

COMPONENT MODEL OF THE ENTERPRISE ARCHITECTURE

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Keywords : Enterprise architecture, business architecture, system architecture, data architecture, application architecture, infrastructure architecture, business processes, information technology ,infrastructure technology.

КОМПОНЕНТЕН МОДЕЛ НА АРХИТЕКТУРА НА ПРЕДПРИЯТИЕТО

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1. INTRODUCTION

As a whole, enterprise architecture (Enterprise Architecture, EA) means (multirange) and exhaustive description of all key components of the enterprise and their relationships. Enterprise architecture is a comprehensive discipline that combines business and technology strategy for the implementation of an enterprise (GAO-02-6, 2002, Minoli ,2008, Op't Land *et al.*). Stems from 80 years of the twentieth century. The purpose of this report is to present a component model corresponding to the modern concepts of enterprise architecture and to propose some new or modified components and semantic relationships

2. SUBSTANCE OF THE ENTERPRISE ARCHITECTURE

Institute for development of enterprise architecture (Institute for Enterprise Architecture Development, IFEAD) summarizes the main principles governing the discipline of enterprise architecture as follows: "There is no strategic projections - no enterprise architecture". This means that the enterprise architecture of today is a system of business tomorrow. In developing EA it is essential to define the key components (domains) for organization and their semantic relations, thus optimized component model to be created.

3. COMPONENT MODEL

Enterprise architecture is adopted to provide the following levels (see figure 1) (Danilin and Slesarenko 2005, Temnenko, 2007) :

- Corporate mission and strategy - identify the main directions of development of the company and set long term goals and objectives.
- Business architecture - based mission and development strategy and long-term business objectives to determine the necessary business processes, information and material flows, and supporting them permanency organizational structure.
- System Architecture - defines a set of methodological, technological and technical solutions for providing information support activities of an enterprise which is determined by its business architecture.

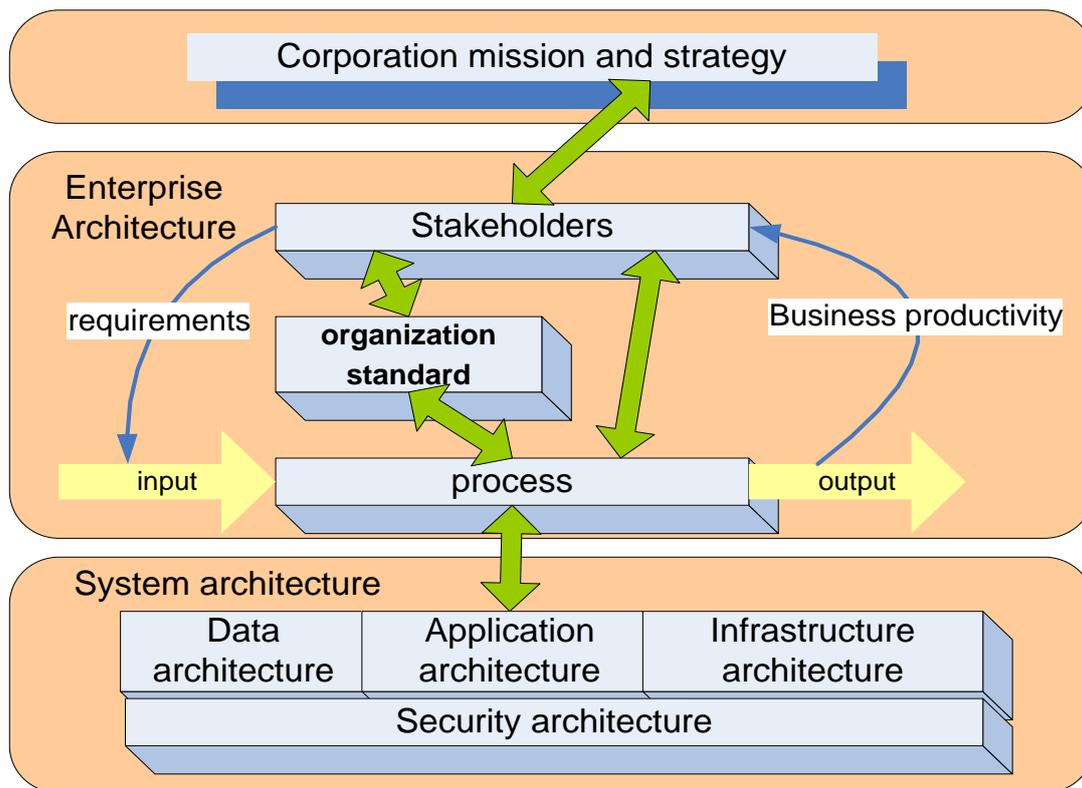


Fig.1. Component model of the Enterprise architecture.

3.1. Business architecture

The discipline "Business Architecture" appeared in the 90-ies of XX century when validating process approach, and many organizations are trying to optimize their business processes. It describes how business works in terms of objectives, strategy, external environment and is aimed at improving its performance. While there is no unanimous opinion on what components should be included in the infrastructure business of architecture, it can be argued that important aspects of this subject area components appear Process, Organization and stakeholders (Shekkerman, 2004). Each of these components is very important and includes several subject areas, as shown in figure 2.

Semantic links defined relationships of the components of business architecture as between them (eg., relationships among stakeholders and business processes to clarify the requirements and organization for the implementation of managerial functions) as well as with other components of architectural domains (eg., links between business processes and their support applications, computers and networks on which these applications work).

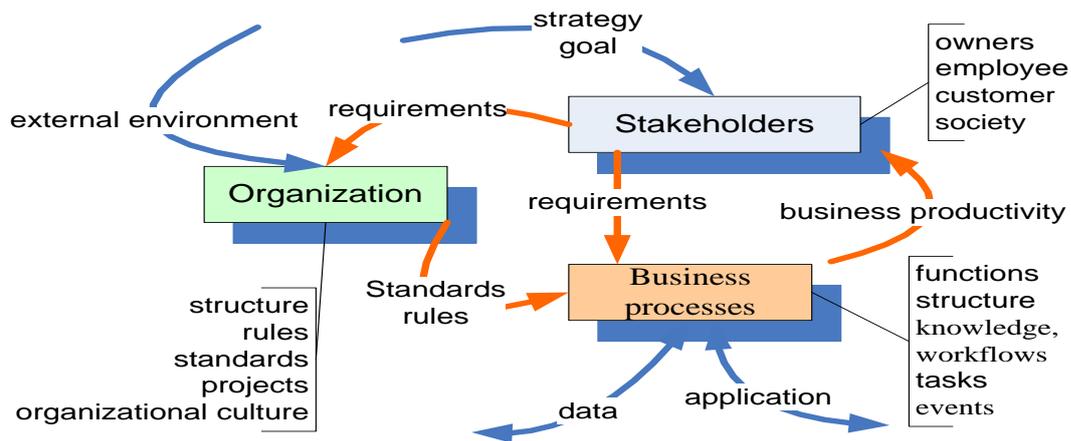


Fig.2. Business Architecture.

Component **Organization** - refers to the structure and design for work, as well as management style and organizational culture of the organization. Objects that interact with this component include the organizational structure, products and services that generate business, business units and their location.

Component **Stakeholders** - refers to people who develop and operate the enterprise architecture. It interacts with all other components including owners, employees, customers and suppliers. This component defines business requirements and respective information technologies, as well as indicators that have to be reached.

Component **Business processes** - appears to be essential for doing business because it defines, describes and classifies business processes and supporting structures that are part of the business model of the organization. This component also includes a group of related objects, such as knowledge, workflows and events (Tujarov, 2009a).

For description and classification of business processes it is suitable to use eTOM (The enhanced Telecom Operations Map) model (TeleManagement Forum, 2009). eTOM is a widely deployed model and framework for business processes in the telecom operators. This model describes and analyzes different level of enterprise process according to their significance and priority for business. The base of eTOM is hierarchical decomposition of standard set of processes. At the overall conceptual level (see figure 3), the Business Process Framework can be viewed as having the following three major process areas:

- Strategy, Infrastructure & Product covering planning and lifecycle management;
- Operations covering the core of operational management;
- Enterprise Management covering corporate or business support management.

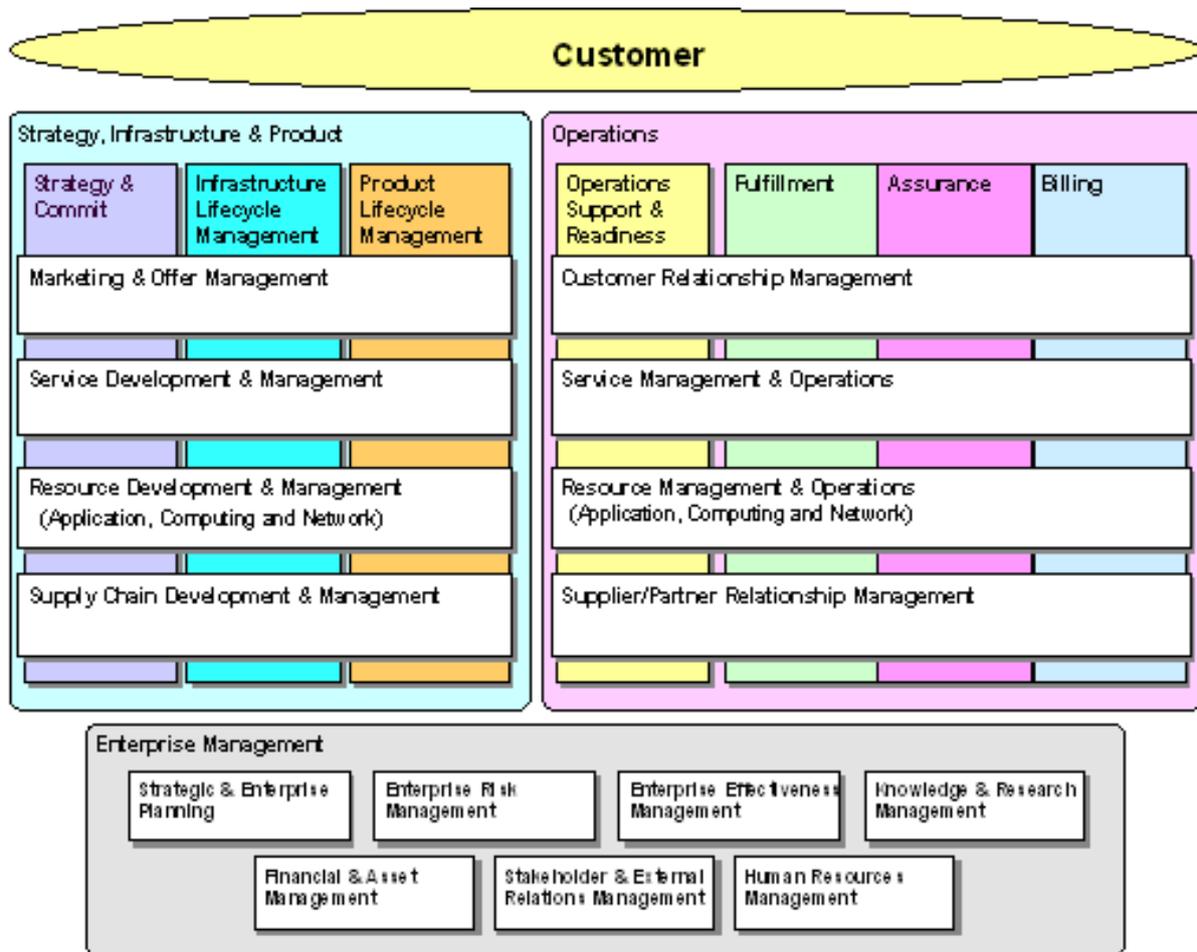


Fig. 3. The Enhanced Telecom Operations Map (eTOM).

Productivity of the business - a component associated with the management. It brings together the objects that defines and measures the effectiveness of the organization. It includes objects such as productivity, market share, business risks, maturity level, ROI (Return on Investment) (David F. Rico) and other related objects. The maturity level of the organization is essential for business productivity (Tujarov, 2009d). This indicator should be used as feedback in defining business requirements, e.g. enterprise architecture and system architecture are in direct relation with the maturity level (Tujarov, 2009b).

Business requirements-a component that forms the quantitative and qualitative requirements to ensure successful business development. It includes component objects as key success factors, key performance indicators, internal and external standards and regulations (Institute For Enterprise Architecture Developments, 2007).

The KPI (Key Performance Indicators) are specified by EA Scorecard. The novelty with KPI are the approaches used for improving the control of business outcome. For each KPI should be set target values and methods of calculation (see figure 4) (Tujarov, 2008).

3.3. 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:

- A standard methodology for describing data - model nature, relationship "(Entity-Relationship Model - ERM);
- Process-oriented methodology for descriptions of the data - model "process, nature, relationship" (Process - Entity-Relationship Model - PERM) (Tujarov, 2007b);

Figure 6 presented functional diagram of the approach. The taxonomy of building blocks are developed, based on requirements associated with business processes. They constitute the basis for describing the architecture of data where answer the following questions:

- What is the physical structure of data?
- For what business processes are designed to?
- Which applications are using the data?
- Who owns the data?
- Who is responsible for data?
- Who are the users of the data?
- What volumes up and how fast growing?
- What level of security they need?

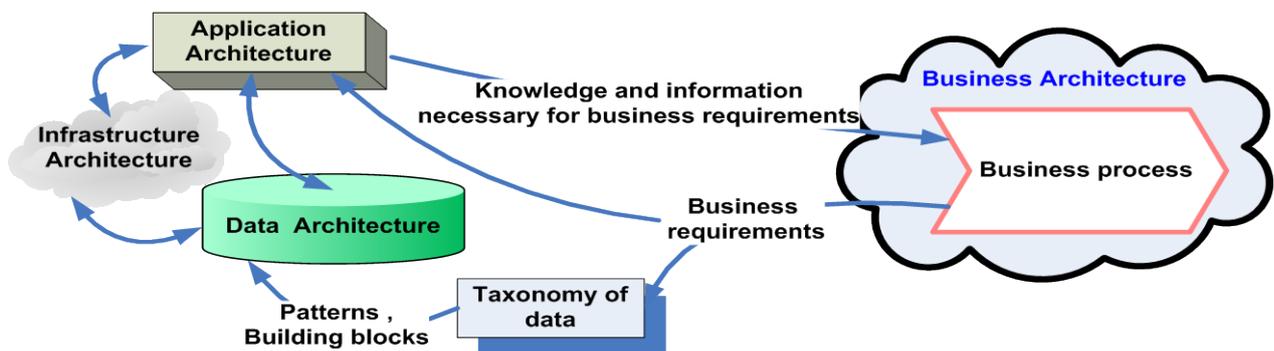


Fig. 6. Functional scheme of the approach "building blocks".

Semantic relations are the relationship between the components of the architecture of data (eg, links between databases, tables with their attributes) and with other components of architectural domains (eg, links between data, business processes and their support applications).

3.4. 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. Additional subject area, influencing the architecture of the application are the models of information systems requirements.

Semantic relationships defined as relations between the components of their applications (eg, connections between applications and their classification categories, relations between the components of applications realized with their service), and relations with other components of architectural domains (eg, links to applications business processes, applications and components with technical resources, links to applications with data that they form and process).

3.5. Architecture Infrastructure

Technology architecture (infrastructure) 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. It consists of a network architecture, architecture and platforms, architecture for the management of IT services.

3.5.1. Network architecture includes (Tujarov,2009c) :

- Local area networks;
- Communication networks and protocols used in them, sets and addressing systems;
- Methods and tools for networks management.

3.5.2. The architecture of the platform include :

- Hardware - servers, workstations, storage devices and etc.;
- Operating and management systems, utilities, office systems and other system software.

3.5.3. The architecture of the management of IT services includes:

- IT services;
- Production processes for providing IT services;

- Processes for management of IT services.

Semantic relations describe relations between components as the architecture of infrastructure (eg, relationships with General system software platforms, rigs ties with specific technical means.), and relations with other architectural areas (for example, links the technical resources of interested parties ties with applications platforms, links to IT services with business processes).

4. CONCLUSION

The report proposed component model for enterprise architecture, which includes the most essential architectural components according to the authors and embrace semantic relations between them. From a theoretical point of view the model is another attempt to define the framework and components of the enterprise architecture. From a practical standpoint, it can be used as a basis for description and creation of enterprise architecture.

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