

## Abstracts of Dr. Theses

**Title:** Mathematical methods of the elaboration and support of decision in social and economic systems (dr. hab. theses)

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### Abstract

The thesis is devoted to the investigation and elaboration of informational tools to apply wider mathematical methods of decision support to poorly structured and unstructured problems.

Many developed optimization methods could not win large application areas till now. The concept of decision support system (DSS) permitted to combine harmoniously the rigidity of mathematical optimization methods with the intuition and reasoning of a decision maker on the basis of inexact and incomplete data. The decision making process and its structure are studied, allowing to justify the necessity of building mathematical modeling methods (optimization and simulation) into information system, to ensure effective functioning, to use advantages of human intellect, mathematical methods and computing. The conceptual structure of DSS is proposed which was implemented in three real systems from different fields.

The car transport is one of the most important branches of economics. On the basis of classification, the place of delivery and dispatching problems in the range of transportation problems is revealed. Frame delivery problems are formulated, from which all possible particular problems are obtained and some developed algorithms of their solution are described. For delivery and dispatching problems, a DSS system is elaborated which uses algorithms of exact and approximate solutions.

Another type of considered problems belongs to scheduling the work of a truck enterprise. When scheduling carrying capacities, the hierarchical simulation models, included in DSS by the planning of enterprise's work showings, are used.

One more example of the application of conceptual DSS structure is implemented in a system of decision support and monitoring of projects, included in a scientific and technical program, during forming of the program and implementation of the projects.

The results of investigation and elaboration of DSS permitted to make their conceptual structure more exact and to propose systems helping leaders of different rank in decision making, which include advanced technologies of management, system theory, optimization and simulation methods and takes into account psychological aspects.

The thesis is written in Romanian.