievements from the field of digital automata.

Another aspect of evolutionary calculations is the use of autonomous agents for personal tasks as personal secretaries, managing personal accounts, assistants selecting information on the networks using third-generation search algorithms, job planners, personal teachers, virtual sellers, etc.

Models of autonomous behavior are expected to be actively introduced into all kinds of household devices that can clean rooms, order and prepare food, drive cars, etc.

- Large groups of different technologies

This includes indistinct logic, image processing, expert systems, intellectual applications, distributed computing, intellectual engineering etc.

In the future, temporarily forgotten methods of simple enumeration of variants will be intensively developed, using an extremely simplified description of objects. But with the help of this approach it will be possible to solve, as expected, a lot of different tasks (for example, from the field of cryptography). Confident enough to operate stand-alone devices in a complex world will help quite simple, but resource-intensive algorithms of adaptive behavior. At the same time, the goal is to develop systems that do not resemble people in appearance, but act as human beings.