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Achieving Agility: The Agile Power of Business Rules

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The Agility Angle: Agility is defined as "the ability of an organization to sense environmental change and to respond efficiently and effectively to that change." Being agile requires flexibility and the ability to revise current actions to achieve a higher degree of performance. Agility implies freedom of movement. Being rules-driven means using pre-defined, well-formed and, automated descriptions of business policy (expressed as declarative rules) to describe how things should and must work. Being rules-driven requires advance knowledge of key decision points and a need for controlled action. Being rules-driven implies operating within a prescribed framework. Is it possible to be rules-driven and agile, or are these contradictory goals? We remove the confusion surrounding these two concepts and show that — just as in martial arts, ballet, sports and auto racing — agility and rules can and must coexist in harmony.

Key Findings

- Being rules-driven and being agile are not incompatible, if the rules are made explicit and if the enterprise establishes a vision for business-rule automation.
- Hard coding your business rules (common in the past) will severely limit the degree of agility you can expect to achieve.
- Business rules contribute to all five of the steps of the agility cycle (sense, strategize, decide, communicate and act), although with different benefits in each step and with different beneficiaries.

Predictions

- Through 2010, the benefits of business-rule-driven agility will capture end-user fascination and create latent demand for corresponding agile infrastructure investments that IT must address (0.8 probability).
- Through 2010, the highest-value and most-visible uses of business rules will be for rule-enabled business process management (BPM) projects, decision optimization and support, architecting agile service-oriented architecture (SOA) and complex-event processing efforts, and policy and scenario management (0.8 probability).
- Through 2010, the most-visionary business-rule vendors will offer business-rule management, multiple-rule algorithms, a near-natural-language interface, and support for evaluating and implementing competing corporate scenarios (0.8 probability).

Recommendations

- Consider the agile use of business rules in each step of the agility cycle.

- Develop a strategy for explicit support of business rules (for example, plan for automating rules and policies with business rule engine [BRE] capabilities).
- For BRE technology, consider the stand-alone BRE and business rule management system (BRMS) market, their reseller and independent software vendor (ISV) partners, and those vendors outside the traditional BRE market that offer rule capabilities (such as business process management suite [BPMS] vendors).
- A strategy for business rules should also include a higher-level strategy for automated support of business policies. Business policies provide a comprehensive framework for managing and deploying business rules.

ANALYSIS

What You Need to Know: Change is coming. We are already seeing growing acceptance of modeled representations of business rules. With the advent and advances of analysis, modeling and simulation capabilities, and tools, enterprises are investing resources to replace traditional implicit business rules with explicit versions.

The distinction is important. An implicit rule is one that is buried in a larger context, such as when a business decision (for example, determining a loan risk level or calculating a late fee charge) is implicit in the actions of the implemented system, even though the rules behind the decision are hidden from view (and auditing and modification), and perhaps scattered and fragmented in their actual implementation. Implicit representation means that the rules exist, but only as an integral (and integrated) part of something much larger. To be clear, implicit rules do not just evolve; they are designed based on specific functional requirements. The key difference is that they are not designed to stand alone and be separated from their constituent applications. In the "soup" of applications, implicit rules are just a flavor in the broth.

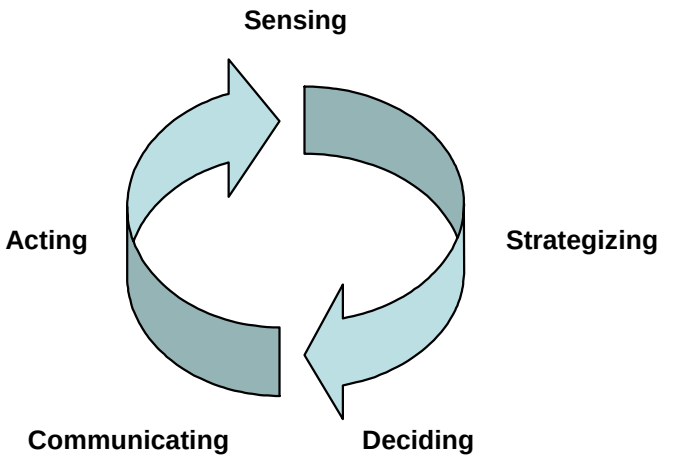
With the shift to explicit rule representation, business rules are now being extracted, modeled, tracked and nurtured as entities that are parallel to other application-level software assets (for example, services, process flow and components). Enterprises are placing a higher value on rules as a new type of software asset. Enterprises are also beginning to automate policies. A policy is a management directive that is generally implemented as multiple individual rules. A policy can be captured in a rule repository and related to a composite set of rules. The shift to the more-explicit representation of rules and policies is a key step toward increased agility.

As rules become more explicit, enterprises are being asked to increase their agility. This is good timing. Agility is defined as "the ability of an organization to sense environmental change and respond efficiently and effectively to that change."

When combining the trend toward explicit business rules and the assured need for increased agility, how we represent and use rules is coming under increased scrutiny. In some cases, business pace is increasing so much that rules must change in near real time.

Being simultaneously rule-driven and agile is difficult under the traditional "hard coded" approach to automating rules (for example, expressing rules as programming logic, embedded in an application system). Advances in rule technologies will increase an enterprise's ability to be agile for those willing to change traditional approaches to rule representation. Successful enterprises will blend a comprehensive business rules automation strategy with their agility efforts, bypassing the implicit rules model, where practical, and adopting an explicit approach to rules automation. The best way to approach such a synergistic blending of rules and agility is to consider how explicit business rules (a rule-driven approach) can be used to support each step of the agility cycle (see Figure 1).

Figure 1. The Agility Cycle



Source: Gartner (April 2006)

The agility cycle — The agility cycle is a series of five intuitive acts that are required to be agile (see Figure 1). By sensing the need for change, developing alternative reaction strategies, deciding on the most-appropriate reaction, communicating the planned reaction and executing the plan (acting), an enterprise fulfills the definition of agility. The agility cycle is a continuous loop. The outcome of responses must also be sensed and evaluated for further action. By creating a continual state of "sense-strategize-decide-communicate-act," enterprises are theoretically able to fine-tune and increase their ability for agile response over time.

The value of business rules mapped to the agility cycle — Explicit business rules can contribute value in each of the five steps of the agility cycle. For each step, the value of having explicit business rules may differ, and the audience deriving the value is likely to vary. However, a comprehensive business rule strategy can add value to each step of the process.

Sensing — Sensing involves locating an opportunity (or problem) for action or reaction ("sensing environmental change"). Advanced rule capabilities can assist in the act of sensing by providing explanations for out-of-tolerance conditions (a common problem that can be detected by rules) and offering an audit trail to show why the condition exists. Rules can be used to process complex events (a combination of one or more discrete events that jointly indicate a pattern of interest) and sense unexpected combinations of out-of-tolerance conditions. Simple and advanced applications of rules can be used to seed the sensing process by making stakeholders aware of potential problems and providing context for the alerts.

In advanced situations, the automated rule base can "learn" from the sensed alerts through pattern recognition and warn of future repeating scenarios. Anticipatory sensing is a key aid to agility (see "Achieving Agility: Information Access Essential to Understanding Your Business").

Business value of explicit rules — Explicit rules create a framework for automated sensing of problems and opportunities (for example, as when a particular rule fires, indicating a policy violation). Rules allow the sensing of problems and opportunities within a true (live) business context to make informed responses. Rule audit trails can explain "why something happened."

Key recipients of business value — Business process owners at all levels can be notified of out-of-tolerance conditions and intervention opportunities (for example, a rule triggers and

indicates an opportunity to respond appropriately when a client's credit limit is reached). Those responsible for sensing transactional and operational activities will benefit greatly.

Strategizing — Strategizing requires evaluating alternative response scenarios. We have shown that rule engines can help sense suspicious activity or activity that is out of tolerance. Rule engine audit trails can explain the likely conditions that created the sensed situation. Once this root-cause analysis has taken place, rule engines allow alternative responses (for example, changes to the rules or policies) to be tested in a protected environment (for example, one that allows failure) until the resulting rule changes can be accepted as "the best response." Further, for situations in which strategies can be formulated in advance, rules can offer predetermined policy and rule change "packets" that are residing in an inventory of prebuilt response scenarios. Not all scenarios can be anticipated, but for those that can, having a prewired response strategy is a benefit of explicit rules.

Business value of explicit rules — Preplanned and newly proposed rules and policies, combined with optimization, simulation and/or heuristics ("rule of thumb" analysis), can provide and test plausible alternative business responses before they are actually selected and implemented. Such efforts add to diagnostics options and power and let the enterprise estimate the impact of its proposed changes.

Key recipients of business value — Business strategists, business analysts and process owners can use diagnostic capabilities, rule execution audit trails and heuristic analysis to mine past performance to inform strategy selection. Preplanned policy and scenario management can offer default strategies for management consideration, in many instances requiring agile response.

Deciding — Deciding requires determining the most-appropriate response scenario for the enterprise. The simulation and policy evaluation features of rule engines that assisted the strategize phase also provide input for the decision phase. A "sandbox" approach to deciding on alternative intervention strategies allows pretesting of the impact of the proposed rule changes. Such pretesting is critical when response strategies may require resource allocation that may not work in the actual environment (for example, when a simulated call center policy or rule change predicts the average time on hold will increase beyond acceptable levels). This level of analysis provides credibility to the final decision regarding which strategy to implement.

Business value of explicit rules — Optimization and simulation allow managers to prescreen scenarios to select the best fit. Heuristic analysis can provide a measure of probability of success on various interventions being considered. Rules can be previewed in a test environment to anticipate downstream effects and factor the results into the final decision.

Key recipients of business value — Business strategists and process owners can take advantage of the odds of a successful intervention by relying on the heads-up insight offered by rule technologies. Technology and business staff can be better aligned by coordinating and pretesting response strategies before implementation. Business professionals at all levels can visualize the impact of a planned agile change.

Communicating — Communicating requires conveying a common understanding of the response scenario. By their explicit nature, business rules represent a visual (for example, a decision tree, a decision table and so on), formalized (for example, logic statements), or natural language representation of the business actions and policies. Communications are simplified because of the explicit (shared and visible) nature of the rules and through the methodology of business rule management. Enterprises that understand explicit business rules will exhibit a high degree of consistency (to the point of using automated consistency checking) in their business rules. Clarity, visibility and consistency assure that everyone in the enterprise "knows the rules."

Rule execution audit trails and rule change histories add further value by showing the evolution of enterprise policy over time.

The business value of explicit rules — Explicit rules codify the enterprise's agile response by providing an archive of the changes or interventions made. A rules repository, combined with an audit log and the results of the scenario and optimization prework provides a "living history" of the rationale and driver of a particular agile change.

The key recipients of business value — Business process owners, business strategists, business analysts and other affected parties (for example, unions, auditors and board members) can literally see why certain agile change was required and how the decision for change was made. IT and business alignment is intensified by a shared BRE-based communications framework.

Acting — Acting requires implementing an "efficient and effective" plan of response. The tools that automate business rules do just that. Business rules are not just "pretty pictures." When properly implemented through a BRE, the business rules transform into executable logic (for example, service, component or actual exported software logic) that implements the enterprise policy decisions as automated decision points and constraints on action. A BRE executes the rules at its disposal, tracks performance of the execution and ensures that the rules are implemented. One of the most-difficult aspects of agility is implementing the agile action/reaction. Explicit business rules allow any action that can be expressed as a business rule to be executed and integrated with established applications. Whatever the rule, the explicit business rule approach ensures that the rule is transformed into running logic that can be tracked, changed and audited as needed.

The business value of explicit rules — Explicit rules allow policies to be automated and govern application and human action. Changing explicit rules quickens the implementation of an agile response with minimum effort expended in searching for "the right levers." Pretested rule sets can be instantiated and deployed for near-instant response where a baseline solution was anticipated.

The key recipients of business value — Business process owners can inject rule changes and new rules into a system that is designed to be tuned for agile response. IT and business process owner coordination is improved.

Agility and explicit rules are not incompatible — Being rule-driven and being agile are not incompatible, if the rules are made explicit and the enterprise establishes a vision for business rule automation. Business rules offer support for all five of the steps of the agility cycle, and their value extends from business to IT. However powerful, not every situation requiring agility will be easily resolved through the use of automated rules. Not all agile responses can be expressed as rules or rule changes — sometimes an agile response requires a more-complex action — but for many operational and transaction settings, explicit business rules offer a fast path to agility that is worth investigating. Enterprises should review opportunities to marry agility and business rules and should focus on those cases in which the match is optimal. The technology for explicit rules is mature. The application of explicit rules to agility is less mature, but is an emerging competitive weapon.

RECOMMENDED READING

"Market Share: Business Rule Engine Software, Worldwide, 2004"

"How to Develop a List of Business Rule Engine Selection Requirements"

"Taking Rule Technologies for a Test Drive"

This research is part of a set of related research pieces. See "Defining, Cultivating and Measuring Enterprise Agility" for an overview.

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