METHODS FOR CREATION OF ENTERPRISE ARCHITECTURE

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Summary: The report presented a model for the description of an enterprise architecture. In this paper the components of the model are described and appropriate methodology are presented for its implementation. Methods that are described in the report optimized the process of Enterprise architecture. It allows for repeated use of architectural sollutions tested in practice. Developed Methods enables its efficient incorporation into the architecture of an enterprise.

Keywords: enterprise architecture, data architecture, business processes, architecture framework , methodology.

МЕТОДИКА ЗА СЪЗДАВАНЕ НА АРХИТЕКТУРА НА ПРЕДПРИЯТИЕ

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1. INTRODUCTION

Enterprise architecture is a complete description of the key strategies of the organization, and business-related data, application systems and technologies, which provide the implementation of functions and business processes of the organization. In realization of the architecture appropriate methods are used, which appears as instrument for creating a wide range of different architectures.
The report presented a model for the description of an enterprise architecture. In this paper the components of the model are described and appropriate methodology are presented for its implementation.

2. MODELS FOR ENTERPRISE ARCHITECTURE

There are different frameworks models to describe the enterprise architecture. They generally include:

- classification of the main fields of architecture;
- uniform principles for their description;
- description of the rules, standards, processes, models that are used to define the various elements of architecture at different levels of abstraction.

Today in 90% of cases are using any of the following methodologies:

- **Zachman** - it is actually a taxonomy for organizing architectural artifacts (i.e., design documents, specifications, models) that takes into account both who the artifact targets (e.g., business owner, builder) and what particular issue (e.g., data, functionality) is being addressed.
- **TOGAF** - divides an enterprise architecture into four categories, as follows:
    1. **Business architecture** - describes the processes the business uses to meet its goals.
    2. **Application architecture** - describes how specific applications are designed and how they interact with each other.
    3. **Data architecture** - describes how the enterprise datastores are organized and accessed.

4. **Technical architecture** - describes the hardware and software infrastructure that supports applications and their interactions.

- **FEA** – it consist of five reference models, one each for performance: business, service, components, technical and data.
- **Gartner** - it isn't a taxonomy (like Zachman), a process (like TOGAF), or a complete methodology (like FEA). It is the enterprise architecture practice of one of the best known.

The leading enterprise architecture methodologies are very different both in goals and in their approaches. Which one is best for your organization? There is no one answer to this question.

Here are some criteria, shown in table 1, by which we can compare the discussed methods:

1. does a very poor job in this area;
2. does an inadequate job in this area;
3. does an acceptable job in this area;
4. does a very good job in this area.

	Ratings			
Criteria	Zachman	TOGAF	FEA	Gartner
Taxonomy Completeness	4	2	2	1
Process Completeness	1	4	2	3
Reference Model Guidance	1	3	4	1
Practice Guidance	1	2	2	4
Maturity Model	1	1	3	2
Business Focus	1	2	1	4
Governance Guidance	1	2	3	3
Partitioning Guidance	1	2	4	3
Prescriptive Catalog	1	2	4	2
Vendor Neutrality	2	4	3	1
Information Availability	2	4	2	1
Time to Value	1	3	1	4

Table 1. Criteria and Ratings for Each Methodology.

3.MODIFIED MODEL TO DESCRIBE THE ENTERPRISE ARCHITECTURE

Modification of the model is shown in figure 1.

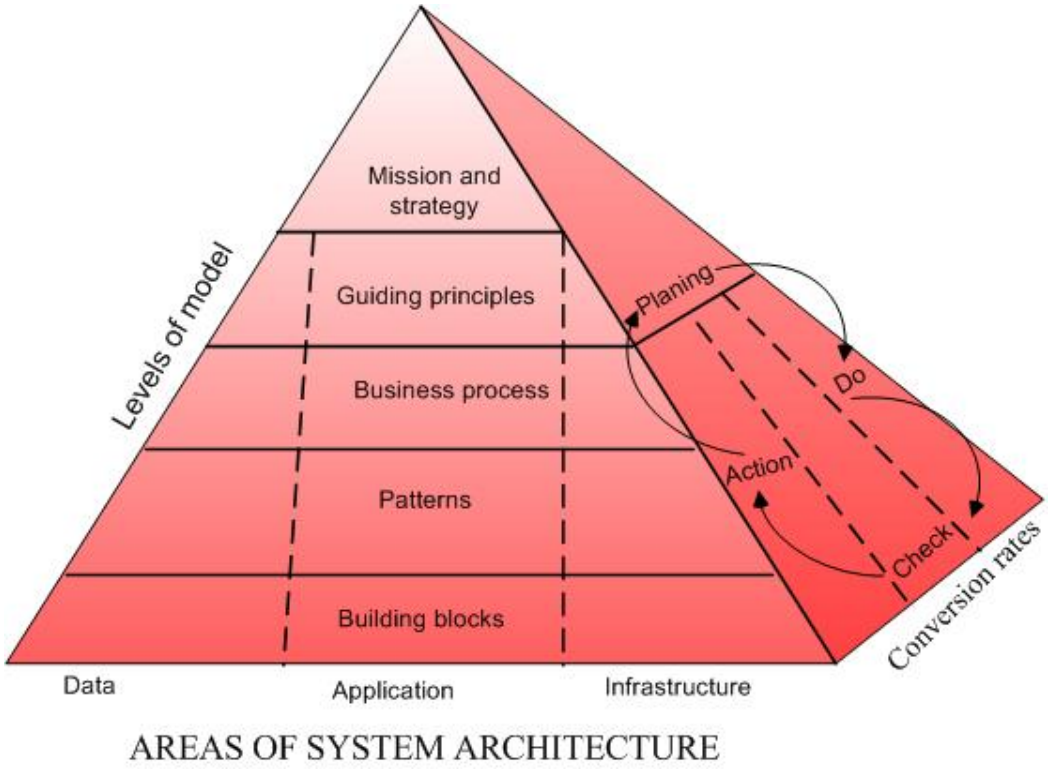

Fig 1. Modification of the model

For the purposes of this study will be used modification of the model of the analytical company Gartner (Gartner, 2011). The famous PDCA (Gubta,2007) approach was added to the basic model.

3.1.LEVELS OF THE MODEL

Mission and Strategy – they define the main directions of development of the company and set long-term goals and objectives.

Guiding principles – they are general rules and guidelines, which are designed to be durable and rarely change:

- they ensure implementation of the organization's mission;
- they are a part of a structured set of ideas, that together determine the values of the organization and how to achieve results.

Business processes - at this level define, describe and classify the business processes and supporting structures that are part of the business model of the organization. Clarify components such as knowledge, workflows, events. It develop business requirements for system architecture. The processes develop business requirements for system architecture.

Patterns - describe models and algorithms, that can be widely used for solving various tasks of the organization. They provide a specific framework, without a fixed content.

Building Blocks (Bricks) - describe the specific architectural solutions, which are also standard and can be repeatedly used in various applications.

3.2 DOMEINS OF SYSTEM ARCHITECTURE (Tujarov et al , 2010)

The system architecture in the model include:

- **data architecture** - the components of data (basic - objects / entities, attributes, relationships) describe the data that are necessary to maintain the information about business process: databases, tables and their attributes. Data modelling is made by one of well known semantically models (Tujarov, 2007a). For this purpose, may be used Process-oriented methodology for descriptions of the data - model "process, nature, relationship" (Process - Entity-Relationship Model - PERM) (Tujarov, 2007b);
- **application architecture** - the components of the architecture of applications describe applications that are used for data management of business processes, their composition and structure as well as services provided by them;
- **technology architecture (infrastructure)** - technology architecture describes providing technologies (General System hardware and software, computer and communication networks, management of IT) required for operation of data management applications and maintains business processes.

3.3 LEVELS OF REALIZATION

Planning

Planning includes the following steps:

- **initiation of the planning** - introduction of participants in the project area and the objectives of planning architecture.
- **pre-Business Modeling** - to provide full and comprehensive knowledge base of all participants in the project to determine the architecture and implementation plan.

Business modeling is performed in two steps:

1. **construction of a preliminary business model** - defines the functions, gives their description and identifies the organizational units - performers of functions.
2. **development of a comprehensive business model** - answers the following questions:

- What kind of information is used in performing functions?
- When the functions are performed?
- Where and who perform the functions?
- How often are functions performed?
- What improvements are possible?

DO

On the basis of developed business processes patterns and building blocks are defined for the data architecture , applications and infrastructure.The implementation of this phase pass by following steps:

- **description of current systems and technologies** - documentation of all organization systems and technological platforms, ie create the IRC (Information Resource Catalog);
- **data architecture** - identification and determination of the main types of data to support business functions. The data architecture is presented using a PER-model and consists of entities, each of which has attributes and relationship to other entities;
- **application architecture** - identify the main types of applications, needed for data management functions and business support;
- **technology architecture (infrastructure)** - determine the main types of technologies required for providing an environment for applications operating data.

Check

At this level the following activities are carried out:

- control of effecivnes of the business processes ;
- control of completeness of the patterns;
- check repeatability of performance of blocks;
- development of implementation plan;
- preparation of final report and transition to the next stage "**Action".**

For this purpose the following tools are used : ROI (David F. Rico), maturity assetment.

Action

At this stage the plan was made for implementation of the architecture. The transition to the standardization of the developed method was done.

4. **CONCLUSION**

The described method in the report optimize the process of Enterprise architecture. It allows for repeated use of architectural sollutions tested in practice. Developed method enables its efficient incorporation into the enterprise architecture .

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