ADVICE ON DECISION MAKING IN BUSINESS MODELING BY MEANS OF MICROSOFT SOLUTION FRAMEWORK (MSF) AND THE EXECUTIVE LANGUAGE FOR THE BUSINESS PROCESSES MANAGEMENT (BPM)

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ABSTRACT

The basic aim of business modelling is the qualification of the aim and the range of the project, the qualification of requirements for the created software and the study on the strategy of his implementation. Results of the business modelling for Information Technology (IT) projects are expressed in the specific notation, namely through the general models which concern the business processes, analyzed cases of the use of IT technologies in business, and business objects.

INTRODUCTION

The process of modelling is a technique of describing the functional features of the system. It encompasses flow and the transformations of the data presented with the various processes in the system.

One can divide notations and the methodologies of modelling into two groups:

- modelling purposed for carrying out the analyses and for the optimization of the economic processes and events
- modelling purposed for creating the software

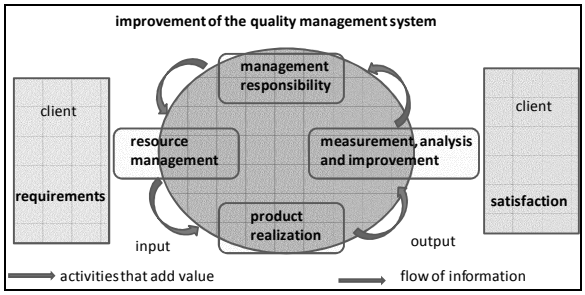

Figure 1: Business project management (Source: http://www.umbrella.org.pl/uslugi/zarz_jakoscia.htm, accessed 03.02.2012)

THE MSF STRATEGY (MICROSOFT SOLUTION FRAMEWORK)

The Microsoft Solution Framework (MSF) strategy used in business modelling is a flexible, integrated set of the models which facilitate accumulating these supplies, human resources and technologies which are necessary to the adaptation of the technical infrastructure to one's aims. During the project of the migration, enterprise or organization can use MSF together with one's own tools and policies.

Every project has its own life cycle, the series of actions which take place from the beginning of the project to its finish.

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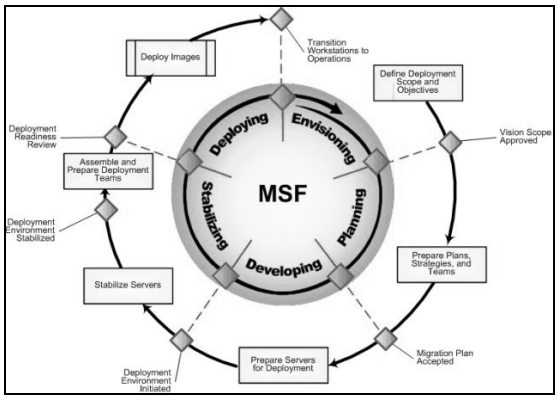

Figure 2: MSF Process Model (Source: http://technet.microsoft.com/en-us/library/bb497060.aspx, accessed 03.02.2012)

MSF Process Model has the advantages of both models of the software production, the traditional and the spiral. It is based on stages and milestones. Stages are the particular periods of time dedicated to the accomplishment of determined actions. Each stage is different and is followed by the change of the focal point of the whole project. Milestones are very particular points, when the synchronization of the stage takes place and the correctness is checked, as well as the level of accomplishment of the stage goals. At each milestone one can adapt the range of the project to meet the customer requirements.

THE PROTOTYPE OF THE SYSTEM

The standards in business modelling and in the executive language of business processes Business Process Management (BPM) have been established in order to facilitate control on the realization of business processes. Through the standardization of the protocols which regard designing, implementation, production, management, service and optimization, BMP leads to the significant improvement of business processes, but all changes are under stringent control of the manager.

The core of the project are Business Process Modelling Notation (BPMN) notation purposed for business process and web-service modelling, and Business Process Execution Language (BPEL), the Extensible Markup Language (XML) based mark-up language which makes use of web services and is purposed for the description of the realization of business processes.

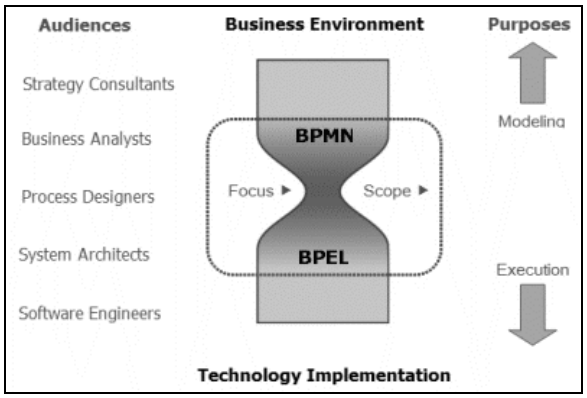

Figure 3: BPMN-Business Process Modelling Notation (Source: own work)

BPMN-BUSINESS PROCESS MODELLING NOTATION

BPMN describes exactly one diagram of business processes: the Business Process Diagram (BPD) diagram. It is easy to grasp and apply, especially for the average users and facilitates and quickens the modelling processes. Moreover, it makes modelling of difficult and complex business processes possible and can be translated into any executive language they use.

BPD diagram insist on taking www services into consideration in these projects which are realized.

BPEL-BUSINESS PROCESS EXECUTION LANGUAGE

BPEL is a perfect example of the Service-Oriented Architecture. It enables a user to design complex business processes, because it is described with the same interface as the typical web service. It means, that the client application can consume it in the same way as a web service (customer's proxy is created in the similar manner) or any other process do. Thus, one can make up services which are very granulated: they can be fused and bound together into final business processes, offered to the client as the end-product. The abundance of constructions and mechanisms provided by BPEL is intended to create complex data flows and to join services of various functionality. It is attractive for corporations, because its language comprises correlation mechanisms, exception service and event-reaction module. These functions, in the hands of experienced user, means coherent business data and complex processes less exposed to breakdowns, able to react to the asynchronic data from other systems.

BPEL, as a tool for business process modelling in SOA, is a kind of 'glue' which links functionalities of many web services together, providing solutions for business

problem. Business process implemented with BPEL is given ability to use many web services and thus to create brand new business application having its own interface for the end-user. Using BPL and web services for the purposes of the systems integration is relatively cheap and convenient, especially for corporations.

BPEL – declarative mark-up XML language

BPEL is a declarative mark-up XML language, purposed for the description of the business process execution by means of web services. Owing to BPEL many simple web services can act as a single service of higher level dedicated to the customer, and SOA can be realized, which is through the various composition and web service coordination techniques.

BPEL language stemmed from two former languages of workflow description: Web Services Flow Language (WSFL) graph modelling language worked out by IBM, and XLANG (block language worked out by Microsoft) The application written in this language is interpreted by the BPEL engine, via the namespaces declared in the language. BPEL process interchangeably order the sequence in which the single services are called out, decides if calling-out is linear or sequential, enables a user to make loops, conditional constructions and variables (and to copy these variables or give them values). Typical BPEL process it is initially given all values by the user, call out the required service (set of ordered services) and gives back the result of the computation. Business process consists of stages (functional blocks, 'activities'). BPEL supports both simple and structural action.

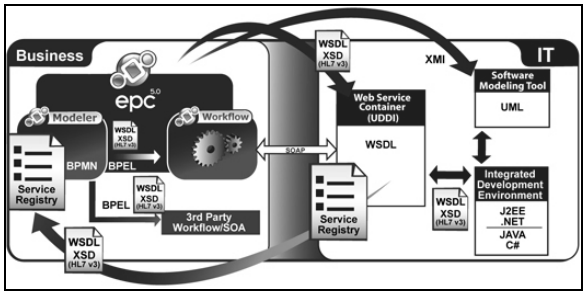

Figure 4: Mapping and dependencies between IT and business (Source: http://www.interfacing.com/ Products/enterprise-bpm/Process-Execution%20/, accessed 03.02.2012)

The composition of complex business processes, by the agency of the BPEL language, is executed either through the so-called orchestration or choreography.

In the orchestration the so-called central unit is required (e.g. the service of Web Services). It coordinates the activation of the individual services which, as a whole, make up the business process. That kind of policy is more flexible. The above-mentioned individual services do not participate in the larger business process 'consciously' so their source code may remain intact. In case of service breakdown alternative protocols may be applied.

In choreography no central unit is used. Instead, it is assumed that each service has a fragmentary knowledge about the structure of the whole business process and communicates with the dependent services on its own. The control flow is maintained through the mutual summoning of the services making up the whole unit.

The features of BPEL:

- The process is introduced as the executable code, independent from the environment of its realization
- The pattern of the representation of the business process is defined
- The language allows for the expression of the co-operation between business objects
- The language can create abstract processes
- Processes can be modified „live"
- the flexibility of the language allows the features taken from the real world to be reflected in the process

Definition of business process in BPEL language orders the sequence in which parallel or serial web services are executed. It is possible to define conditional activities and results of one service can be declared as call arguments of the second one. BPEL offers traditional loop structures, variable declarations, substitution, exception service etc.

BPM-BUSINESS PROCESS MANAGEMENT

BPM provides business processes with easy browsing and detecting and connects them dynamically with administered services. Thus, it facilitates the implementation of business processes into the frame architecture SOA. It allows for separation of the complexity of the system from business processes. As a result, the infrastructure is more flexible.

The business processes management:

- Business processes modelling
- Simulation and optimization of business processes
- Business processes activation
- Monitoring - Business Activity Monitoring (BAM)

Support for popular standards:

- Business Process Execution Language (BPEL)
- Business Process Management Notation (BPMN)

BMP is often combined with SOA (architecture leaning on services), which is the conception concerning the IT systems development which attaches importance to meet exactly the needs of the user.

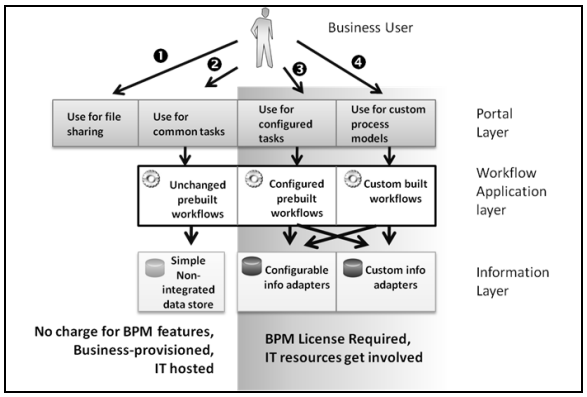

Figure 5: A chart concerning various software used by the customer and mutual relationships between the particular sort of the respective software (Source: http://blogs.msdn.com/ b/nickmalik/archive/ 2010/09/17/a-roadmap-to-bpm-democratization.aspx, (accessed 03.02.2012)

BPMN-BUSINESS PROCESS MODELLING NOTATION

Business Process Modelling Notation (BPMN) is the standard by the BPMI organization which regards www services, modelling the course of business processes and mutual flows between them. It is intended to provide such a description of business processes and business environment which is comprehensible for all users, from business analytics who sketch the initial outlines of processes, to the technical staff responsible for the implementation of technology, which is worked out to serve these processes. It is also intended to uniformly visualize the XML-based executive languages of business processes, by means of using the common notation.

Apart from BPMN, the BPMI worked out:

- the language of business processes modelling Business Process Modelling Language (BPML)
- the query language for business processes Business Process Query Language (BPQL)

They were all grounded on mathematical basis (the Pi calculus, one of the process algebras). As a result, one can directly manipulate the model and the generated executive language of business processes can be executed at once. Roughly speaking, BPD diagram is translated directly into the description in BPML language, in the same manner as diagrams of the data structures translate into the description in the language of definition.

BPMN describes exactly one of the possible diagrams of business processes, namely the Business Process Diagram (BPD) diagram. It is 'digestible' for typical users: easy to grasp and to use in process modeling. Moreover, it can be a tool for modeling much more complex and intricate business processes and translated into any executive language of such processes. Within the BPD diagram the importance is attached to make use of www services in the conducted projects. BPMN can automatically translate itself into BPML or any other standards of the executive languages of business processes e.g., Business Process Execution Language For Web Services (BPEL4WS).

THE SUBJECT OF THE RESEARCH

This article pertains to the notations, elements of the programming languages and models which find application in the decision support systems. At each particular stage decision making starts from defining problem and its possible solutions. Then, the model of the chosen solution is made. When it comes to teams responsible for creating various business applications, the efficiency can be raised e.g., by facilitating procedures concerning business process servicing, by reducing servicing costs, by giving managers monitoring tools, by correction of unfavourable events, by bringing order into data and into data accessing.

Each model type is appropriate to meet a particular need. Business model describes process from the point of view of its business participants. Technical model describes it from the point of view of IT architecture, whereas the executable model – from the point of view of BPEL architecture. Owing to BPM we can integrate business processes into SOA architecture through providing browsing, detecting and dynamic linking to managing services. In other words, it is possible to separate the intricacy of the system form all the business processes and hence to create more flexible architecture.

SUMMARY

Model of the process described by means of BPMN notation is a logical representation of rules and work-manners of the process. One can generate of it a notation in any executive process language. To achieve better results one can use process simulation, which enables him to analyse process models before their implementation. During the simulation model acts as an enterprise, simulating business processes and events at an accelerated rate, and it displays the animation of the simulation. As the simulating application stores the statistical data concerning to the parts of the model, one can define the efficacy on the basis of that data and thus avoid business mistakes before the implementation of processes.

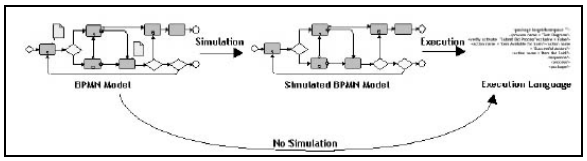

Figure 6: Simulation of the process model in the BPD diagram in BPMN notation (Source: own work)

Process modelling by means of BPMN notation is important if we want to understand how to integrate many business project into one system. BPMN provides a strong support for other modelling techniques (e.g., relational modelling of data, designing systems and applications by means of UML, designing XML schemes and net architecture). Owing to all the above-mentioned modelling methods, it is possible to make up the architecture of an enterprise able to react for the changes more safely and in faster manner.

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