

Transformation enterprise architecture method for company's sustainable development

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Abstract. In the last decade, the scientific field of enterprise architecture has been formed and is actively developing. The study of enterprise architecture has become an important research task. In the article the authors managed to trace the connection between the architecture of the enterprise and the management of the social system. To consider the personnel as a part of the architectural approach. To apply typological analysis and personnel construction method to the architectural framework. Many organizations have ongoing challenges and are in constant search of synchronization of business goals and objectives and their information system development processes. Enterprise architecture is used to solve these problems. These problems reflect the need for research and change in the methods of management of social systems in the organization.

1 Introduction

An “enterprise architecture” (the term “enterprise architecture” may also be used in translated texts) can provide a holistic understanding of how a company works. An enterprise architecture (EA) designates both a certain management object that provides a common view in business and the interconnection of parts into a single whole, and a discipline that has arisen on the basis of this object. Enterprise architecture methodologies make it possible to objectify and concretize the concepts that form the basis of various organizational theories and management approaches. This happens, for example, by applying appropriate modeling languages such as Archimate, complex methods for creating and using AP models, such as TOGAF, reference models, such as the SCOR reference model of operations in supply chains and others. A significant role in EA is given to the accumulation and reuse of knowledge, which is recorded in the form of directories, templates and reference models

Many organizations have ongoing challenges and are in constant search of synchronization of business goals and objectives and their information system development processes. Enterprise architecture is used to solve these problems.

Under the architecture of the enterprise, usually understood as a complete description (model) of the structure of the enterprise as a system, including a description of the key elements of the system, the relationship between them.

Enterprise architecture is an area of knowledge about the organization (composition,

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relationships and relationships) of the individual elements of an enterprise: systems, processes, people, infrastructure, data, goals, tasks, requirements, etc.

Business architecture is a set of social groups, their interactions, the rules of these interactions and the fundamental principles of organization of groups and interactions.

Enterprise architecture defines the overall structure and functions of business and IT systems across the organization as a whole and provides the overall framework model shown in Figure 1.

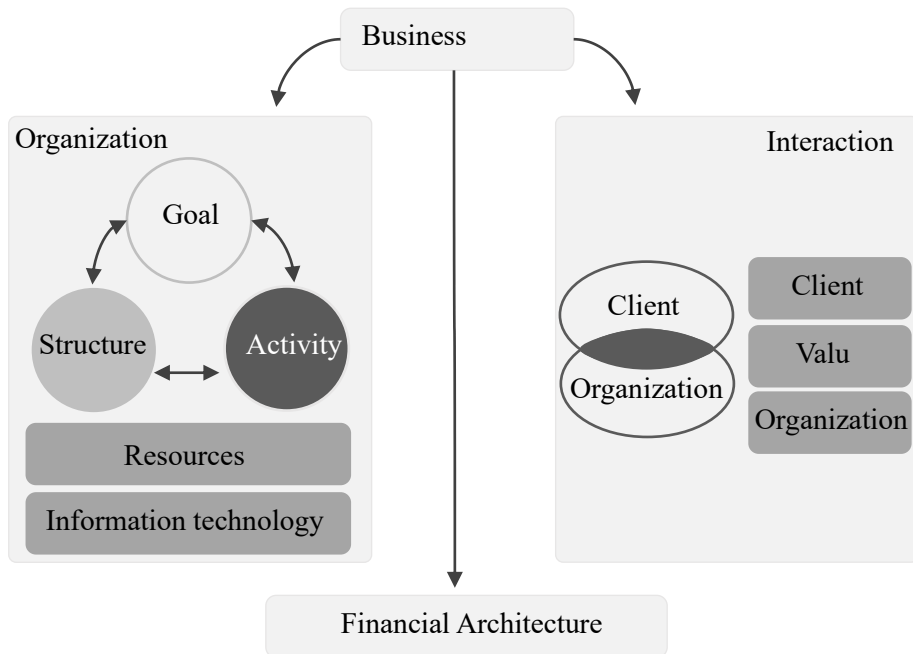


Fig. 1. Representaion of enterprise architecture.

In the center there is a business model defining both internal processes in the organization and interaction with external environment, and how effectively it will be organized will be reflected in the financial architecture. Such a common vision, provided by the architecture of the enterprise, creates the possibility of unified design of systems, adequate in terms of providing the needs of the organization, and capable of interaction and integration where it is necessary.

To provide a holistic understanding of the structure of the company can "enterprise architecture". Enterprise architecture denotes both some object of management, providing in the business a general view and interconnection of the parts into a single whole, and the discipline that arose on the basis of this object [1-3]. Enterprise architecture methodologies allow to objectify and concretize the concepts that form the basis of various organization theories and management approaches [4]. This is done, for example, by applying appropriate modeling languages such as Archimate [5], comprehensive methods for creating and using AP models such as TOGAF [5], reference models [6], such as the reference model of supply chain operations SCOR [7], etc. A significant role in AA is given to the accumulation and reuse of knowledge, which are fixed in the form of reference books, templates and reference models.

However, despite all the efforts in the field of enterprise architecture deployment, they

often do not lead to any positive change in the company. There are a number of reasons for this. Among the main ones are: the lack of experienced specialists in the construction and management of business architecture; the absence of those responsible for the management of social systems; unpreparedness of the management team to assess the existing business processes.

These problems reflect the need for research and change in the methods of management of social systems in the organization.

Management in social systems is the management of people by people. It encompasses the impact on the activities of people organized into groups, other communities with their various interests. It is the most complex area of management.

The difficulty lies in the fact that when designing the architecture of the enterprise, and all its components in the mutual relationship, do not take into account the individual abilities and characteristics of human resources, but it is the personnel that decides everything. All architectural changes are based on people, participants in the transformation, their competencies.

The general system-forming features of social systems include the following: the stability of the human community, the accumulation and transfer of knowledge, and the presence in them of the coexistence of various elements, mutually complementary and antagonistic to each other.

In other words, the effectiveness of architectural projects depends largely on the management of social systems of the enterprise.

The current study examined the possibility of extending the architectural framework with the Personnel artifact. The Personnel artifact is directly related to the application of typological analysis of personnel and the method of personnel construction. Typological analysis defines the composition of the artifact: type, typological competencies of the type, worldview/communication.

Let's take a closer look at the composition of the concepts of artifact Personnel:

A person's socionic type is an innate type of a person's thinking structure, which is determined by the mutual arrangement of functions. Socionics considers 16 types of information metabolism, or sociotypes. Sociotype determines a person's capabilities in interacting with the surrounding reality and in particular in relations with people, his/her strengths and weaknesses in activities (sociocompetence type).

By worldview is a system of views, assessments and imaginative representations about the world and man's place in it, the general attitude of man to the surrounding reality and himself, as well as the basic life positions of people, their beliefs, ideals, principles of knowledge and activities, value orientations conditioned by these views. A worldview gives human activity an organized, meaningful and purposeful nature.

Communication is the process of exchanging information (ideas, facts, thoughts, feelings and values) between two or more people, leading to mutual understanding, based on which the manager receives the information necessary to make effective decisions and communicate the decisions made to the employees of the organization.

To provide an understanding of the typological approach to the structuring of individual characteristics of types, the method of typological analysis (TA) of personnel, a systematic approach to team building and personnel management, will allow the works of the following scientists [8-11].

The aim of the study was the option of incorporating typological analysis and the method of "personnel construction" into the architectural approach through the introduction of additional business artefacts. The task of the work was to connect the architectural layer of activity with the assessment and structuring of the existing human resource potential of the enterprise with the subsequent modeling of personnel changes within the target architecture.

2 Materials and Methods

Development of enterprise architecture at all stages of the work from the construction of the current architecture and further transition to the target architecture is linked to human resources Figure 2.

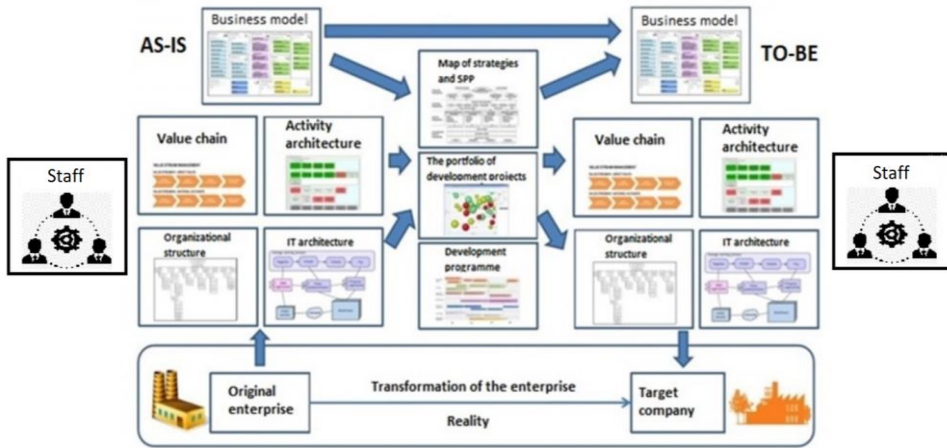


Fig. 2. Simple relationship map of main entities of Enterprise Architecture [12].

The issue of proper organization of personnel communications between specialists in different subject areas, architects is urgent and requires an objective assessment of staff.

Since problems and improvements are not only related to the level of competence, but also to the natural talents and abilities of each employee of the enterprise. Taking into account and maximizing the strengths of each employee within architectural projects is important.

Linking the architecture framework with the Personnel artifact increases the level of system analysis and solves the problems of enterprise social system management, business architecture artifacts are shown in Figure 3.

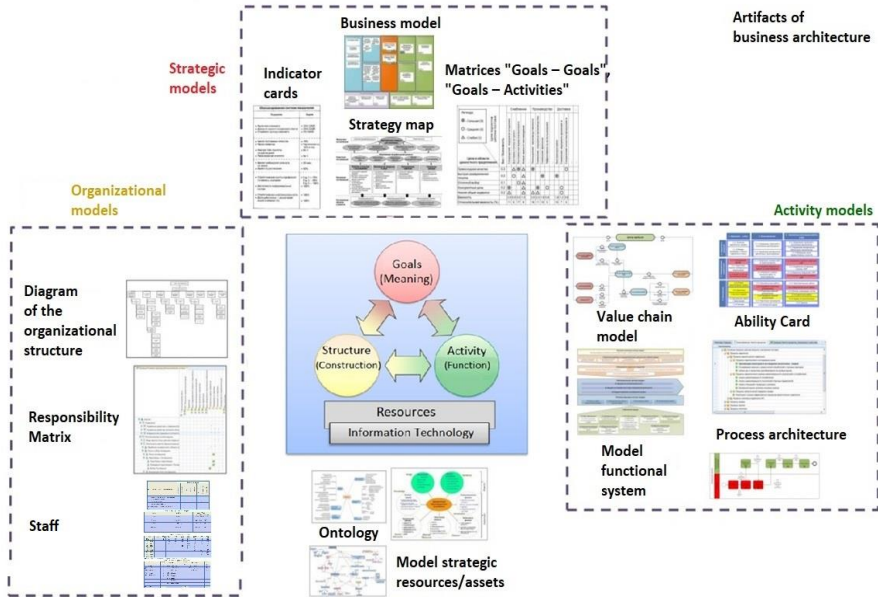


Fig. 3. Map of business architecture entities [12].

For linking enterprise's architecture with human resource design were used descriptions of two layers, these are activities and organizational structure, in the current architecture, see block 2 of figure 4, human resource design was used to evaluate employees, and in the target, block 3 of figure 4, to model and optimize the assigned functions for personnel. Algorithm of work of staffing design with current and target architecture is shown in Figure 4.

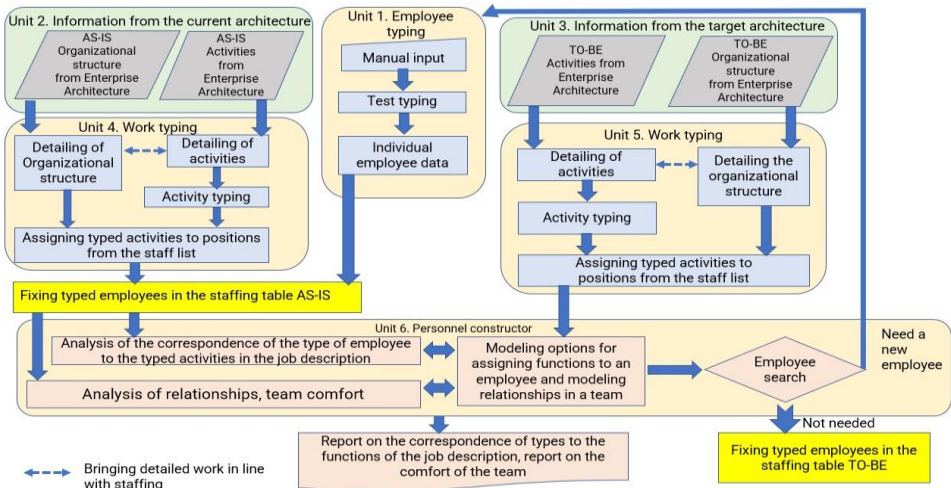


Fig. 4. Algorithm for the work of frame design with the current and target architecture.

To assess the existing human resource potential of the enterprise it is proposed to conduct typing of employees block 1. using the test typing test Isabel Briggs Myers [13] , in our case we used the Gulenko test [14]. The results of the typing are recorded in the staff schedule AS-IS, according to the organizational structure of the current enterprise architecture.

After typing, it is necessary to detail the aggregated activities from the current enterprise architecture, resorting to a one-sentence formulation followed by typing of activities by typological aspects. The typed activities are aligned with the current staff schedule and recorded in the current job descriptions.

The next step is to analyze whether the type of employee, his strengths and weaknesses, correspond to the typed work, which are enshrined in the job description. After that it becomes clear which functions will correspond to the type of employee and which will not, and a report is prepared based on the results. This is followed by an analysis of inter-type relations by subdivision, which determines the comfort of the team. After this you can assess the micro climate in the team, the results are prepared a report.

Similarly to the current architecture, typing of work is performed according to the target architecture. The typed activities are aligned with the modified staffing schedule and recorded in the job descriptions modified for the target architecture.

The last stage of the HR constructor is to optimize the assigned jobs by modeling, functions that fall on the weaknesses of employees, they can be removed and re-assigned to employees who they fall on the type of strengths, that is, you can improve efficiency by rotating the function within the team / unit, changing job descriptions.

3 Results

Solved tasks and created artifacts of EA Framework are supplemented by the artifact of personnel, which provides architectural transformation with additional possibility of typological analysis and staffing design within the framework of enterprise social system management Figure 5.

The importance of assessing the personnel architecture of an enterprise is confirmed by experimental data obtained before the introduction of architectural changes both at enterprises and divisions of companies. The implementation of changes was much faster and did not meet with resistance for organizational structures with a natural harmonization of relations or built using personnel recommendations. Meanwhile, organizational changes in non-harmonized companies led to stagnation and the subsequent collapse of the company.

In the conducted experimental assessments of collectives with harmonized relationships, no influence of age or other factors other than typological ones on the support of architectural changes was noticed.

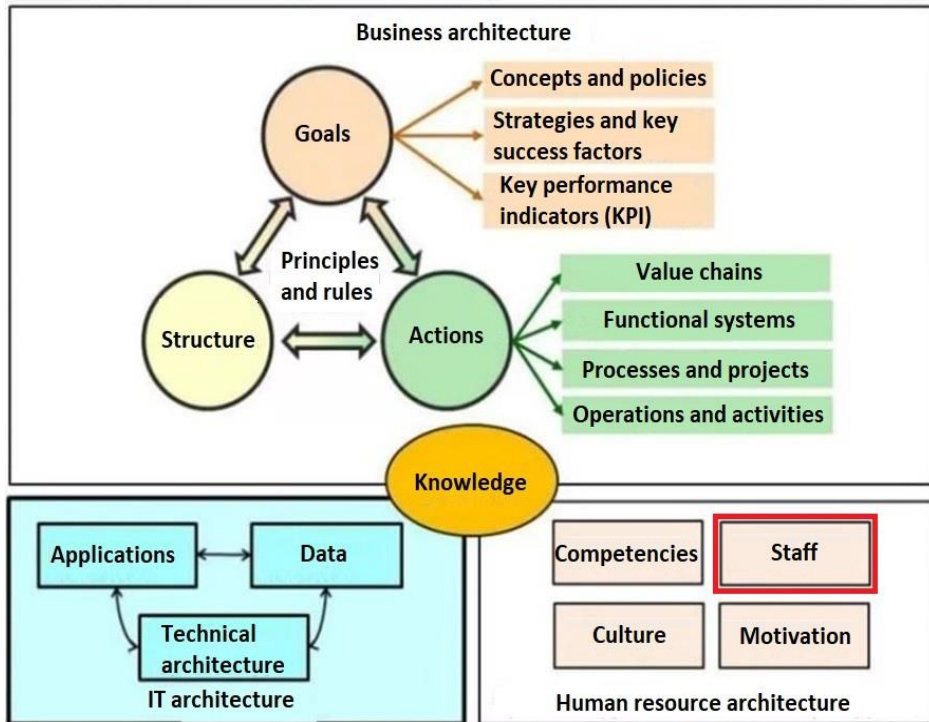


Fig. 5. EA Framework, tasks to be solved and artifacts to be created.

Thus, the application of the Personnel artifact in architectural transformation projects will allow to assemble, analyze and optimize teams of performers, units minimizing conflicts and optimizing the microclimate. In the future, the Personnel construction element will allow to control, analyze and make adjustments in the system management of activities, taking into account the social requirements.

4 Discussion

As a result, the method of "Personnel Design" harmoniously complements the architectural transformation of the enterprise and allows to make more transparent, clear and predictable the work on personnel management. This approach opens up opportunities to improve the effectiveness of managing the abilities of each employee in the organization and to bring the functional responsibilities of the organization into line with the abilities [15]. At the same time assessing the staff composition of the current architecture, and making systematic connections with the activities, organizational structure of the enterprise and the problems of the enterprise we get a more complete base for understanding the human factor in the organization and the basic basis for the optimization of the team.

Considering the architectural approach to the transformation of the transport enterprise, the restructuring of activities, IT infrastructure solutions, organizational structure, all this requires the adaptation of human resources to the change of the introduced changes. It is possible to solve the problem of adapting human resources to architectural changes by applying a typological analysis and a systematic approach to team building by creating new and removing old functions from employees. As the practice of typological analysis and the method of personnel design (QC) shows, they make it possible to classify, structure and bring activities and organizational construction into line with the abilities and talents of the

existing staff.

The difficulty lies in the fact that when designing the architecture of an enterprise, and all its components in interconnection, the industry and individual characteristics of the enterprise are not taken into account. An important specificity of transport enterprises is a unique process model with a close connection between the main and service processes (operational and technical links). The main burden of planning work - routes, operating costs, depreciation of transport and much more - is carried out by the economic department, which traditionally should only conduct accounting activities. In a transport enterprise, the economic department is the core of the efficiency of all company activities. Therefore, traditional approaches to building the architecture of enterprises are not suitable for the transport industry, since they do not take into account the peculiarities of the human resource, which should work in a very close connection here. Because of this, all ongoing architectural changes in a transport enterprise should be based on people, participants in the transformation, and their competencies.

The application of an architectural approach without taking into account the attitudes and abilities of personnel leads to a decrease in the efficiency of the distribution of transport enterprise functions, and this affects the assessment of the current architecture and the construction of the target architecture.

5 Conclusion

The transformation of the company is inextricably linked to changes in the activities and competencies (knowledge) of the staff. The process of development of the company occurs through the disclosure of the unique abilities of each and further detailed development of an individual system of motivation for each employee. Change of methods of work with the personnel is directed on the employee, on his independent comprehension of the purposes, and accordingly bringing special, personal, deep sense in the professional activity. Understanding each employee's strengths and compensating for weaknesses by mutually complementing a colleague with strengths, increases the effectiveness of the company.

Scientific management of inter-type relations increases efficiency of communications within the framework of mutual supplementation at performance of works, an exchange of explicit and not explicit knowledge between the co-workers and finally a possibility of modeling and creation of an optimum microclimate in a collective. In other words, application of inter-type relations in management of communications of employees allows to form information space of the company and to increase efficiency of management and remote interaction.

Application of typological assessment of works within the framework of work regulations of the enterprise allows to bring in compliance the talents and abilities of the employee to the regulations of works taking into account mutual supplementation, redistribution in case of necessity. Such estimation with modeling of regulations of works allows to increase personnel management within the framework of development and transformation of the enterprise.

Supplementing enterprise architecture with an artifact of personnel allows you to reduce the risks of the processes of development and transformation of the enterprise, to make it systematic and modelable under the goals and objectives and the enterprise.

Thus, the development of enterprise architecture, as well as any social structure, can be based on modeling and managing social ties.

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