

# The algorithm of stochastic sampling in the investment program formation of the mega project

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The report proposes an algorithm of stochastic sampling for the construction of the execution schedule of the network stochastic model and the formation of the investment program of the mega project. The task of implementing the megaproject investment program is presented as the task of optimizing resource-scheduling for alternative options for performing work with different probabilities. The algorithm of stochastic sampling of an individual realization of the network stochastic model consists in a sequential consideration of the groupings of work and the calculation of the temporal characteristics of events. As a result of stochastic sampling, some of the work is realized, the rest of the work is excluded from the list. The stochastic sampling of each work is determined by a specific description of the logical capabilities of the initial event and the final event of this work. Exception of work from the current implementation is done according to rule A, and inclusion of it in a particular implementation - according to rule B [1]. To reduce computational costs, branching is used. As a result, we obtain a family of deterministic network models. In each concrete implementation of the deterministic network model, the problem of finding the permissible schedule of the minimum duration at which the guidelines are fulfilled is solved. The total intensity of consumption of resources does not exceed their number. The problem of finding an acceptable schedule of the minimum duration is solved, at which the directive terms are fulfilled. The total intensity of consumption of resources does not exceed their number. The proposed algorithm is implemented on the real economic information of the megaproject of the East Siberian oil and gas complex. The schedule for the implementation of the megaproject investment program and the distribution histogram of resources are constructed.

1. Gimadi E.Kh., Goncharov E.N, Zalyubovsky V.V, Plyaskina N.I., Kharitonova V.N. On program and mathematical support for the resource-scheduling task of the East Siberian oil and gas complex // Bulletin of the Novosibirsk State University. Series: Mathematics, mechanics, computer science. - 2010. - Vol. 10, no. 4. - P. 52-67.