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A concept of a model-driven organization memory system

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Abstract:

In the article there have been described primal assumptions of a concept of the Model-Driven Organization Memory System (M-OMS). For this purpose there was used a concept of the Enterprise Architecture as a core of M-OMS class solutions. The suggested approach allows the M-OMS to offer functions unavailable in case of classic implementations of Organization Memory Systems (realized for example in a form of properly adopted intranets or enterprise portals). In detail, in this situation important will be a possibility of carrying out analysis using these models (especially of a type „what-if analysis") concerning modifications and development of organization components described in the M-OMS.

Key words:

Model, Enterprise Architecture, Organization Memory System, Model-driven Organization Memory System.

Introduction

During the analysis of the organization activity it is possible to indicate that it has a collective memory which remains even when it is left by individual members and that this memory is an important factor of effective reactions of the organization on changes and challenges from the environment. J. Yu, J. Thom and L. Alem describe this memory as an „organization memory" and define it as

„a process of expression, exchange and common use of information which causes that knowledge gathered in an organization is recorded in a form which is easily available" 0. According to these authors, a basic function of the organization memory is „preventing loss and improving availability of all types of enterprise knowledge by enabling a central, well-designed repository which facilitates a reuse of information and decreases to minimum a necessity of relearning and reperforming works that have been already performed within the organization" 0.

The organization memory should contain knowledge gathered during existence of the organization. It contains the information sources and the context in which these sources are created as well as the actual (declarative) and procedural knowledge. The tool, implemented by IT solutions, which serves for integration, storage, analysis and distribution of knowledge related with the organization, along with necessary procedures has been named as the Organizational Memory System – OMS.

It is necessary that the Organization Memory System be available for all of the unit employees, because it has to allow an integration of distributed knowledge, facilitate an access to it, provide its distribution and reuse amongst organization members. One should note that effectiveness of the Organization Memory System requires that its structure, development and maintenance have to be integrated with existing business processes and compliant with a culture of the organization.

Nowadays, there are being made efforts to build the OMS in a form of properly adopted intranets or Enterprise Portals 0. However, they don't allow carrying out cross-sectional analysis which make use of resources gathered inside of them and their role is limited solely to a repository of documents offering function of less or more advanced searching..

6.1. Benefits from maintaining classic Organization Memory Systems

Bibliography of the subject offers description of many comparisons indicating benefits from holding organization memory systems – see for example 0, 0, 0. Below, the author has carried out synthesis of these benefits:

- Preventing of loss of knowledge when an employee leaves the unit (it frequently occurs in case of trade specialists – i.e. IT specialists); in case of the OMS it is possible to gather knowledge related with each organization component – that is strategic organization goals, legal conditions (external as well as internal), business processes being realized (in sense of quality as well as quantity), organization structure, information resources of the organization (understood as paper and electronic registers), IT systems (a list of compo-

nents is not closed); a key issue regarding an effectiveness of use of gathered knowledge is a possibility of modelling connections between these components.

- A possibility of reuse of knowledge obtained in other parts of the organization (i.e. it refers to information projects, steps of introducing organization changes or projects increasing effectiveness of functioning of the organization); owing to knowledge gathered in one place and providing its access mechanisms it will possible to:
  - preventing of occurrence of „reinventing a wheel" symptom – that is working on solution of the same problem once again; it is especially important in case of multi-department organizations which have worldwide or Europe-wide character;
  - rational management of means – owing to possessing knowledge related with existing organization components – i.e. IT systems – it will be possible to reuse them in the other part of the organization; it is especially important in case of actual economic situation;
- Use of gathered knowledge for undertaking more effective (in praxeological sense) decisions concerning the entire organization; a integral description of organization components will allow carrying out comprehensive analysis of causes of introduction of new solutions.

6.2. Assumptions of the Model-driven Organization Memory System

In recent years there has been observed a growth of importance of paradigm of building the model-driven solutions 0. This approach has been introduced within software architecture by OMG consortium which has developed the Model Driven Architecture (MDA). Nowadays there has gained popularity a concept of the Model Driven Engineering (MDE) which approaches a subject of building IT systems in a comprehensive way. In the MDE all products prepared during software creation phase (from requirements' collection phase to a working solution) should be represented by a collection of models designed with use of a common modelling language. It allows to maintain integrity between artefacts being created and facilitate managing of their development in the future.

Through analysis of above trends the author proposes an introduction of a new class of organization memory systems – that is the Model-Driven Organization Memory System (M-OMS). For purpose of their construction it is postulated use of a concept of the Enterprise Architecture. The Enterprise Architecture is defined as a collection of models being a description of a structure and functions of organization components, mutual relations between these compo-

nents and principles and directives concerning management of designing and modifications of these components during some period of time 0.

Such an approach will allow the M-OMS to offer functions unavailable in case of classic implementations of organization memory systems (realized for example in a form of properly adopted intranets or enterprise portals mentioned earlier). In detail, in this situation important will be a possibility of carrying out analysis using these models (especially of a type „what-if"[1]) concerning modifications of organization components described in the M-OMS.

Moreover, the use of the M-OMS will allow to decrease a gap which actually exists very often between strategic organization goals and projects that are being realized (especially IT projects). It will be possible because describing key organization components with use of models (including strategic goals) and referring them to planned projects will allow practical realization of a concept of strategic alignment.

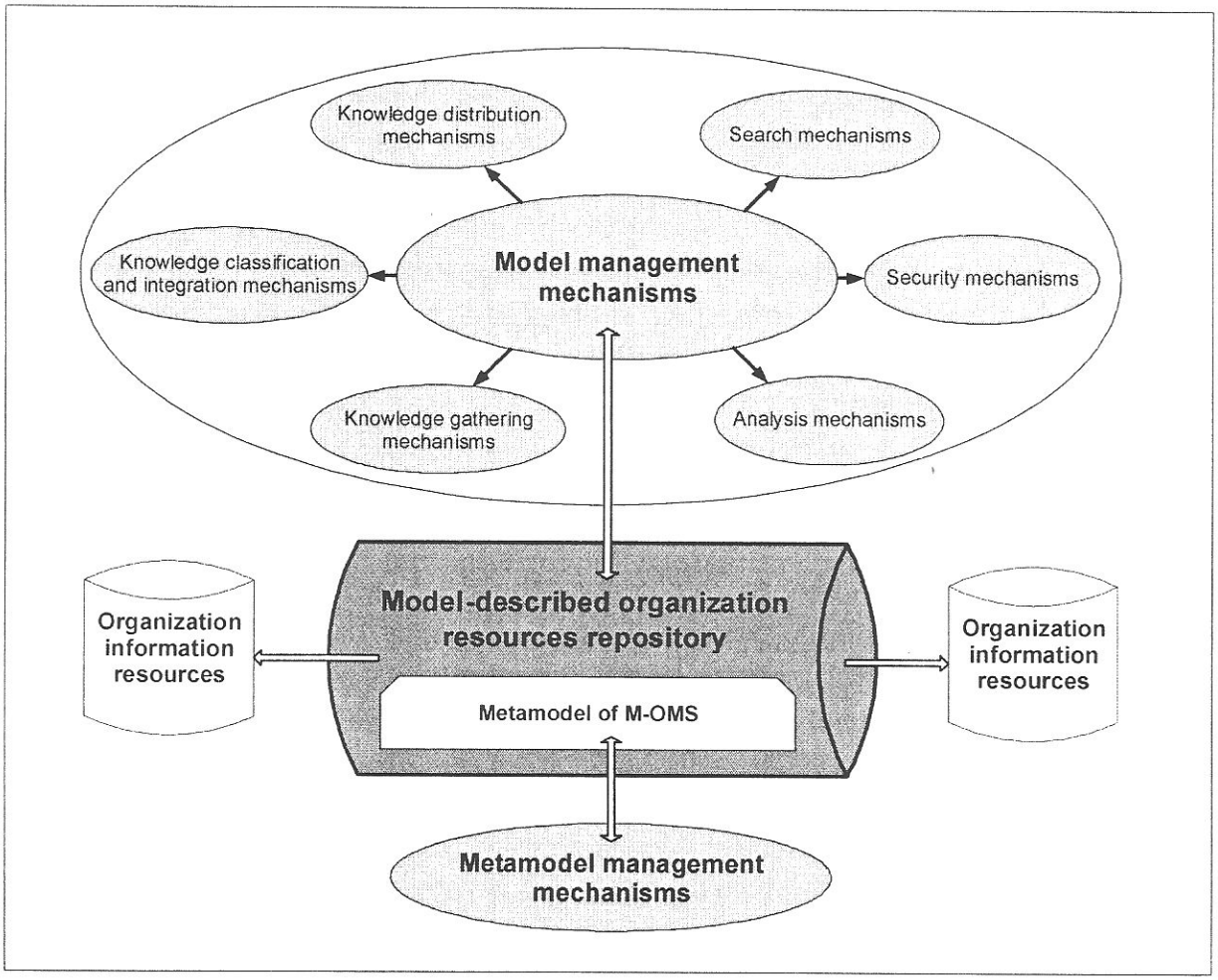
As a starting point for working on methodical basis of construction of the M--OMS there has been assumed a use of existing Enterprise Architecture Framework, that is, an approach of constructing Enterprise Architecture containing all architecture domains (that is domains of business architecture, data, application and technology) and providing necessary notional apparatus, models and reference architectures, roles and ranges of their responsibility 0. In detail, it is recommended use of properly aligned architecture framework TOGAF (The Open Group Architecture Framework). Its creator is The Open Group consortium which undertake standardization works regarding IT solutions. A key element of the TOGAF is a methodology of development of Enterprise Architecture (Architecture Development Method – ADM). It contains a sequence of consecutive phases which are realized in an iterative manner 0. This method may become a basis of dedicated approach within supplying and using of organization memory systems in organizations.

Classification and integration of different types of information and knowledge are key conditions for effective deployment and development of organization memory. In this context the M-OMS system will deliver means necessary for classification and integration of knowledge collected from different sources into one repository. It is important that a core of the repository are models (created on a basis of properly prepared metamodel and expressed through different modelling languages) describing each organization component – see figure 1. Only elements of these models are in relation with remaining information resources – in a semi-structural as well as structural form. It allows carrying out

[1] I.e. a possibility of rating introduction of new regulations to the unit; nowadays, it is very often claimed that legal modifications don't contribute to necessity of raising costs; maintaining the M-OMS will allow analysis of how these modifications will influent business processes, information resources, IT systems; it is a basis of estimating costs of their implementation in the organization.

advanced analysis and facilitates preparation of cross-sectional graphical presentations – i.e. a diagram showing dependencies of organization goals, business processes realizing these goals, data used within these processes, applications supporting realization of these processes and IT infrastructure which is used by these applications.

Figure 1. A structure of a Model-driven Organization Memory System



Source: The author's study.

6.3. Assumptions of IT solution realizing a concept of the M-OMS class system

In respect of economic rationality issues it seems relevant that the M-OMS class system shouldn't be built from the beginning and it would be more beneficial if it is implemented as an extension (an overlay) of IT tool already existing on the market. In the actual phase of works on this concept a concrete solution (a product) hasn't been selected yet but it is only indicated that, in the first place,

it will be a tool for modelling Enterprise Architecture which has a possibility of expanding and developing functions (especially in terms of model repository management).

Additional benefit of usage, as a base for further works, a standard tool for modelling is simplicity of its integration with existing IT environment in the unit. This requirement very often decides about its acceptance or not by its future users. Owing to use of the standard tool for modelling as a starting point it will be possible to apply advanced mechanisms of integration with external knowledge sources which already exist in the organization (especially with a variety of solutions dedicated for modelling data, applications, business processes which may origin from different suppliers). It is especially important in case of middle and large units in which IT environment often has very heterogeneous character.

A tool realizing a concept of the M-OMS system also has to provide the organization employees with a simple access, navigation and searching for stored knowledge – together with providing appropriate security level (it is especially important in case of deployment solutions in large organizations). The system will deliver query generation mechanisms in order to provide an user with a help related with searching for information. Information access will be possible from a thick as well as thin client (working environment – Internet/Intranet).

Conclusion

In the article there have been undertaken considerations concerning assumptions of construction of the model-driven organization memory system. For purpose of their construction it is postulated use of a concept of the Enterprise Architecture. Such an approach will allow the M-OMS to offer obtain functionality unavailable in the classic organization memory systems (like what-if analysis)

Within further study works there are planned:

- selection of a language for building models and working out the M-OMS system metamodel (for example ArchiMate);
- determination of necessity of modifications range within the TOGAF in order to enable usage of this architecture framework for working out methodological basis of construction of the M-OMS;
- selection of IT tool which will be used for working out the M-OMS system.

After completion of this phase there is planned a guidance implementation of the M-OMS system. It will enable empirical verification of considerations presented above and, if needed, introduction of necessary modifications.

Koncepcja systemu zarządzania pamięcią organizacyjną sterowanego modelami

Streszczenie:

W rozdziale przedstawiono wstępne założenia koncepcji systemu pamięci organizacyjnej sterowanego modelami (M-OMS). W tym celu wykorzystano koncepcję architektury korporacyjnej jako jądra rozwiązań klasy M-OMS. Zaproponowane podejście pozwala na oferowanie przez M-OMS funkcji niedostępnych dla klasycznych realizacji systemów pamięci organizacyjnej (realizowanych chociażby w formie odpowiednio zaadoptowanych intranetów czy też portali korporacyjnych). W szczególności istotna będzie tutaj możliwość prowadzenia analiz z wykorzystaniem tych modeli (w szczególności analiza typu *what-if*) dotyczących modyfikacji i rozwoju opisanych w M-OMS komponentów organizacji.

Słowa kluczowe:

model, architektura korporacyjna, system pamięci organizacyjnej, system pamięci organizacyjnej sterowany modelami.

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