

3. Ввод параметров управляемости риском (можем ли мы вообще им управлять, например, риск поставки оборудования или ураган) и близости рисков (у рисков есть дата, когда он наступает, чем она ближе, тем более высокий будет балл риска).

4. Расчет системой балла риска.

Количественная оценка:

1. Назначение рисков на работы. Влияние либо берется с уровня риска, либо выставляется вручную по каждому назначению.

2. Создание плана, включающего и неопределенности и риски.

3. Расчет модели с необходимым количеством итераций (мы получаем 1000 разных графиков, имеющих свои значения по финишу, стоимости и т. д.).

4. Провести анализ отчетов.

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## **OPTIMIZATION OF BUSINESS PROCESSES FOR INTEGRATED DESIGN OF UNIQUE INDUSTRIAL FACILITIES**

*(SPbGUEF, St. Petersburg)*

The composition of section for design documentation and requirements to their content are presented in RF Government Ruling #87 of February 2008.

Detail documentation consisting of documents in the textual form, working drawings, specifications for equipment items and products to be developed for implementation of architectural, engineering and technological solutions contained in the design documentation for capital projects [8, p. 2].

The requirements to design documentation for the capital projects and working documentation for all types of construction facilities are specified in GOST R 21.1101 – 2009 «The system of design documentation for construction. Basic requirements to design and working documentation».

Interpretations to implement design activity and to individual provisions are presented in information document ID – 24.2001 «Organization of design activity».

«The procedure for development of the design technology and documentary presentation based on the ISO 9000 standards» is intended to form the organizational and methodical documentation to specify the design technology in design institutes which create their own quality system based on the ISO 9000 standards.

The list of documents in the field of estimate regulation and pricing recommended to determine the cost of design and survey activities is contained in Order of the Federal agency for housing and communal services # 110 of April 20, 2007.

The interexchange with statements of work (input data) between the interface departments to develop appropriate design aspects is the basis of the business-process for developing the design (working) documentation.

The list of statements of work for the interface departments is determined by construction of the adjacency matrix [12, p. 25] where connections between the statements of work are specified by design succession.

An exponential rise in the quantity of statements of works and connections between them is observed with the increase of complexity of the facility being designed which complies with the properties of the dynamic complex system [11, p. 37].

The interconnection of changes within different parts of design documentation can be presented by the «feedback loop» [11, p. 48] when changes in one part of the design give rise to changes in the other part.

The feedback acts under the principle of the closed circuit and time is needed to follow it. The result in an extremely complex system can appear after a very long period of time. By the time when it is revealed the critical threshold can be passed and it will be too late to make corrections.

Changes in engineering solutions in the statements of work for interface departments have impacts on the changes in every part of the design on the whole. The volume of revisions is reduced in the course of design activity as the number of interconnections between the interface department decreases. Thus, the design is most affected by statements of work released at the initial design stage which requires to decompose the activities down to the level of an individual statement of work at the planning stage.

The methodical recommendations «MDS 11-11.2000. Work arrangement of Project Manager on the market» takes into account achievements of the home and foreign science and practice in the field of management of investment project development and implementation based on the «Design management» methods.

Structure of the methodical recommendations is maximally brought to that of the «SNiP 1.06/04-85. Project Manager (Chief Architect) Regulations» which specifies responsibilities, rights and liabilities of Project Manager (Chief Architect)

in the construction of new facilities, in expansion, improvement and technical re-equipment of operational facilities, building and structures of the national economy and industry branches, in planning and construction of towns, townships and rural settlements.

MDS 11-2.99 «Recommendations for the Project Manager activity in the development and implementation of the design and working documentation to construct enterprises, buildings and structures» discloses the idea of «Project management» in terms of the Project Manager activities.

Project Manager (Chief Architect) is responsible for the technical and economic level and architectural solutions of facilities under construction, for quality, well-timed development and completeness of design and estimate documentation, proper cost estimate calculation, construction phases and for reaching the design targets by the specified date [4, p. 1].

The combined (design and functional) organizational structure can be singled out as the most appropriate the processes of the integrated design in terms of the design management approach [10, p. 36].

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