Different instrumental methods which can be used in new EIS: theory and practical approach

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Abstract. In this paper we study Business rules management system (BRMS) approach in Enterprise information systems (EIS) development. The approach is closely connected with Enterprise decision management (EDM) concept and usage of EIS in business and world economy. The paper has survey nature and gives retrospective analysis of today's marketing situation in EIS and BRMS industry. Highlight examples of EIS BRMS modules (ORACLE and SAP), their advantages and goals in the real high-tech industry.

Keywords: enterprise information systems, business rules management systems, enterprise decision management, instrumental methods, Oracle Business Rules, SAP Business Rules.

1 Introduction

Sooner or later top management of any company faced with the problems of systematization of data and process of automation during working with the information. Over time, growth in the volume of data makes within the company problems in creating modern enterprise information systems (EIS), which cover all aspects of the business enterprise. Purchase of EIS is not the final purpose. EIS is only a tool which allows organizations to operate effectively. This applies to work not only ordinary performers, but also top-managers at any company's level [1,2].

Thus, purchase of EIS - is only purchase of a tool to maintain control over the company or to increase the effectiveness of this control. "Automatic Control", unfortunately, does not usually happen. Therefore, if after the implementation of EIS, the process of collecting and processing information is not accelerating and increasing the accuracy and completeness of the data, and management of the organization is not receiving new data, or can not use it properly, then the information remains unclaimed, and it does not lead to more effective solutions. EIS itself does not increase profitability [4]. It can increase efficiency and expedite the processing of data, which can provide information for decision making. Manager can increase profitability from effective solutions based on this information. It is therefore necessary not only to choose and implement EIS, but also learn how to use it with maximum efficiency. Moreover, understanding whether and how the use of EIS

should be preceded, more precisely determine the choice of the supplier and the process of implementing EIS. The main thing that allows manager to make EIS is to unite the activities of the enterprise with its instrumental methods [4]. Author's concept of EIS with instrumental methods is presented in the figure 1. Instrumental methods include: business rules tech., scenario analysis and precedent approach.
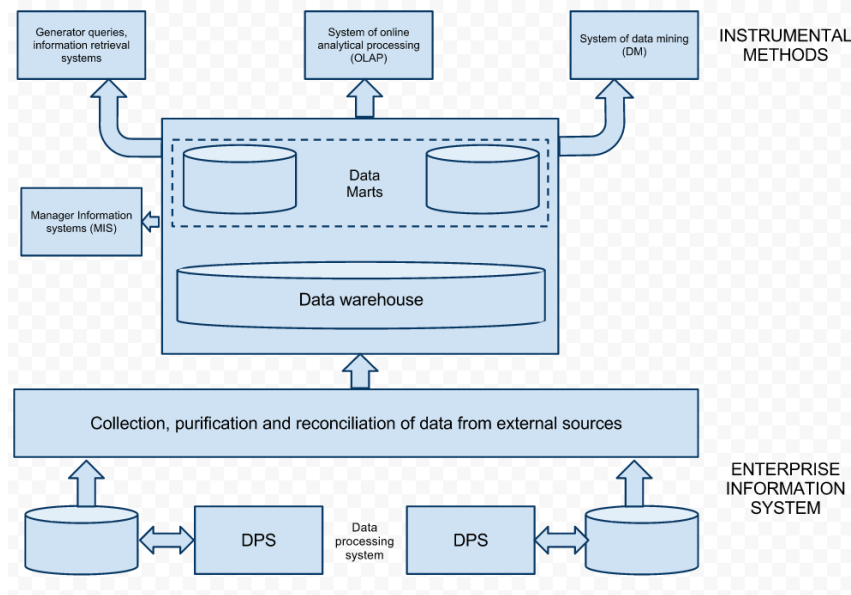

Figure 1. Enterprise information system with instrumental methods within

For industrial EIS important information is: production data, finance data, procurement, and marketing. Based on the information, manager can quickly adjust and plan the activities of the company. He or she gets a chance to see the whole enterprise and business processes from the inside, to see the basic functioning of the system, where and how he or she can minimize the costs, which prevents from the increasing of the profits. Management team is interested in consolidation of information from the whole branches and central offices of their enterprises, as well as having possibility of monitoring remotely all units.

2 EDM (Enterprise Decision Management) Approach

Since the late 80's companies were focused on improving the efficiency of business processes and building a data structure. In the early nineties has become apparent insufficiency of the approach. Describing the processes and data, the researchers found that there is one other area of expertise, critical for understanding, the nature of any organization - its business rules. Designed to support business structure, control and influence the behavior of businesses, business rules appear as a result of restrictions imposed on business.

This trend popularized by Ron Ross, Barbara von Halle, James Taylor, Tony Morgan and other authors [3,4]. So, it was determined that this approach should include parameters such as terms, facts and circumstances. The concept of business rules are widely used today, there are special groups of organizations, such as, Business Rules Group (BRG), Semantics of Business Vocabulary & Business Rules association (SBVRa) and International Business Rules Forum, which develop different standards for business rules. While no single standard format for business rules was created, there were developed a number of related standards, for example, Semantics of Business Vocabulary and Business Rules (SBVR), Production Rule Representation (PRR).

The integration of business rules and EIS was facilitated to appear in the mid-90's into concept of Enterprise Decision Management (EDM), oriented to a higher degree of automation in decision-making process, replacing an approach based on business process management, when the main task was automatically chosen, and algorithms were presented in the form of business rules [4]. Enterprise Decision Management has three major components: organizational component, developing component and management component (figure 2).
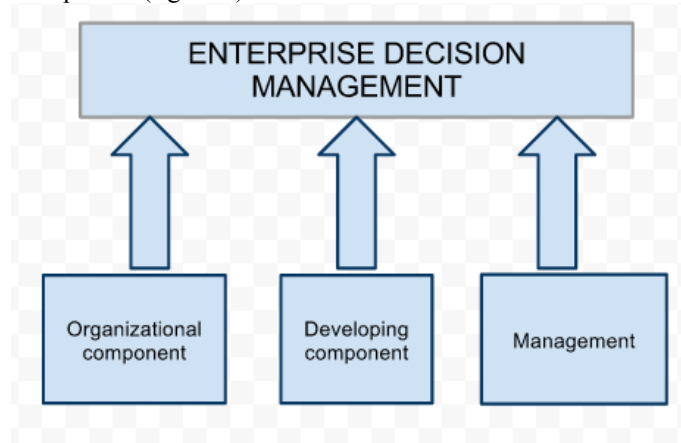

Figure 2. Enterprise Decision Management approach with its three major components

Due to the complexity of decision-making process within organizations in recent years, EDM has acquired special importance to the business. It must match rapidly changing laws and market situations. To automate the decision-making process, EDM involves pooling of analytical tools, forecasting and automating solutions, business rules, processes and business procedures, electronic control systems and organizational structure.
The key points of EDM concept in terms of business rules are:

    1.   business users who have the ability to control key points of solutions in business processes;
    2.   business rules are ideally suited to illustrate the correctness of the decision-making process;
    3.   the possibility of replacing part of the application code for business rules;

4.   visualization of business regulations and their relationships for easy management and the possibility of substitution code.

With the advent of EDM concept, business rules have strong architecture and clear justification from business standpoint, because business flexibility is unstable without right management decisions within the organization. The application of business rules in the way of automating decisions reduces development costs and maintenance; stops the dependence of system's update from IT industry [5].

3 BRMS (Business Rules Management System) Approach together with EIS Leaders

Every company use several hundreds or thousands of specific rules (business rules), such as legislative initiatives, agreements with partners, inside restrictions, certain internal rules of the organization which determine its behavior, business policy and distinguish the enterprise from others. Business rules are indirectly determined by a large number of inconsistent analytical and project documents, and mostly they can be transformed into logic and application programs.

Often they are not available or unconsciousness in general, developers make assumptions about the business rules that may be incorrect and poorly aligned with the objectives of the enterprise, and can not be easily modified and adapted [3]. This fact leads to various inconsistencies and errors and makes it difficult to change business rules, and this is necessary response for change in the external and internal environment.

A leading providers of business rules management systems have been successfully developed their systems in parallel with the suppliers of EIS, and now two markets have become closer [1].

One of the leaders in EIS business is Oracle Corporation, has its own Business Rules module, which consists of three components:

1. A Rules engine
2. A Rules SDK for use by applications that modify and/or create Rules.
3. The Rule Author GUI for Rules creation

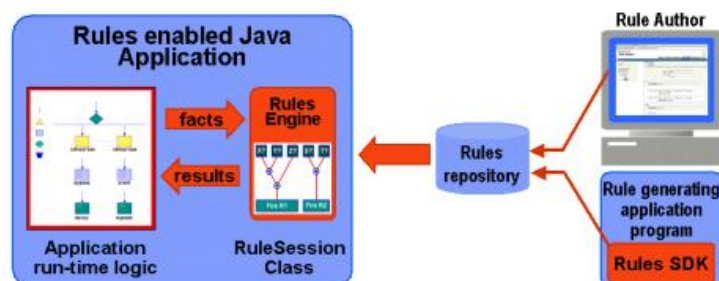Architectural structure of Oracle BRMS is presented in figure 3.

Figure 3. Oracle Business rules components

Another EIS leader is German company SAP, which provides users with its own BRM system: SAP NetWeaver BRM [2].

SAP NetWeaver BRM helps managers to manage the growing set of business rules in any organizations. Therefore, SAP provides the following tools:

1. **Rules composer** – Enables process architects and IT developers to create and modify business rules via rule representation formats, such as decision tables
2. **Rules analyzer** – Enables business users to test, refine, analyze, and optimize business rules
3. **Rules manager** – Enables business users to edit and manage business rules in a Web-based collaborative environment
4. **Rules repository** – Provides the environment for rules versioning, permissions management, access control, alerts, and additional repository services
5. **Rules engine** – Executes rules, integrated with the run-time technology provided by SAP NetWeaver Composition Environment

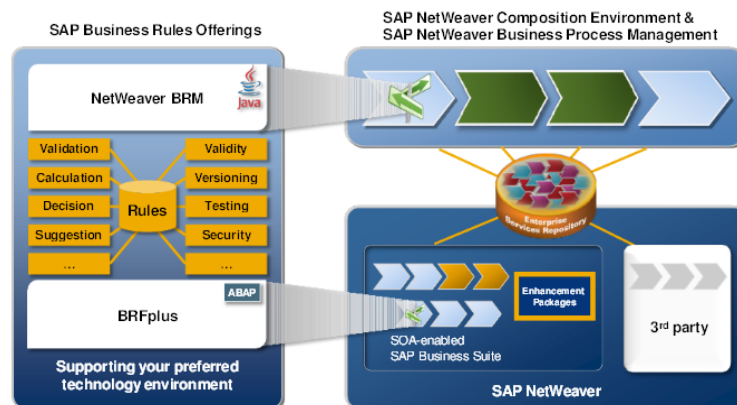Architectural structure of SAP BRMS is presented in figure 4.

Figure 4. SAP Business rules components

4 Competitive Preferences of BRMS Approach in Business

Business rules management system speeds up all processes occurring within the enterprise, where it was embedded. As a consequence, the company more favorably responds to changes in the environment or on the global economic crisis. Accelerated decision-making process and automate operational decisions inside and outside of the enterprise which has beneficial effect on business itself [4].

Examples are: the use of BRMS improve business efficiency by 25% in General Electric customer service; 15% of efficiency at the pharmaceutical giant Bayer; Swiss Medical's profit, using BRMS, was increased by 23.5% during the reporting period

(second quarter 2010); in Delta Airlines, with the introduction of BRMS, processing speed of customer service was increased by 2.5 times, which resulted in increasing of revenue grows (15.8%). Wodafone, one of the biggest telecommunication companies in the world, implementing BRMS for its order processing system of personalized service packages for customers of different consumer clusters, increased processing speed operational decision-making by 2.5 times, increasing net income by 25 % for the report period (2010, Q2) [3,4].

5 Conclusion

The above description of EIS, its basic definition and practical examples of the following BRMS systems give managers simple possibility to identify problems on time and solve them with immediate actions automatically. Together with BRMS approach Enterprise Information Systems can identify the relationships of objects in the presence of incomplete information, and decrypt the conceptual lattice, obtained by the algorithm which does not require additional knowledge, because of its simplicity.

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