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Building Responsive Enterprises: One decision at a Time

Visibility, prediction, impact and action are the keys

Organizations must become more responsive. Rapid changes in business conditions, global competitors and increasingly networked customers are forcing the issue. Organizations must improve visibility, increase their ability to predict, accurately assess impact and take prompt action to survive.

Responsive business

Process and event management

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The responsive enterprise The right action at the right time

"Responsive Process Management serves as an organization's central nervous system, ensuring that companies have infrastructures that are capable of driving the decisions that determine the success of their business."

Dr John Bates, CTO Progress Software Corporation

A responsive enterprise needs to be able to see what's going on and accurately predict what's about to happen. It needs to be able to tell what impact the current state and impending future is going to have on its business. Finally, it needs to be able to rapidly yet accurately respond so it can avoid problems, take advantage of narrow windows of opportunity and deliver on its promises.

Responsiveness requires:

- Visibility see what is happening around you, in your systems, in your business
- Prediction tell what this means about the future and predict effectively what is going to happen next
- Impact Analysis identify the impact of what you see and predict on your business and decide what you should do about it
- Take action do what you need to do to move your business forward

These four give you responsiveness today. You also need agility so that when your needs change, and they will, you can make changes to your systems and processes quickly. No enterprise can stand still so responsiveness must be paired with ongoing, continuous improvement. And of course you can't rip out your existing systems and replace them – they must be improved in place.

The need for decisions Responsiveness requires decisions

"Operational responsiveness – the ability to quickly and effectively make the right decisions—is a priority for every forward thinking organization. Any organization can make decisions quickly, but most lack the infrastructure to do so successfully. The results are either quick decisions made poorly, or good decisions made too late. Either way can cost a business dearly."

Dr John Bates, CTO Progress Software Corporation

Building a responsive enterprise of any size requires that the systems of that enterprise can succeed in a number of distinct tasks:

- You must be able to instrument existing systems to capture events. You must be able to find the business process steps implicit in your existing systems and raise the visibility of your core transactions as they flow through your applications.
- You must be able to define the processes you need across these systems. You need to create end to end process flows that deliver business value and correlate system and technical events into higher-level business events, those requiring some kind of business response.
- You need to be able to monitor all this. You must collect data about these events and processes so you can see what it all means, present synthesized information to people so they understand it and provide analytic capabilities to derive insight from all this data.
- You also need to be able to make decisions. More precisely you need to have systems that can make decisions for you—letting you say how you want them made but then making them reliably, accurately and quickly when you need them.

While all these characteristic are important, in this paper we will focus on the role of decisions in delivering a responsive enterprise.

Decisions, processes and events

Event correlation is a powerful tool for turning the lowlevel, technical events flowing through your systems into higher level business events. Matching system events to known and evolving patterns allows you to extract business meaning, often in real-time, as data streams through your business. Knowing that a business event has occurred, however, is just the beginning. To act on that event you need to make a business decision. You might, for instance, correlate a set of events in your supply chain to tell you that a shipment is likely to be late - the business event. For your systems to react to this event correctly they need to know which customers' shipments to delay, which orders to fill. This business decision – which orders should be met given lower supply than expected – is driven by policies, by predictions of the likely impact on customer loyalty and by the analysis of service level agreements. It turns this business event into useful business actions.

Decisions can be thought of as linking events and processes. Deciding which process should handle a particular event, ensuring you kick off the right business processes, is critical. Whether these processes handle the consequences of the event automatically, manage exceptional cases or coordinate the people who must respond to the event, deciding which ones are needed, can be complex.

Selecting the right process to kick off, however, is not the only use of decisioning in processes. Some processes are decision-centric and can make little or no progress without decisions. For instance, a process to increase a credit card holder's limit is very straightforward except for the decision about their credit worthiness. Others processes combine more complex process steps with automated decisions to deliver straight-through processing — unless critical decisions in the process are automated, the process will have to stop and wait for human intervention. Throughout this paper we will use a loan processing example. In our hypothetical loan processing environment, existing systems handle parts of the processing while human-centric processes link applicants to loan officers and automated workflow pushes applications through. For complex applications, case management handles exceptions and issues and the whole process assembles a complex document – the loan paperwork.

One critical decision in this process is that of approving and then underwriting the loan. This decision might be deployed in support of the loan officer but might also be deployed to ensure that, once all of the information has been assembled (determined by correlating a set of events), the application process can keep moving without reference to a loan officer. This decision would be triggered when the business event "loan application complete" was detected from underlying system events and would decide if the application could be approved or rejected automatically. If not, then it would trigger the loan officer process to get a human involved. If it could be automatically rejected, it would trigger workflow to send rejection paperwork, and if it could be automatically approved, it would use a second decision - what are the price and terms for this loan to generate additional documents and route them to the applicant. Decisions play a crucial role in linking events to processes, selecting sub-processes and keeping the whole process moving whenever possible.

Separating out decisions and managing them separately also makes processes simpler, easier to change and more agile. By encapsulating potentially complex business logic in decision-making services, the remaining process is more streamlined, making it easier to change and evolve. This same encapsulation means that processes and decisions can be evolved separately, allowing each to have its own change cycle. As decisions and processes often have very different drivers for change, this separation increases agility and lowers the cost of change. Finally, it is often the case that moving

decision-making earlier in a process, making the decision-making component the first step in a process, reduces the number of different paths through a process.

Consider the loan processing example once more. Different regulations affect the process and the decisions within it. A state might issue new guidelines for what documentation is required or how long it must be kept, affecting the process. Meanwhile, other regulations, enforced on a different date, might change what can be used as the basis for rejection. The company itself might change its risk profile, further complicating the decision-making process. Keeping the decision and process separate yet linked allows these changes to be isolated within their respective components.

Both events and processes need decisions if they are to be of maximum value to an enterprise striving to become more responsive.

Business rules for alignment

Process modeling, dashboards, portals, alerts and Business Activity Monitoring are all great tools for improving alignment. Business users can understand what is happening in their business and see how their systems represent their business. They can also specify how they want their business to behave, who they want to be informed, who needs to take the next action. This visibility into, and control over, their systems breaks through the traditional barrier between business users and their information technology partners. Business and IT are aligned, working together to create a responsive enterprise.

But we have already seen how important decisionmaking is to processes and events. These systems must be able to decide how to act, how to make complex business decisions, if responsiveness is to be maximized. However, having identified decisions, you can't just write code if you want to maintain any kind of agility or alignment. Business users and their IT staff cannot be aligned around decision-making if the logic of those decisions is embedded in code the business cannot understand. Similarly, if the only way to change the logic is to initiate a software development project then you will only be responsive if the situation remains stable – your agility, your ability to change systems in response to changing business situations, will be compromised.

Many process management and event correlation environments support business rules to specify snippets of business logic. These event or process rules allow for escalation and routing to be automated and for simple actions to be defined. Real business decisions often exceed the capacity for these rules, however.

In our example, the rules behind what is and is not an approved application can get complex, with different states having different rules while different products require different logic for assessing risk. If the rules capability of the process environment is all we have, then we will likely resort to writing code to manage this logic as it will exceed the simple lf...Then capabilities available to us.

Beyond this execution challenge is a more important one. Managing all of the rules involved in a decision, or a set of decisions, so they are understood, visible, compliant and manageable is critical. If the rules cannot be found, checked and updated when necessary then it will not matter if they can be executed as they are likely to change if they are to remain correct in today's dynamic business environment. Similarly, if the rules for decisions cannot be shared and integrated with both process and event-centric environments, then consistency and compliance will be a challenge. Without a serious rules capability, those decisions that involve lots of rules, rules that change a lot, rules that are complex or interact in complex ways, or rules that require real domain expertise to be understood cannot be properly managed.

What a responsive enterprise needs is a Business Rules Management System that can plug into its overall environment so that the decisions that build on event processing as well as those that drive process management are manageable by and for the business.

Increasing decision accuracy

Business rules are at the core of automating decisions. When people make decisions, they apply policy, expertise and regulations. Business rules, and a business rules management system, allow an enterprise to embed its understanding of these elements of a decision into a system. But when people make decisions they also conduct analysis – they look at the data they have (about customers, about risk, about products) and look for patterns and issues in that data. When business rules are used to automate decisions, analytic techniques are required to bring this same analysis to bear.

Many enterprises are using analytics in a business activity monitoring environment. With automated decisions in place, you can use those same analytics to find problem areas in your processes and in your decisions. When you find a problem area, you can write new rules, or change existing ones, to solve it new rules that handle otherwise expensive exceptions, that implement a newly discovered best practice or close a loophole. More advanced analytics techniques can do more, driving suggested rules to close gaps and deriving new rules from the ongoing analysis of data about business operations, customers and more.

In our loan processing example, the analysis of our processes might show that a particular kind of loan is always being referred to a loan officer and then rapidly approved. Further analysis could show that these loans could be auto-approved, saving the time and expense of a loan officer review, and new rules could be added to the approval decision to handle this situation. Once complete, the loans that used to be rubber-stamped by a human loan officer can be processed straight-through, both cheaper and with better customer service.

More sophisticated companies can even take their data, process it using data mining and predictive analytic techniques, and embed the result in their rules, taking decisioning to another level. Many analytic models that predict risk or opportunity, for instance, can be represented as a set of business rules once they have been developed. If in-database analytics or other techniques are used to make analytical models available, business rules can be written to act appropriately on those predictions and maximize their value.

Loan processing is often a user of serious analytical models. Predictive analytics that show how likely a particular borrower is to default or pay off early, for instance, are critical to approval decisions. Built from an applicant's credit history and much more, these models turn uncertainty about the future – which borrowers will default – into a usable probability: how likely is it that this borrower will default. Business rules allow the business to set thresholds for these probabilities so that the right products can be approved at the right price for each applicant.

One last note on the role of analytics in decisions. Regardless of the level of analytics embedded in the decisions you have, analytical techniques and analysis infrastructure can and should be applied to the effectiveness of your decision-making to see how well your rules work, which ones correlate to successful outcomes and much more. Applying performance management techniques to decision-making and business rules specifically enables ongoing and effective decision analysis, leading to continuous improvement in decision-making.

Decisions in agile responsiveness

Decisions have a central role to play in agile responsiveness. Embedding business rules-driven

decisions in processes increases straight-through processing by eliminating the need for manual decisionmaking, improving responsiveness. Agility is improved also, as the business can collaborate effectively with IT to make the right change to the right rules quickly and accurately. Rules-driven decisions play a similar role in event-centric components, moving systems from event correlation to event-driven business action.

When business users can see their business through real-time, or near real-time, dashboards they have much greater visibility into risks and opportunities facing them. Business rules driven decisions can make these dashboards actionable, giving business users ways to change the behavior of their systems when they see the need. Instead of just seeing, for instance, that a particular product is selling poorly, they can add rules to promote or discount it, driving the results they want. Integrating rules-based decisions with business dashboards turns them from passive clusters of instruments into cockpits or control towers.

Identifying, managing and embedding decisions are critical steps in building a responsive enterprise. Using business rules as the basis for those decisions ensures that responsiveness is combined with agility.

The Progress RPM Suite

Progress Software offers a Responsive Process Management suite designed to deliver comprehensive visibility across processes, transactions, events, and systems. The suite has components that handle event process, business rules, business process management and more.

The Progress® Control Tower[™] is a unified environment that gives you a real-time view of what's happening in your business along with the ability to improve it. A highly interactive and customizable environment, it lets you track process performance against defined business metrics, quickly identify anomalies, and target improvement efforts.

A responsive enterprise must have business processes and events that rely on distributed and interconnected applications. Progress' RPM suite delivers business process visibility across your infrastructure so you can see how systems are supporting the needs of the business. Combined with process modeling tools and business rules management, this helps ensure that IT and the business stay aligned.

The integrated nature of the Progress RPM suite allows you to drill down into processes from the Progress Control Tower, optimize them, refresh them with a newer version, or change business rules that drive decision-making.

Progress also provides comprehensive solution accelerators designed for industry-specific business processes, such as revenue assurance in communications, responsive logistics management in transportation and logistics, and real-time market surveillance in financial services. The Progress RPM suite is also designed to integrate easily and flexibly with your existing IT environment.



Conclusion Decision management and responsiveness

"Unlike infrastructures designed to **support** the decisions made by an organization, Responsive Process Management is designed to **drive** organizations toward effective decisionmaking. Companies today must have immediate visibility into changing market conditions and the ability to sense and respond in real time. Responsive Process Management delivers this critical capability."

Dr John Bates, CTO Progress Software Corporation

In an ever-changing business environment with rapid changes in regulations, competitors and more, enterprises must become more responsive. In particular, they must build a portfolio of systems that offer agile responsiveness and business alignment. A responsive enterprise needs to be able to see clearly what's about to happen, assess the impact of what is happening and rapidly respond. It must be able to avoid rapidly escalating problems, take advantage of slivers of opportunity and deliver on customer promises. A responsive enterprise requires:

- Visibility
- Predictions
- Impact Analysis
- The power to take action
- The agility to make changes

Business process management, event correlation and business activity monitoring are important to a responsive enterprise. Decision Management, the identification and proactive management of business decisions in operational systems, is critical as a way to weave all of this together. Using business rules, and a business rules management system, to manage decisions ensures this can be done by business and IT people in collaboration.

About Decision Management Solutions

Decision Management Solutions provides consulting and implementation services for all aspects of decision management. Decision Management improves business performance by identifying the key decisions that drive value in your business and improving on those decisions by optimizing your organization's assets: expertise, data and existing systems.

Our end-to-end, decisions-based approaches and methodologies address key business priorities, such as cost competitiveness, differentiation, customer retention and growth. We offer an array of consulting services for companies, ranging from advice about adopting decision management strategies to tactical support for successful implementation projects.

Decision Management Solutions is led by James Taylor, a leading expert in decision management. James has over 20 years experience in developing software and is the foremost thinker and writer on decision management. James has experience in all aspects of the design, development, marketing and use of advanced technology. He has consistently developed approaches, tools, processes and platforms that others can use to build more effective information systems. In addition, Decision Management Solutions has an extensive network of industry and implementation partners.

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