Managing Knowledge within the Small and Midsized Companies

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In the post decade the business environment was altered with direct impact to the way business organized and managed. The ability to capture and harness corporate knowledge has become critical for firms as they seek to adapt to changes in the business environment. Business rules management systems [BRMS] allows separating out the business logic and changing rules without impacting the remainder of the application, offering in that way a solution to faster adapt the informatic systems to changes. BRMS adds decision capabilities to application and workflow-type processes. Generally, small to midsized business budgets don't allow for rip-and-replace approach and the software licensing can be prohibitive and restrictive too, leaving to that few options for complete information management. This paper introduces business rules, business rules management system together with a cheaper solution that can be used by almost small and midsized companies to manage their knowledge and support the decision making process.

Keywords*: knowledge management, business rules, business rules management system.*

The Business Environment
In the post decade the business environment was altered with direct impact to the way business organized and managed by the following major worldwide changes:
a) emergence and strengthening of the global economy with major change in the way the management and control are applied in a global marketplace, the competition take place in world market, the business activities implies cooperate global work groups and the usage of global delivery systems;
b) the transformation of industrial economies and societies into knowledge (and information) based service economy. There is a large migration from traditional business firms to new style business firm. Traditional business firms have hierarchical arrangement of specialists, standard operating procedures for delivering mass-produced products or services, and traditional managers relies on formal plans, rigid division of labor, and formal rules. New style business firm are flattened (less hierarchical), decentralized and uses flexible arrangement of generalists to deliver mass-customized products and services. The new manager relies on informal commitments and networks to establish goals (rather than planning), a flexible arrangement of teams and individuals working in task forces, and customer orientation to achieve coordination among employees. The new manager appeals to the knowledge, learning and decision making of individual employees to ensure the proper operation of the firm and having in mind all the time that "without knowledge and its associated assets of information and data, nothing can be done, nothing made, nothing achieved";
c) the transformation of the business enterprise into knowledge (and information) based economies offering new products and services and where knowledge considered as a central productive and strategic asset. The business pressed by a time based competition with a shorter product life, realized in a turbulent environment and having a limited employee knowledge base;
d) the emergence of digital firm – for convenience defined as "Organization where nearly all significant business processes and relationships with customers, suppliers, and employees are digitally enabled, and key corporate assets are managed through digital means"[1].

2. Decision Making Cycle
The ability to capture and exploit corporate knowledge has become critical for firms as they seek to adapt to changes in the business environment. Whether it been learning from

past success or failures, identifying opportunities to improve custom profitability, or simply enabling teams to become more productive, knowledge management lies at the heart of any well-managed company. Again, in the new economy, the innovation, time to market, knowledge, and ability to execute differentiate the leaders from the followers. Having digitally enabled relationships with customers, suppliers and employees, core business processes accomplished via digital network, and rapid sensing and responding to environmental changes the digital firm must offer strong support to decision process. If we consider that every decision-making cycle depends on finding answers to the following three core questions (for which the indicated capabilities used to find their answer):

- How are we doing? - the usage of scorecards and dashboards help monitor the business with metrics and find answers;
- Why? – the reporting and analysis provides the ability to look at historical data and understand trends and to look at anomalies and understand why;
- What should we be doing? – a reliable view of the future and ways to fallow is obtained by planning and forecasting; then the integration of all theses capabilities allows respond to changes happening in business. IT can be to the company a catalyst for change and an engine driving rapid growth.

3. The Evolution of Information Processing Paradigm

The evolution of information processing paradigm during the past four decades to build intelligence and manage change in business functions has generally progressed over three phases: automation, rationalization of procedures, and reengineering. To this ones added the fourth phase, the today knowledge management:

1. Automation – increased efficiency of operations;
2. Rationalization of procedures – streamlining of procedures and eliminating obvious bottlenecks that are revealed by automation for enhanced efficiency of operations;
3. Reengineering – radical redesign of business processes that depends on information technologies – intensive radical redesign of workflows and work processes (redesign to e-business);
4. Knowledge Management - identifying, creating, representing, and distributing knowledge for reuse, awareness, and learning across the organizations.

The business decisions are critical source of value. But making the best decisions is well beyond the capacity of most business systems today, when decisions must be made faster, across more channels and product lines, leveraging more data, under greater regulatory demands and competitive pressures, and with more complicated constraints and trade-offs.

4. Business Rules Management Systems

Over past years the developments centers to two solutions designated to easy and faster adapt IT systems to changes: one based on business process management and another one based on business rules engines. The business process management (BPM) solution is process-centric focusing on the workflow around a given process. The business process can be defined as "the unique ways in which organizations coordinate and organize work activities, information, and knowledge to produce product or service" [1]. The business process management guides an application through a number of steps that must be followed to accomplish a specific task. The business rules engines (BRE) solution guides application through rules that determines the BPM steps. Business rules are translations of the policies, the statement of guidelines governing business decisions, into detailed conditions and actions that unambiguously enforce the policy. In IT systems the business rules engines read business rules and then they do automatically what is necessary to do so that they still in concordance with them. The today dynamic business environment has a major impact to the business rule lifecycle. The business rule lifecycle is represented by the process by which a company manages changes to policies and their enforcement. Enterprises are using business rules engines as a means to reduce costs of

managing changes to policies, and consequently, changes to business rules.

The two solutions, BPM and BRE, are integrated into a more complex one solution: business rules management systems (BRMS).

BRMS technologies is a "horizontal" technology – it can be used in any business that

has a specific problem: "How can I reduce the maintenance costs of IT applications that need change rapidly?"[5]. With a BRMS (figure 1) the business logic is separated out and can be changed without impacting the remainder of the application. It adds decision capabilities to application and workflow-type processes.
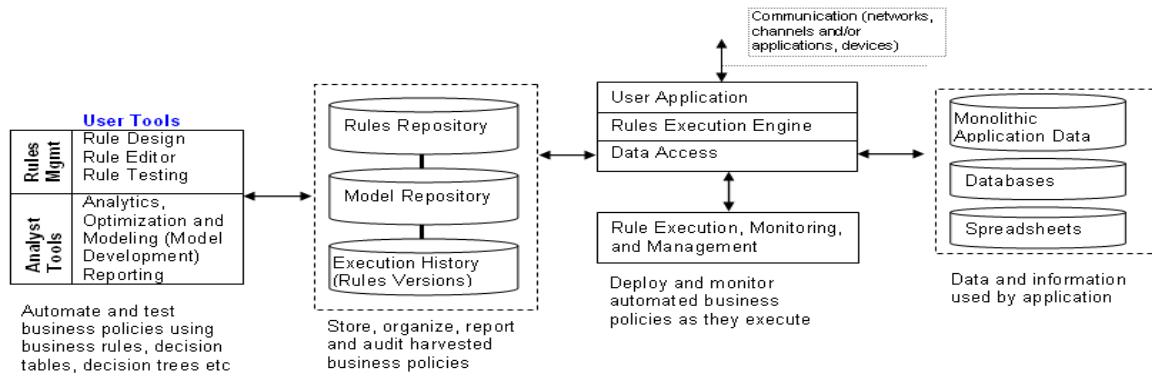

Figure 1. BRMS components

Within BRMS:
- business policy experts can manage and evolve business policies using the methods and vocabulary with which they are most familiar;
- technology experts can manage and evolve technology using methods and vocabulary most suitable to their tasks.

The information management solution for small and midsized companies is to fully integrate, share and deliver information so that they able to improve accuracy and speed of decision making by providing consistent, rapid and secure access to all relevant information. This type of information management implies the usage of business rules management systems. As a small to midsized business, budgets don't allow for rip-and-replace approach and the software licensing can be prohibitive and restrictive, leaving few options for complete information management [2].

5. Usage of Business Rules Benefits
Benefits and advantages from using business rules based automated systems can be grouped in two benefits areas: business and technology benefits.
a) Business Benefits:
- Business Control – Business use control

of the decision logic and decision process. Business rules can be modified by business users, in a controlled, auditable manner that is cohesive and consistent across applications. They offer closed-loop capabilities for designing, deploying and executing decision;
- Flexible and consistent workforce – Flexibility for rule-based decision process. All the company's analysts can use the same methodology to build models for different application area;
- Learning environment – Business users and analysts can rapidly improve and evolve their decision logic by: a) a more quickly deploying updated models in an integrated environment, and b) learning at a faster pace through continual feedback loops and champion/challenger strategy testing;
- Increased consistency - By lowering the costs of making decisions through automation, by reducing the number of people, by streamlining the process needed to make or process a decision, by lowering costs of compliance, regulatory requirements, through centralized and easy-to-update business rules management. By providing faster decision that operate at speed of transaction it lowers also hand-off costs between systems and between people;
- Increased Agility - Improved strategic alignment and greater competitiveness

through faster response to market changes and regulatory changes. It ensure a greater return on new products and market opportunities, through faster time to implement and to change decision-based processes, and by being able to change approaches to the market more quickly. All that obtained together with lower IT development costs to change decisions, by placing control of business rules in the business user's hands.

b) Technical benefits:

- Real-time deployment – Decision intelligence placed into the transaction processing stream for real-time decision processing. Models can be deployed into production environment immediately after development;

- Development productivity – Decision logic is updated centrally and deployed automatically, regardless of underlying technology. Business rules are built and maintained once and are not replicated in fragmented systems.

- Ability to represent and simplify complex decision logic in standardized scores, decision tables or English-like business rules;

Auditable decisions: the ability to understand why an automated decision was made that way it was.

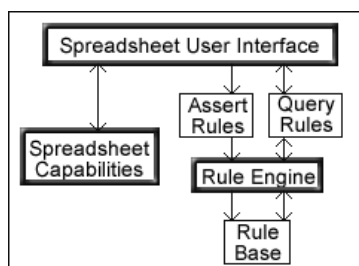## 6. A solution for small and midsized business

Figure 2 ARulesXL architecture [4]

As we know, the small to midsized business budgets don't allow for rip-and-replace approach and the software licensing can be prohibitive and restrictive.

Almost of business analysts, knowledge workers and data workers have at least minimal knowledge to use office application. The solution offered is ARulesXL rulesets [4] that are developed and maintained in Mi-

crosoft Excel spreadsheets by the company Amzi! Inc. They use data from spreadsheet cells as inputs and return results as spreadsheet cell values. The rulesets can be incorporated, via API, in a variety of languages and tools and can be called from Web applications written in .NET or Java. The API allows load inputs from whatever data sources the application needs (e.g. databases, users, networks), and query the ruleset to obtain results. The results can be displayed in application's user interface or in Web pages. The results can also be used programmatically to create schedules, orders, analyses, recommendations and more. The solution uses the spreadsheet user interface for design, edit and test the business rules described in English like language and using the spreadsheet formula syntax. It allows combining the processing power offered by spreadsheet together with the logic power of a business rule engine. The formal description of the business rules allows company to capture, manage, maintain and use knowledge. The spreadsheet as solution allows also reusing and collecting rules as company grows and need other category of BRMS.

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