Healthcare transformation and the role of business rule automation

Neil Ward-Dutton, Research Director

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## Summary

### Healthcare systems are evolving; the concept of quality in healthcare is fundamentally changing

Healthcare industry structures are changing as the roles of public and private sector entities shift and recombine; in markets like the US, new delivery models (such as Accountable Care Organisations) are being developed in the quest to change financial incentives in the industry from being volume-based to being value-based.

Of course, there's also the issue of the overall cost of healthcare provision; providers have to become significantly more efficient in their use of resources.

### It's never been more important to support service delivery and agility through software

How do you navigate the chaos of regulatory evolution, service delivery shifts and technology disruption, improve patient care, and also cut cost? You have to integrate IT into your operations more seamlessly and more broadly than ever before.

You need to make the best possible use of the developers that you have available – focusing them on implementing innovative features rather than managing existing features. This means empowering other groups to share responsibility for managing existing features.

### Business rules automation through a BRMS helps remove the IT bottleneck to agility

A Business Rules Management System (BRMS) is a specialised business software platform that helps you formalise business policies, requirements and terms and conditions – and then execute them in an automated fashion; yet in a way that clearly insulates them from other software system elements. BRMSs are critically important. They make it easy for subject-matter experts to participate alongside IT specialists in projects, and they support productive and safe collaboration between different groups around changes.

### The ROI of BRMS technology is about more than just speed

Using a BRMS to specify, automate and manage business rules gives you potential to not only implement policies and rules faster. It also gives you the potential to lower IT implementation costs; reduce the turnaround time for change requests; reduce the costs of unplanned changes and bug fixing; and – from a business rather than IT perspective – also lower the cost of compliance.

### Choose a BRMS that is easy to use, scales, and helps you manage change

The value of a BRMS springs from its ability to bring new people into the realm of software delivery and do that safely and productively. You can only do that if you choose a BRMS that promotes business user involvement; manage change at scale; performs well at scale; and fits well with your existing IT landscape.
Transformation in quality and delivery models

Delivering value with lower expenditure – doing more with less

The healthcare industry is experiencing a period of unprecedented change. In developed countries across the world, industry structures are changing as the roles of public and private sector entities shift and recombine; in markets like the US, new delivery models (such as Accountable Care Organisations, or ACOs) are being developed in the quest to change financial incentives in the industry from being volume-based (where providers get paid for the work they do) to being value-based (where providers get paid for the benefits they deliver to patients).

Of course, there’s also the issue of the overall cost of healthcare provision; in all developed countries this is an issue high on political and public interest agendas, and the goal of lowering overall healthcare expenditure obviously means that providers have to become significantly more efficient in their use of resources.

In line with these trends, providers are looking to find ways to:

• Integrate care delivery around patients – creating enhanced EMR-based systems to bring together multiple practitioners and stakeholders and co-ordinate the provision of care.

• Reduce hospital readmission rates – particularly for patients with long-term conditions and those exhibiting common comorbidities (heart disease, diabetes, atrial fibrillation, chronic kidney disease, etc).

• Improve patient safety and outcomes – by monitoring patients and their symptoms much more closely, and using analytical systems to help identify risks and predict potential issues than can be prevented ahead of time.

• Deliver care in multiple settings – by integrating health and social care services, particularly for people with complex needs and the elderly, and enabling care to be delivered at home.

• Provide better information and guidance to patients to help them help themselves – and use low-cost resources (for example contact-center staff) to quickly identify and triage requests

In addition to all these service delivery environment changes and considerations, regulatory frameworks and industry standards are also evolving. For example the introduction of ICD-10 coding (which will be mandated in use from October 2014) creates a very significant transition challenge for providers; as there’s no industry standard transition defined from ICD-9 to ICD-10, providers are all currently having to figure out their own path forward.

All these factors together are creating a business and technology environment characterised by almost perpetual change. Rising above the chaos of regulatory evolution, service delivery shifts and technology disruption in order to make real, lasting improvements in patient care while also minimising expenditure is tough, and it requires you to find a way to integrate IT into your operations more seamlessly and more broadly than ever before.

The million-dollar question is: how can your business balance flexibility, speed and control as more complicated operational decisions need to be made more quickly, more often?
Healthcare IT has to make sure it’s not the bottleneck

According to The Standish Group’s widely-cited CHAOS study, just 39% of all software development projects succeed (according to the criteria of on-time and on-budget delivery, with required features and function); and 43% of projects are ‘challenged’ (late, over budget, or delivered to a smaller scope than originally required). What’s particularly striking about these results is that this 39% represents a significant improvement over previous study findings. It seems that software development projects continue to be just as challenging as they’ve been for the past 40 years.

The same study also highlights the three most important success factors for software development projects: effective executive sponsorship, user involvement and optimization (of project size and complexity). Software delivery projects fare better if they’re collaborative, iterative affairs. Going forward, IT has to be integral to the vast majority of service delivery and administration activities; why approach software development like it isn’t?
The business value of business rules technology

Simply trying to find ways your IT teams can deliver faster is no longer enough. We need to find ways to bring more resources to bear on the challenge of meeting the demand for new IT capabilities, and IT changes. We need to bring healthcare subject-matter experts right into the heart of software development and change work using tools that enable a clear ‘separation of duties’.

This is where Business Rules Management System (BRMS) technology comes in.

Business rules are everywhere!

It might not be immediately obvious, but business rules – statements that express business policies and affect the execution of business decisions – are pervasive in the business of healthcare provision. In administration processes like billing and payment processing your organisation probably has a clear understanding of the value of automating business rules; but in the context of other business activities, business rules might not even be written down or always followed.

Nevertheless they’re there, influencing the operation of your operational processes and systems nonetheless. Business rules drive business decisions on matters as diverse as billing and payment, diagnosis, care management, call center service delivery, fraud management… the list is practically endless.

Every time industry regulations change; every time pricing strategies get updated; every time new diagnostic or clinical practices are established; every time your strategy regarding distribution and patient interaction channels evolves – all these things are triggers for business rule changes.

Naturally of course, targeted business software systems have grown up around the application of business rules (billing systems, case management systems, EMR systems, and so on). However these systems tend to weave the implementation of business rules in and out of other software elements (software concerned with managing data, ensuring security, presenting information and managing user input, and so on). In the context of the rate of change demand inherent in today’s business environment, that’s a recipe for creating IT bottlenecks.

Business Rule Management Systems help you automate rules – and get them under control

A Business Rules Management System (BRMS) is a specialised business software platform that helps you formalise business policies, requirements and terms and conditions – and then executes them in an automated fashion; yet in a way that clearly insulates them from other software system elements.

BRMSs combine tools to help subject-matter experts define business rules; an operational environment that can apply and execute those rules in software to enable automated decisions; and tools to help teams monitor and maintain the effectiveness of sets of rules in response to changing situations or requirements.

BRMSs are designed to drive operational decisions – i.e. decisions that govern how core operational processes are carried out on the ground, hour by hour, day by day – quickly, accurately and at high volume. They’re not ideal for encoding and enforcing policies that guide business strategy or management direction, for example – the kinds of policies that might only be enacted a couple of times every quarter.
BRMSs create flexible business operating platforms

BRMSs have a major role to play in improving operational flexibility, for three important reasons:

- **Direct business involvement in business rule design.** BRMS technology enables subject-matter experts to define business rules using simple language statements and terms, and then interprets or translates those directly at runtime. By making it possible for business specialists to express rules clearly without software development training and by not requiring any manual design translation or software development steps in between, BRMS technology helps open up the kind of IT bottlenecks that can occur in fast-changing business environments.

- **Consistent application of rules.** Used properly, BRMSs act as a kind of magnet for business rules – pulling business rules expression and application into one place where they’re managed separately from other software systems. One of the key benefits of this is that as you start to really analyse the business rules that drive business decisions, you realise that rules are often implemented in different ways in different places. BRMSs provide you with the opportunity to define each business rule in one and only one place, and apply it consistently wherever needed – across customer interaction channels, product lines, sales teams, management territories or geographical locations.

- **Rule change isolation.** Because BRMSs isolate the automated application of business rules from other business software systems, teams can understand the implications of business changes on a set of rules and make appropriate rule changes in full knowledge of the scope of change impact. Teams don’t have to hunt through legacy software code to discover where rules are implemented and hope that they make the right changes in all the right places.

BRMSs help you balance freedom and control

An agile business operating platform is a great thing; but it’s important to remember that agility isn’t just about speed of movement. Agility requires you to not only be able to move quickly, but to change direction with accuracy. In the world of business technology, this is about balancing the freedom to make technology changes with control structures that ensure the changes made are appropriate, accurate and consistent with requirements. In highly-regulated industries like healthcare and insurance, this is particularly important.

This balance is crucial in the domain of business rules management, because as we’ve already explained our intent is to involve different groups – some technical and some non-technical – in managing rules. The more that subject-matter experts can take responsibility for implementing changes, the better; but if we then force those same people to take responsibility for technical testing we’re setting ourselves up for other bottlenecks.

BRMS technology can create a balance of freedom and control by providing sophisticated change management tools, combined with easy-to-use rule definition tools. Subject-matter experts use non-technical tools to define changes; but rule versioning, testing and deployment features help ensure that these changes can’t be deployed into production – and so overwriting existing operational rules – until a technically-specialised team has verified the work and ensured that a new deployment won’t interfere with any operational services.

The BRMS sweet-spot: complexity, change, compliance

We’ve already seen that BRMS technology is really about managing the automation of operational decision-making. But some types of operational decisions aren’t really an ideal fit for implementation in a BRMS. Put simply: a BRMS requires an investment in money and skills; and being able to manage consistency in, and automate, some types of business decisions just won’t give you payback on that investment.
So where’s the BRMS sweet spot? The technology is particularly applicable to operational decision-making where one or more of the following factors is in play:

- **The overall set of rules needing to be applied is large and complex.** The larger and more complex a ruleset is, the more complicated it is for people to understand and change. Trying to apply large, complex rulesets in operational situations without automation is a recipe for challenging business delays and errors; but even with automation strategies that rely on regular software development approaches, managing large and complex rulesets creates major change challenges.

- **The set of rules governing decisions change a lot.** Sometimes change pressure comes from inside your business; it might come from new product introductions or contract changes, compensation plan changes or strategy shifts. Other times the change pressure is external: industry regulations governing risk management, competition, pricing or complaint handling procedures might shift, for example. Wherever business rulesets change a lot, the ability to automate the application of rules in a way that clearly insulates them from other software system elements pays dividends.

- **The set of rules must applied consistently, and rule changes must be implemented under control.** Changes to important operational business rules should always be carried out carefully; but in some situations, this is not enough. Particularly in scenarios supporting the implementation of industry regulations, you may need to be able to prove that certain operational business rules are being applied consistently. Because a BRMS isolates business rules from other software systems, and because it translates human-readable rule descriptions into software while maintaining the link between the two, BRMS technology is particularly valuable here.

In the context of healthcare delivery, there are many places where BRMS technology has strong applicability; the most significant examples might revolve around:

- Supporting contact centre teams in initiatives that aim to assist patients and triage requests, where complexity and control are strong features. The benefit of using BRMS technology here is that subject-matter experts can be directly and intimately involved in the specification of advisory system behaviour, and can quickly tune system features if outcomes need improvement or when service scope needs to be altered (perhaps to help new groups of patients manage specific conditions).

- Supporting new care systems that are designed to reduce readmission rates, particularly relating to the care of chronically-ill patients. In this context, coding service delivery policies in a BRMS makes it possible to quickly take advantage of new insights from healthcare outcome analytics to tune recommendations given to patients across service delivery channels and agencies — ensuring these patients always get consistent advice and support to help them manage their conditions and enabling providers to proactively intervene in high-risk situations.

- Managing the transition between ICD-9 and ICD-10 coding systems, where complexity and control are key features of rules that need to be applied; using BRMS technology here has the potential to enable you to manage change in a more flexible and agile fashion.
Your next step: figuring out what you need

Now you’ve seen how and where a BRMS investment can deliver business value, your next step is to explore available technologies to see what’s going to be a good fit for your requirements.

Key capabilities to look for

In line with the components of business value that a BRMS can bring, you should look for three sets of capabilities from a BRMS: capabilities that enable business user involvement; capabilities that enable sound change management; and capabilities that drive great performance and scalability. If you’re serious about creating a flexible business operations platform through the use of business rules, don’t be tempted to simply procure a stand-alone business rules engine; an engine alone will give you some value, but you’ll have to work very hard to achieve the three main types of business rules value that a full BRMS can deliver (business involvement in rule design; consistent application of rules; and change isolation).

Business user involvement

You should explore the following capabilities in particular:

- How easy is it for subject-matter experts to author rules? Can authors use tools in collaboration with each other, or do they each have to work separately using their own individual tools?
- Can authors define common business terms that will get used in rules (concepts like account balance, sales target, price, discount, fraud risk) and easily manage the way that those terms get used in rules?
- Is it easy to get reports and analyses out of the platform so business users can share ideas with others, create controlled documentation?

Change management

You should explore the following capabilities in particular:

- What features are provided to make it easy to identify rules needing to be changed? Is it possible to find other rules that might be impacted if a rule changes? How easy is it to link rules to source business documents (like policies, regulations, procedure manuals etc)?
- Can multiple versions of rules be maintained, both individually and as part of coherent rulesets? How easy is it for technical teams to verify the completeness of rules and test them for errors?
- Is it straightforward to set up the rules management environment to provide different levels of management authorisation to different people?

Performance and scalability

You should explore the following capabilities in particular:

- What features are provided to optimise the performance of large, complex rulesets? Can the engine quickly determine which rules or rulesets to apply, based on the nature of the data?
- Can you deploy rules engines in clustered server configurations, so the platform can serve many requests at the same time?
- How well will the rules engine work in your specific environment?