

Modeling organizational changes in modern organizations

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Abstract. This article presents a way to systematize stages in modeling organizational changes in modern organizations. The author brings to light the content of each stage, presents a technology for planning changes, and marks out criteria for the assessment of the efficacy of implementing changes.

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Introduction

Any executive has in one way or another been engaged in carrying out organizational changes – it is a typical and mainstream objective. However, up until the 90s across the world and up until now in Russia changes in management systems were often effected through traditional, “conservative” methods for developing solutions, using quite vague unsystematized concepts. A lack of special standards for describing the organization prevents one from cutting down time needed for changing the structure of management and complicates control over the process of changes, since to be able to compare design parameters with actual ones one needs them to be specific and measurable. The present-day state of the external environment creates certain requirements for the change management process: cutting down time for planning and organizing changes, clearly structuring information, and boosting the expeditiousness of control and the timeliness and accuracy of analysis. The change management process involves quite a large volume of information on the object of change, which requires processing, summarizing, and formalizing. This objective can be resolved through constructing models.

The aim of this article is to provide a rationale for procedures and mechanisms for modeling processes related to substantiating managerial decisions on effecting organizational changes.

As far as this study’s results, the authors rely on the works of scientists engaged in the study of issues in managing organizational changes [1], [2], [3], [4], modeling change management processes [5], [6], [7], and developing the methodological fundamentals of diagnosing the degree to which organizations are prepared for effecting changes [8], [9], [10], [11].

Modeling deals with just some of the blocks of the logical model of the change management

process and is aimed at resolving certain objectives. The author’s systematization of such objectives is provided in Table 1.

The availability of models for organizational changes will create the following advantages for the organization:

the introduction of special managerial registers joined up into information models helps to accurately identify and objectively assess the organization management system similar to the way the availability of registers in accounting helps trace and assess its financial state;

1) obtained models help create and maintain in a working state the documented procedures (regulations) providing for a procedure for implementing the functions (processes) of the organization, concurrently preparing it for implementing organizational changes in the format of required quality standards; modeling technologies help to promptly change the organization of and procedures for the organization’s activity, ensuring the flow of organizational changes in controlled conditions;

2) modeling helps to demonstrably describe the organization’s initial, desired, and end state, as well as set up a plan or program for changes.

The application of modern modeling technology can be used as an effective tool for developing and adopting both local and integrated organization management systems. Using special methods and means of modeling, one works out a model for the existing and future organization management system, and then puts together corresponding internal regulatory documents on the management of the functional blocks of the organization.

Experts assert that at the beginning of the third millennium such engineering approaches may become mainstream and standard elements of constructing and changing management systems within organizations. Mastering various methodologies for modeling organizational

changes opens up to organizations new vistas for applying complex tools oriented towards modeling and changing business processes and

using both quantitative and qualitative modeling techniques.

Table 1. Objectives of modeling changes in change management blocks and mechanisms

#	Block	Objectives of modeling organizational changes	Current
1.	The diagnostic-monitoring block	General (nonrecurring) 2. presenting the current organizational structure 3. presenting the main current organization management functions and their mutual linking with the structure 4. presenting current business processes in correspondence with the functions and structure of management 5. presenting the current documentation flow 6. presenting current information, financial, and material flows 7. computing performance indicators in correspondence with constructed models 8. determining the object of changes	
2.	The change planning block	9. presenting a new organizational structure of the object of changes 10. presenting new functions of managing the object of changes and their mutual linking with the new structure 11. presenting new/re-designed business processes in correspondence with the new functions of the object of changes and the new structure of managing the object of changes 12. presenting a new re-designed documentation flow of the object of changes 13. presenting new/re-designed information, financial, and material flows of the object of changes 14. computing performance indicators in correspondence with the constructed models of the object of changes 15. documenting the functions, structure, and processes of the object of changes	16. presenting variants for the development of objects of changes 17. determining the direction of the development of the object of changes 18. determining the composition and volume of relevant resource support 19. determining criteria for the analysis and assessment of the efficiency of the object of changes during the implementation process 20. determining the planned efficacy of changes being modeled
3.	The organization block	21. presenting the organizational structure of the subject of changes 22. presenting new functions of managing the subject of changes and their mutual linking with the structure 23. presenting requirements for fulfilling change management functions 24. determining the possible results of change management functions being fulfilled 25. presenting the process of implementing change management functions and carrying out work on implementing organizational changes	
4.	The motivation block	26. presenting requirements for the organization's personnel for fulfilling new functions linked with organizational changes 27. presenting requirements for the organization's personnel for fulfilling change management functions	

Modern change management solutions support special means of business modeling, which, in turn, support the modeling of major management campaigns: modeling strategy; modeling the organizational structure; modeling processes, functions, and data; modeling methodologies that include qualitative and quantitative methods.

Each model is characterized by its own goals and objectives – therefore the object of changes, which is a complex integrated system, is normally described through a particular set of models, which in the aggregate form a general model for organizational changes.

It is expedient to break the business-modeling process into several stages in correspondence with the logical model for the concept of change management. For that, the authors suggest grouping the stages by change management functions (Table 2).

Table 2. Business-modeling stages and change management functions

Stage	Objectives to be resolved	Change management function
Preparation stage	<ol style="list-style-type: none"> 1. determining the project's goals 2. forming a system of assessment indicators 3. determining the project's structure 4. identifying available change management tools 5. drawing up a schedule for the implementation of the project 	Planning the changes
Modeling the current state of the object of the study	<ol style="list-style-type: none"> 6. analyzing the organizational structure 7. analyzing functions fulfilled 8. analyzing business processes 9. choosing assessment criteria 10. identifying and assessing bottlenecks 	Diagnosing the changes
	<ol style="list-style-type: none"> 11. determining potential for enhancement 12. fine-tuning subsequent stages 	Planning the changes
Modeling the new state of the object of the study	<ol style="list-style-type: none"> 13. describing the new organizational structure 14. describing new functions 15. re-designing old/designing new business processes 16. creating new job instructions 17. determining and assessing alternative scenarios 18. planning the need for resources 19. determining the need for resource support 	Planning the changes
Preparing for implementing the developed project of changes	<ol style="list-style-type: none"> 20. developing systems of organizational interaction of personnel 21. designing an information system 	Planning the changes
	<ol style="list-style-type: none"> 22. identifying sources of resistance 23. developing a motivation system 24. developing training courses 	Motivating the changes
	<ol style="list-style-type: none"> 25. distributing roles and responsibility 26. creating the structure of change management 27. developing personnel qualification level indicators 28. developing implementation schedules 	Organizing the changes
Implementing the changes	<ol style="list-style-type: none"> 29. shifting to the new state 30. implementing the new organizational structure 31. training personnel and retraining personnel 	Organizing the changes
	<ol style="list-style-type: none"> 32. monitoring and analyzing the reasons behind deviations from the course of changes 	Controlling the changes; analyzing the changes
	<ol style="list-style-type: none"> 33. making amendments and taking expeditious measures to remediate deviations during the course of implementing the changes 	Adjusting the changes
	<ol style="list-style-type: none"> 34. ensuring well-coordinated work among the units during the course of implementing the changes 	Coordinating the changes
	<ol style="list-style-type: none"> 35. assessing the efficacy of implementing the organizational changes project 	Assessing the changes

The most high-capacity in the modeling process is the change planning function. It is on the quality of modeling the current state and correctness of the constructed model of the future state that the success of implementing organizational changes depends in large part. Therefore, to help the cause of achieving effective organizational changes we have proposed and examined an integrated model for planned organizational changes. The model incorporates a model for the current state of affairs within the organization and a model for the suggested desired state. These sub-models require fine-tuning objectives being resolved in terms of the logical model for change management. The following objectives are expected to be resolved in the process of modeling the current state of the organization: constructing the tree of the project's goals; determining priorities and criteria for assessment; constructing and analyzing the model for the organizational structure; constructing and analyzing the functional model; linking the models formed and determining their interactions; identifying and assessing bottlenecks; determining the directions of development.

In the process of modeling the desired state of the organization, one is expected to resolve the following objectives: describing and constructing a new organizational structure; describing new functions; re-designing old and designing new business-processes; developing regulatory documents (documenting functions, duties, and the structure); putting together alternative variants and assessing them; determining the need for resources.

The authors propose a modified algorithm for constructing such sub-models (Figure 1), which helps to objectively reflect the sequence of resolving all the relevant objectives of the model for integrated organizational changes in the system of interrelated sub-models.

Before one starts modeling organizational changes, one needs to determine and describe their goal, as well as grasp the degree to which organizational changes are important. For that, it is expedient to include in the first stage the construction of the model of goals. The model of goals serves the purpose of determining the need for and direction of organizational changes. The model of goals orders goals into a hierarchy and distributes between goals critical factors in their success. This model is linked with the functional model: each goal is matched by a function that leads to attaining that goal.

The model of goals is the starting point for constructing the model for the structure and the model for the system of assessment indicators of a general form. The latter is needed for determining a particular indicator or a group of indicators presented in a general form, which is necessary and sufficient for

assessing the level of attaining the general goal and the sub-models. Such a model provides a data structure for determining indicators linked with the model and having a qualitative or quantitative assessment of a dependency between each other. The constructed dependencies help determine the degree of the impact of particular indicators on attaining the goal. The constructed organizational model should be complemented by a model reflecting a procedure for effecting its assessment and a model for all relevant regulatory documents. The model for a procedure for assessing the organized model reflects the choice of indicators for the assessment of the organized structure and functions bestowed on the organizational units, the determination of criteria for assessment indicators in correspondence with goals, and a procedure for computing based on the constructed organizational model (the number of specific units, employees, a variety of functions fulfilled).

Such a model acts as a backlink in constructing an organizational model adequate to goals set. The regulatory document model reflects the composition of documents describing the organizational model and documentation flow and helps put together the internal structure and content of documents in correspondence with the constructed organizational model. The process-role model should also be complemented with a model for a procedure for its assessment. The model for a procedure for assessing the process-role model reflects the choice of process assessment indicators, determining criteria for assessment indicators in correspondence with goals, and a procedure for computing based on the constructed process-role model (the number of engaged functions and units in the process, the number of employees, the time for fulfilling particular functions, and the number of documents used).

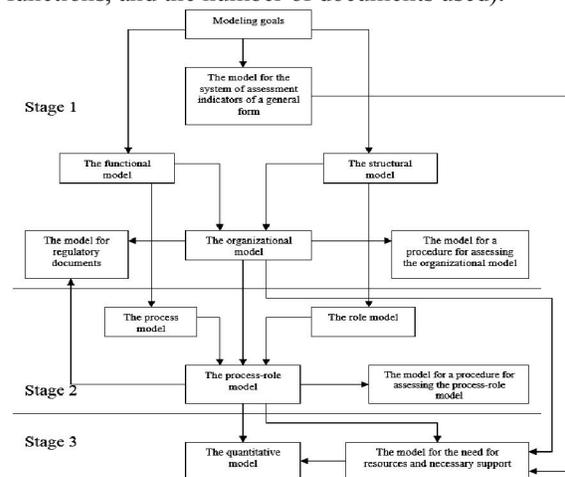


Figure 1. A modified algorithm for constructing sub-models for the current and desired state of the organization

The third stage includes the model for the need for resources and relevant support for implementing the organizational, process-role, and quantitative models. This model groups the main characteristics of the above models into aggregated groups. The quantitative and qualitative composition of the group requires a certain level of support, which, in turn, requires certain resources (for instance, the number of units and levels in the hierarchy determine requirements for the information system: local, intermediately-, highly-integrated – hence requirements for personnel which will be using it, the

need for financial resources for such an information system, expenditure on personnel training, etc.). The aggregate need for resources is reflected by the quantitative model. Quantitative model data is used as baseline information in computing the system of assessment indicators. Information on the composition and purpose of models used in planning organizational changes is provided in Table 3. Introducing new models boosts the degree of structurization and formalization and also reduces the difficulty of perception during team discussions and making decisions on organizational changes.

Table 3. The composition and purpose of used models in planning changes

Model	Purpose	Result of use
The model of goals	<ul style="list-style-type: none"> determining the need for and direction of organizational changes 	<ul style="list-style-type: none"> a hierarchy of goals a hierarchy of critical success factors
The model of the system of assessment indicators of a general form	<ul style="list-style-type: none"> determining particular indicators or groups of indicators for assessing the level of attaining a set general goal or sub-goals 	<ul style="list-style-type: none"> a set of indicators linked with the goal dependencies of indicators' values on baseline data for their computation
The structural model	<ul style="list-style-type: none"> determining the composition of and structurizing organizational units identifying the composition and hierarchy of organizational units 	<ul style="list-style-type: none"> a list of organizational units and their hierarchy
The functional model	<ul style="list-style-type: none"> determining the composition of and structuring functions 	<ul style="list-style-type: none"> a list of functions fulfilled in the company and their interrelations by the hierarchy
The organizational model	<ul style="list-style-type: none"> entrenching functions with organized units 	<ul style="list-style-type: none"> the matrix of distributing functions across organizational units
The model for a procedure for assessing the organizational model	<ul style="list-style-type: none"> determining the adequacy of the organizational model to goals set 	<ul style="list-style-type: none"> a set of indicators for assessing the organizational model, their criteria, and computation methods
The model for regulatory documents	<ul style="list-style-type: none"> putting together organizational documentation and the documentation flow 	<ul style="list-style-type: none"> the composition of documents the structure and content of documents a list of documents which are the "inputs" and "outputs" of processes
The process model	<ul style="list-style-type: none"> assigning input and output parameters to each function 	<ul style="list-style-type: none"> particular functions in the form of chains of interrelated business processes reflecting the cause-and-effect link between these functions
The role model	<ul style="list-style-type: none"> determining the role of a particular position (person) in the business process 	<ul style="list-style-type: none"> distribution of roles in business processes across positions
The process-role model	<ul style="list-style-type: none"> entrenching business processes with positions 	<ul style="list-style-type: none"> a description of the consistent transformation of the company's material and information resources a description of the way the interaction of operations in the process of resource transformation is organized
The model for a procedure for assessing the process-role model	<ul style="list-style-type: none"> determining the optimal of the constructed business process 	<ul style="list-style-type: none"> a set of indicators for assessing the business process, their criteria, and computation methods
The model for the need for resource support	<ul style="list-style-type: none"> putting together the composition and structure of and determining the need for resource support in correspondence with constructed business models 	<ul style="list-style-type: none"> grouping the characteristics of models into aggregate groups the composition, structure, and level of relevant resource support and requirements for it
The quantitative description of the model for the system of assessment indicators	<ul style="list-style-type: none"> describing the organization's budgets - receipts and expenditures during the course of executing business processes 	<ul style="list-style-type: none"> the quantitative need for resources for ensuring the organization's activity

In terms of the change management concept, in planning active changes it is more expedient to use the interactive planning approach, which is based on projecting the future and looking for ways to construct it. In planning passive changes, one should be oriented towards the past and the present, i.e. use, according to [10], reactive and inactive change planning. It is crucial to the subject of this study to put together and present the process of planning active and passive changes (Figure 2), which will be based on integrated analysis.

According to Figure 2, planning passive changes comes down to developing a design of adapting the organization's problem zones to the requirements of the internal and external environment based on available data on organizational changes which have taken place and a forecast for the state of the external environment; determining the composition and availability of relevant support; assessing the degree to which the issue arisen has been solved. As a result of the described process, one draws up an implementation design in which one should delineate the methodology of implementation control.

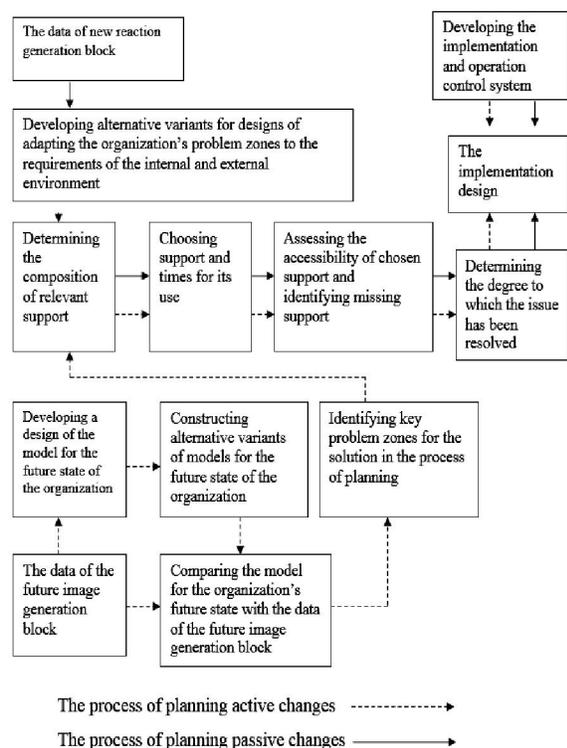


Figure 2. A scheme for the process of planning active and passive organizational changes

In planning active changes, one should first develop a design of the model for the organization's future state, which should be compared with scenarios for the possible development of the organization. After the comparison, one chooses a variant for further elaboration, which can best ensure the attainment of the target level of development. In both cases, in planning changes one comes up with a rationale for developing solutions on organizational, information, technical, and other types of support, effects the linking of the various types of support between each other, chooses the most suitable support, assesses its accessibility and impact on the attainment of the organization's development goals. It is expedient to include in the line-up of design solutions on organizational support solutions on changing the functions of the organization's personnel and changing the organizational structure. Design solutions on information support can include the description of the organization of the information base, conditions and requirements for ensuring information exchange in the system of managing the organization and the system of managing changes, dummy document forms, instructions on making changes to the information base, and others. It is expedient to include in design solutions on technical support the description of technical means, the design assessment of the reliability of technical means, the technological scheme for processing data, etc.

The third stage involves assessing the results of carrying out the changes. The assessment of the results is one of the most significant stages in carrying out changes.

The authors suggest the following criteria for assessing the results of implementing changes:

- attaining one's goals (whether intended transformations were implemented);
- meeting deadlines (whether the changes were completed by an intended deadline);
- the level of costs (whether actual costs matched intended ones);
- the sustainability of obtained results;
- an indirect impact on other spheres of activity (whether an implemented change had an impact on other spheres of the company's activity this change does not deal with).

These criteria enable one to fully compare one's attained results with those planned in the beginning.

On the whole, it should be noted that planning organizational changes through the creation of models gives the organization advantages. Firstly, modeling is an answer to virtually all questions dealing with enhancing the organization's activity

and boosting its competitiveness. Secondly, the organization's executive management, which has adopted this methodology in the company, will have information that will enable one to independently enhance one's organization and forecast the future. The high transparency, simplicity, and accessibility of the integrated description helps work out clear requirements for tuning up the subsystems of resource management and interrelationships with the external environment, as well as for the content of the company's managerial reporting being developed, which is needed for making decisions.

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