

A MULTILAYER ARCHITECTURE OF THE INFORMATION SYSTEMS WITH THE HETEROGENEOUS ACCESS INTERFACES

Introduction

In this article the widespread variants of the multilayer architecture of the information systems (IS) have been analyzed. As the main criterion of this analysis was chosen the possibility of application of one or another variant of architecture for the building of the IS with the heterogeneous access interfaces. On basis of the obtained analysis results, in this article is proposed the specific variant of layered architecture for the specified class of information systems.

Analysis of the widespread architectures variants of information systems

When we analyze modern approaches for constructing of the information systems, which are introduced, for example, in [1, 2, 3], we see that development of such systems supposes differentiation of their activities between three layers (image 1).

First layer is the data source. This layer includes activities which are responsible for the access to data provided by the external sources (relatively to the system). Second layer contains the applied logic of the information system. This layer is the most complex and valuable part of the information system. And the last, third layer, keeps activities which provide interaction with clients. The major part of this article is devoted to the analysis of interaction between presentation layers and applied logic of the information system.

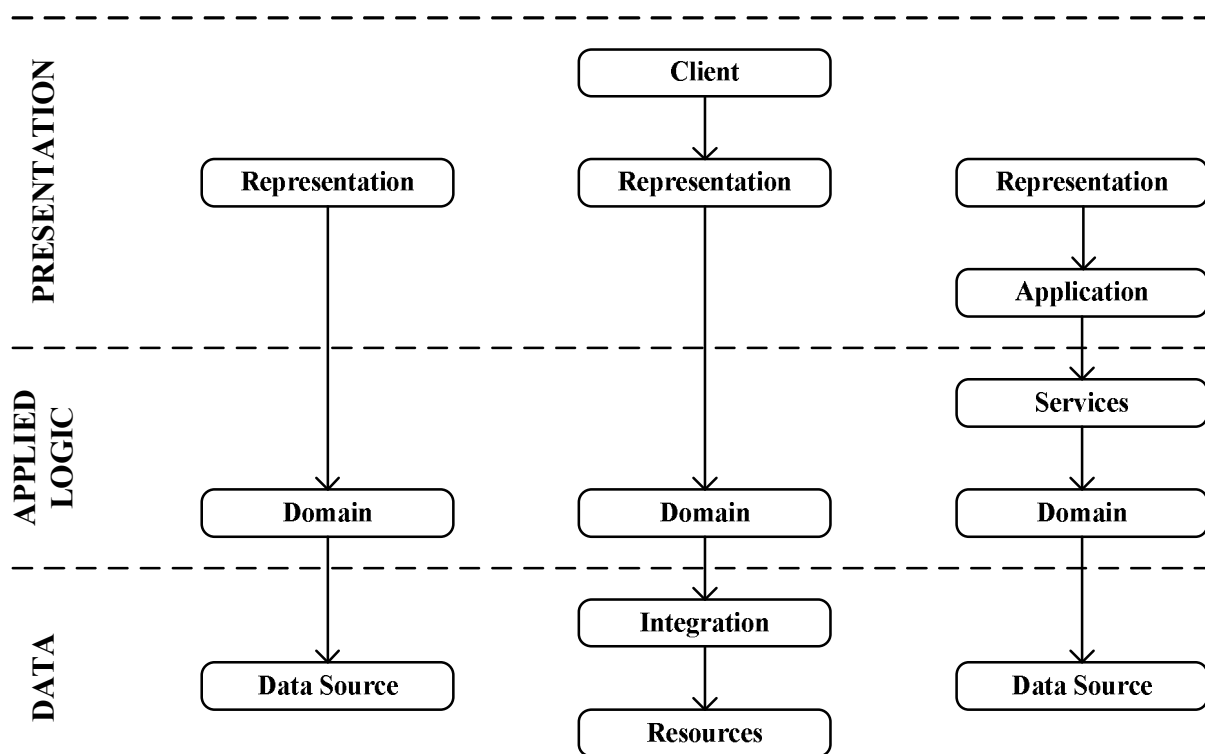


Image 1 – Widespread variants of the multilayer architecture of information systems

Appears from the title of this article reviewed type of IS supposes existence of the multiple heterogeneous clients which want to have access to the system's services simultaneously. In accordance with the considered variants of architecture this implies development of several independent presentation layers which are interact with the shared

layer of applied logic. Each of these presentation layers can have more or less complex structure which may include several sub-layers [2, 3] (image 1). But the major role belongs to the service layer [3]. Presence of this layer in the IS which supplies heterogeneous clients is mandatory. This layer formalizes and unifies interface between multiple presentation layers and common layer of applied logic (so this layer is facade for the information system's core). Also, in common, we will require some interaction protocol, which may be represented with the application layer.

Разработка адаптированного варианта архитектуры ИС

On the image 2 is shown the proposed variant of the architecture. This variant has two significant features. First of them is the requirement of the service layer [3] which is situated between multiple presentation layers and single layer of the applied logic. Second is the existence of the interaction protocol between presentation layers and service layer. This protocol specifies acceptable scenarios of the usage of information system. Interaction protocol may be represented as the application layer [3].

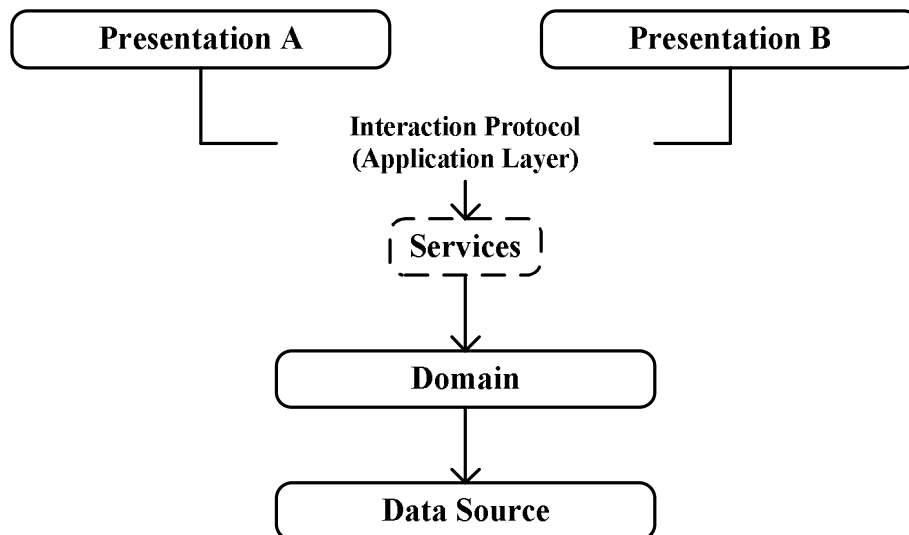


Image 2 – Architecture of the IS which supplies heterogeneous presentations

Internal structure of the concrete presentation, domain and data source layers is inessential and may vary [1, 2, 3] between different implementations of the IS.

Conclusion

In this article the modern approaches to constructing of the multilayer architecture of the information systems have been reviewed. On the basis of these variants in this article was proposed the architecture which accents an attention on the necessity of usage of the service layer and, in most cases, the application layer.

[1] Fowler M. Patterns of Enterprise Application Architecture / Fowler M. – M.: «Williams», 2006. – 544 pp.

[2] Alur D. Core J2EE Patterns: Best Practices and Design Strategies / Alur D., Crupi J., Malsk D. – Prentice Hall, 2001 – 420 pp.

[3] Marinescu F. EJB Design Patterns / Marinescu F. / New York: John Wiley, 2002 – 289 pp.