PROBABILISTIC AND SIMULATIONAL MODELS FOR PLANNING AND MANAGEMENT IN MULTI–PROJECT ENVIRONMENT

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The main goal of this work is a critical analysis of project portfolios' formation models and models of resource allocation between projects of portfolio, proved imitation approach to solving these problems.

The importance of solving the problem of planning and managing of project portfolios associated with following factors: higher requirements of investors in the projects included in the portfolio; there is a need to develop such tools for selecting projects that would take into account the strategic aspects of development provide competitive ability of project-oriented companies; existing approaches to portfolio management is rather fragmentary and in many cases does not correspond to real projects.

This paper considers the Agile-management - iterative method of planning and control of processes and projects that focuses on short development cycles, operational updates according to changes in customer needs and focuses on achieving personal, technical and organizational success. Thus, modern development methodologies and techniques help to reduce uncertainty when performing the projects and directed to ensure that the diverse requirements and coordination of all project participants are met.

One of the major components of the portfolio characteristics is its risks, and in the case of innovative projects generally known that most of them won't be successful. Portfolio risk – is the risks of projects, of which portfolio consist, that are considered together to achieve synergy in the implementation of strategy.

The review of following project portfolios' formation models is considered: Badri-Davis (essentially a boolean integer programming model), Radulesku (forming portfolio from the set of competing) and resource allocation model. As a result of critical analysis of project portfolios formation models and resources allocation between portfolio's projects in terms of risk and uncertainty models conducted by the authors, found that existing methods are rather fragmentary and not sufficiently cover the problems of planning in multi-project environment. Developed imitation model of the overall planning structure in a multiproject environment, which consists of three basic models - project model, project portfolio formation model and planning model, implementation of which will accumulate the necessary statistics, imitate the possible consequences for the conditions of various risks and obtain the necessary information.

Keywords – probabilistic model, imitation model, agile, software development, optimization, project management, planning, extreme programming.