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SYSTEMS AND INFORMATION TECHNOLOGIES IN LOGISTICS. MANAGEMENT PROCESSES OPTIMIZATION TOOLS - MULTI-OBJECTIVE OPTIMIZATION

The term of optimization, optimal is a very natural element of our current contacts' glossary (daily, common), used - and one may even venture to say abused - in situations when you want to indicate the characteristics of a subject, an object or a phenomenon, particularly distinctive in a given class, kind or type. In a sense, it is an over-interpretation, especially in cases when you do not provide, or are not able to identify the criteria that constitute the evaluation essence of distinguished characteristics of the selected object. Optimization - the method of determining the best (optimal) solution (searching for the function's extremum) from the point of view of a particular criterion (an indicator) of quality (e.g. of costs, a route, efficiency).

Examples of multi-objective optimization applications can be multiplied indefinitely, hence only a few obvious examples of a fairly general character:

product and production process designing, financial management, aircraft and automobile designing (e.g. maximisation of a performance indicator while reducing fuel consumption of a vehicle, or the reduction of the mass of a device while maximizing the resistance of its individual components, etc.), maximization of profits including maximization of profits by minimizing production costs.

Significantly different, with specific characteristics, are the conditions of crisis management, an area of multi-objective optimization applications in a decision-making process. The very definition of crisis management sets a certain framework which, on the one hand, clearly corresponds to the idea and principles of multi-objective optimization, and on the other hand, naturally prefers indicated criteria specified by an objective function. The article, in the simplest way possible, brings closer the essence of the optimization problem, including with regard to the conditions of crisis management.

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