

Multiple dimensions of Enterprise architectural description

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Summary: This report aims to examine the characteristics related to the multiple dimensions of architectural description and their influence on achieving the current requirements to develop a dynamic organization-real-time work, adequate response to the changing external environment and ceaseless improvement.

Key words: Architectural description , Subject areas and levels of maturity, Levels of decomposition

Многомерност на архитектурното описание

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INTRODUCTION

Nowadays the architecture of the enterprise is considered to be a fundamental means of achieving synchronization of business and IT. At the core of its design and construction stands architectural description. The final results of the initiatives and projects depend on its right formation.

This report aims to examine the characteristics related to the multiple dimensions of architectural description and their influence on achieving the current requirements to develop a dynamic organization-real-time work, adequate response to the changing external environment and ceaseless improvement [1,5].

ESSENCE OF ARCHITECTURAL DESCRIPTION

In general, the concept of architectural description refers to a single, comprehensive description of the current and target state of business and information technology, and their interrelationships. Architectural description is the most important architectural process based on architectural artifacts describing the business and system architecture of the enterprise, and the interrelations of the constituent components. Functional scheme of the architectural process, which shows the location and role of enterprise architecture, is presented on figure1.

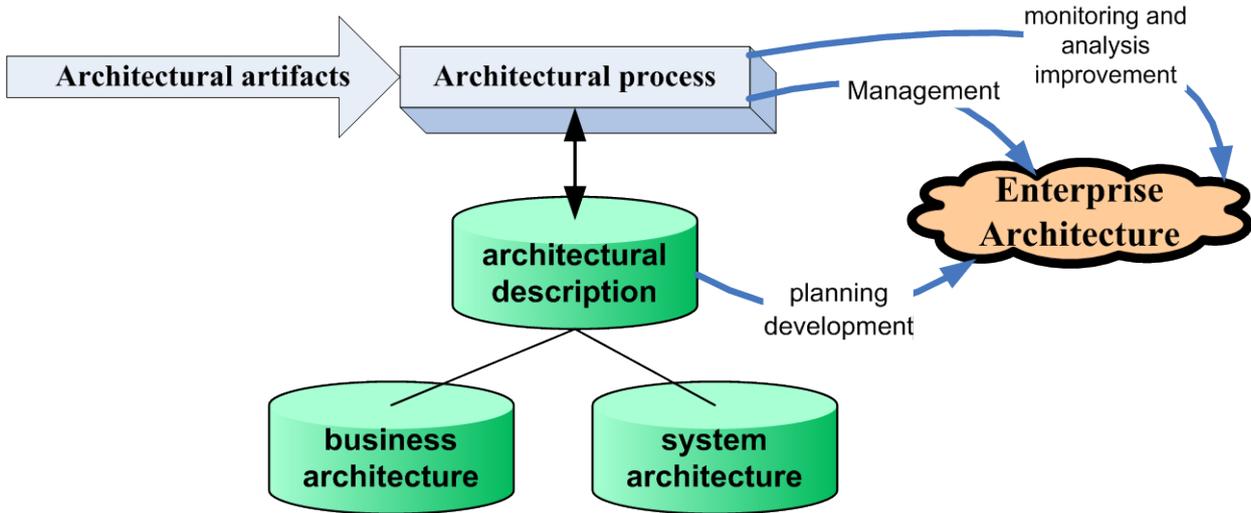


Figure1. Architectural description.

Architectural description is the basis of the development of enterprise architecture, their analysis and support. It includes a variety of

objects, the description of which is subjected to a single architectural model.

Architectural description depends directly on the level of maturity of the organization [7]. Each level of maturity requires its own architectural description, which inherits the description of the previous level, and it builds (see figure2).

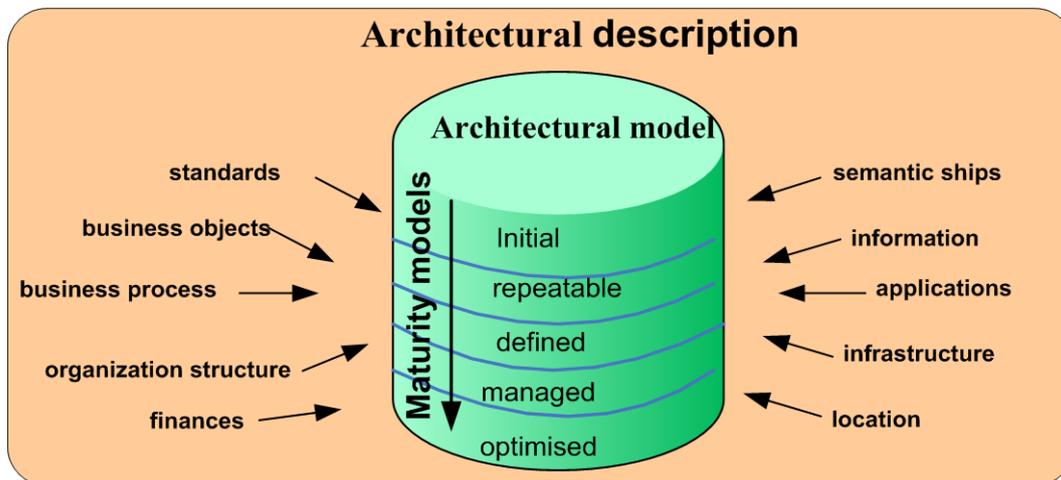


Figure2.Maturity of the architectural description

The description of the architecture serves for a detailed guidance that sets out the basic, standard or type elements of processes, their interrelationships, and processes for managing the information systems.

Requirements to the architectural description:

- Sufficient level of detailization for practical usage by IT professionals for development the new systems;
- Simple and clear description, understandable for everyone who takes part in the process;
- Dynamics of the description (i.e. reaching compliance of the architecture with the level of maturity of the organization);
- Ability to adapt to the emergence of new requirements;
- Formalization of the description with the option of automatic data processing;

Characteristics of architectural description

- Appropriateness - description of the architecture of the enterprise, justified and related to the needs of the business;
- Complexity - the ability to describe a wide range of business components and IT and their interconnections;

- Interaction with the environment - providing of mechanisms for interaction with the external environment and approaches and means to react to the changes made in it;
- Integrity - the architectural description is a comprehensive system capable of solving problems that are not peculiar to anyone of its components;
- Transparency - presentation of architectural components and their summed and explicitly interaction;
- Interoperability (interoperability) - ensuring the interaction of two or more systems or components to exchange and use an information;
- Automated processing - a degree of formalization, which allows you to use software tools for entering, storing, processing, analysis and visualization of the description. Creation of automated processes for architectural control;
- Multiple dimensions-architectural components should be able to have representation in multidimensional system of coordinates according its level:
 - ⇒ Maturity - taking the level of maturity of the architectural components with the creation of architectural description, design and development of the architecture;
 - ⇒ Subject areas of architecture (business architecture, data architecture, application architecture, technology architecture);
 - ⇒ Details (enterprise level, project level, applications level, application-components level, etc.);
 - ⇒ Abstraction (level of context, conceptual level, logical level, technological level, the level of detailed description).
 - ⇒ Perspective - presentation of a different point of view of architectural components and their interrelationships (owner, architect, designer, developer, service).

Achieving these characteristics is possible using a single architectural model.

MULTIPLE DIMENSIONS OF THE ARCHITECTURAL DESCRIPTION

Figure 3 presents different aspects (perspectives), in terms of which it is important one architecture enterprise to be described, while the corresponding correlations are analyzed (e.g. abstraction and roles, subject areas and levels of maturity).

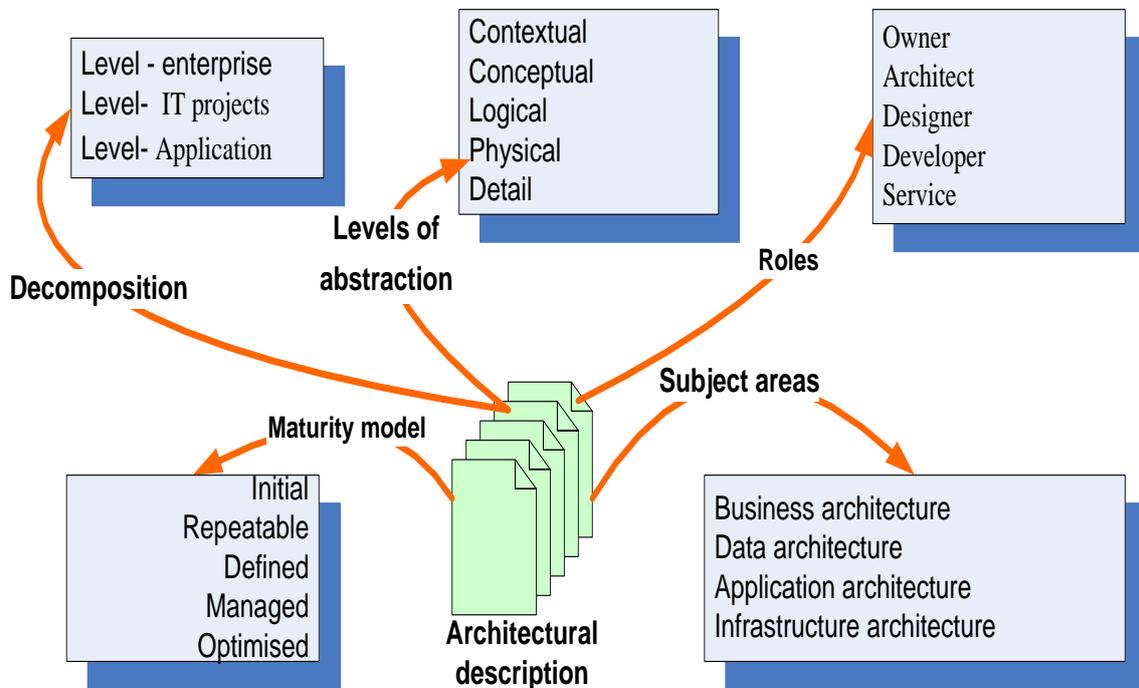


Figure 3. Aspects of architectural description.

Subject areas and levels of maturity

The main subject areas, which the architectural description includes, are discussed and described in details in the literature. In most publications these subject areas are treated in two states (present and future) [2,4, 6].

Problems concerning the clarification of the future state arise with this approach. In this case it is much better the state of the subject areas to be seen through the prism of an established methodology for determining the level of maturity of an organization, as the CMM appears to be (see figure 4) [3, 7].

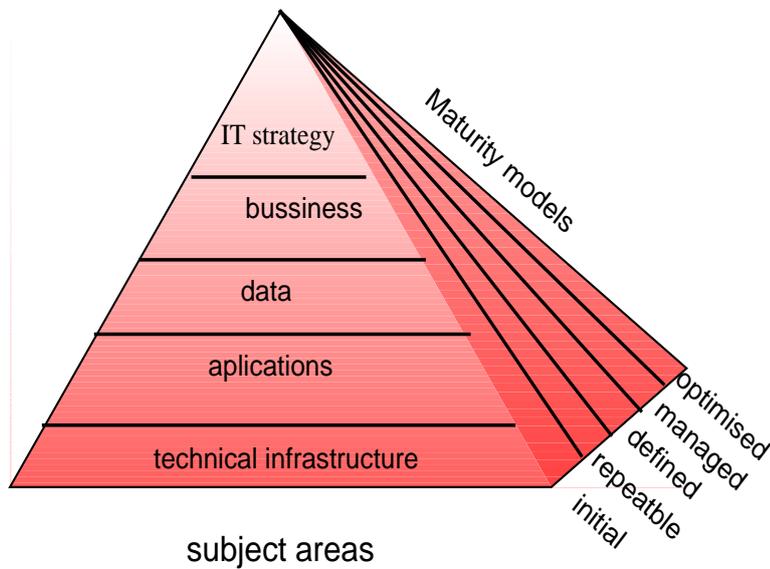


Figure 4 Subject areas and levels of maturity.

PHASES	KEY WORDS
Initial	Spontaneous informational connections. Chaos and incoherence
Repeatable	Basis processes. Repeatable operations.
Stabilized	Standardization of the processes. Integration, existing of procedures
Controllable	Control of the quality, feedback on the basis of quantitative indicators
Optimized	Continual development

Levels of abstraction and roles

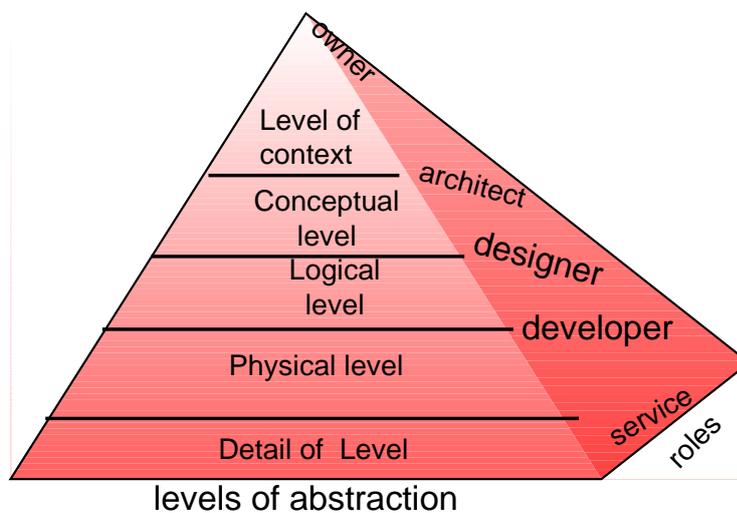


Figure 5. Levels of abstraction and roles.

Quantity and hierarchy of levels of abstraction in the analysis of subject areas does not appear firmly set, and there are different recommendations. What is typical is that in many publications levels of abstraction (see figure 5) are bound with the roles [6,1]. The following levels of abstraction could be met very often:

- ⇒ Level of context - a business-oriented leadership;
- ⇒ Conceptual level - oriented towards the architect or the owner of the business process;
- ⇒ Logical level - oriented towards the architect and designer of the system;
- ⇒ Physical level - oriented towards the designer and developer of systems;

Model framework to develop enterprise architecture on IEEE 1471 (see figure 6) gives an idea to clarify the roles of various stackholders in the process of drafting an architectural description.

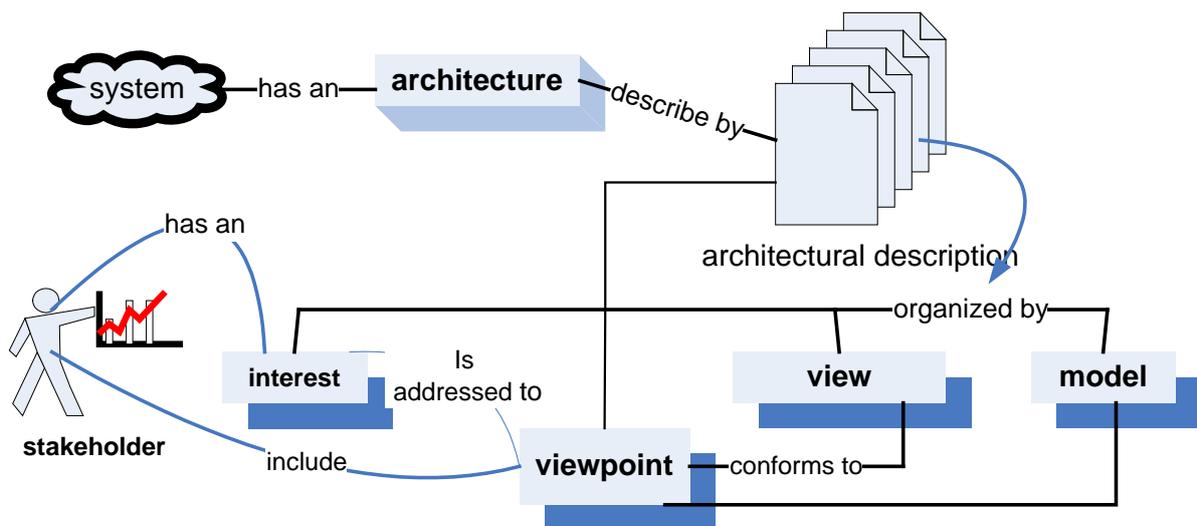


Figure 6. Framework model of the enterprise architecture of IEEE.

LEVELS OF DECOMPOSITION

The levels of decomposition shown on figure 7 are widely accepted and determine the levels on which the enterprise architecture are described and constructed.

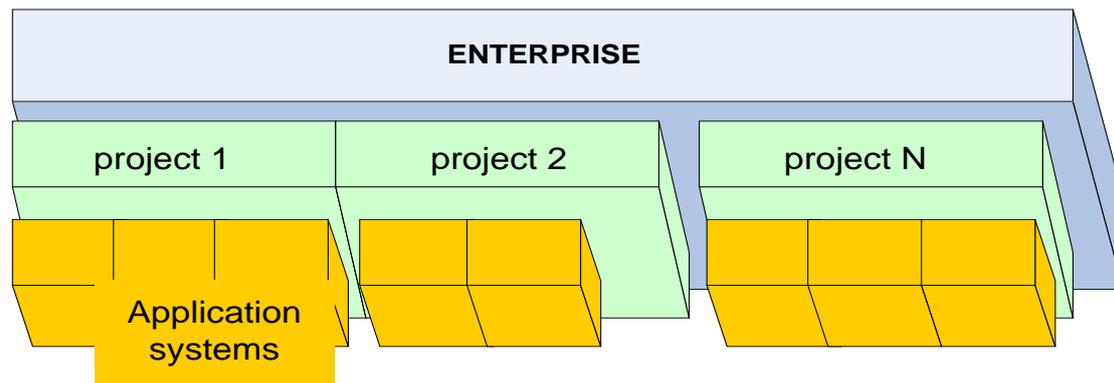


Figure 7. Levels of decomposition.

Enterprise architecture - defines the general structure and functions of the system (business and IT) within the entire organization and provides a framework model, standards and guidelines for development of the architecture of individual projects. Common vision afforded by the architecture of the enterprise, enables a uniform approach in the design of systems corresponding to the needs of the organization and providing interaction and integration of individual systems.

The architecture on the level of individual projects_determine the structure and functions of the systems (business and IT) at project level, and so in the context of the entire organization.

Architecture of application systems-Determine the structure and functions of the applications which are designed to provide the necessary functionality.

CONCLUSION

The report proposed model of the multivariate of the architectural description, Compared with existing models [6,7], the architectural description is proposed to be developed taking into account the level of maturity of the organization, which allows a precise synchronization with the IT business.

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