

Executive Summary

In this paper we look at how healthcare providers can use Business Process Management (BPM) to improve patient outcomes and the bottom line. We first look at BPM as a management discipline, a technology platform and an implementation style. Thereafter, we look at the specific benefits of implementing BPM and how SaaS-delivery can enable a NO-upfront-cost-deployment.

How to make operational change really stick.

What is different with BPM? We believe that BPM addresses the most significant challenge of all process improvement initiatives - 'how to make operational change really stick'. The inputs to BPM are process maps and business rules (derived using traditional process improvement methodologies). The automatically generated output is an executable model or, as we prefer to call it, the digital infrastructure that manages a combination of human and automated tasks holds the process together end-to-end and provides real-time MI.

Healthcare has been slow relative to other industries to embrace process improvement methodologies such as Business Process Re-Engineering, Lean or Six Sigma. Several factors have contributed to this lag, including more human-centric and complex delivery processes, resistance among clinical staff and less competitive pressures.

The world is changing. The combination of a tough economic environment, increasing competition and a focus on outcomes will accelerate the need for process improvements. We recognise that healthcare processes are complex and sometimes a matter of life or death, however, we argue that it is precisely for this reason that the potential of BPM is so significant in healthcare.

Successful BPM implementations will ensure better clinical outcomes by ensuring following agreed clinical policies and consistent delivery. They will also reduce costs by automation and process improvements through sophisticated MI. Case studies points to productivity improvements in excess of 30% and significantly better clinical outcomes.

Customised patient management & workflow solutions can now be implemented at a fraction of the time and cost.

The good news? It is about 'survival of the fittest'... but it is not about size or financial prowess. Implementation of traditional IT systems would take a year and you would not get very far investing £½ million. However, with new, SaaS-based BPM solutions delivered in the Cloud, customised patient management & workflow solutions can now be implemented at a fraction of the time and cost. Implementation in two months, NO upfront investment and annual cost below £100k is the new paradigm.

“..healthcare is not manufacturing, we deal with people...”

Evidence-based medicine is impossible without a great degree of process thinking.

This challenge is frequently heard from clinicians and managers in healthcare resisting a greater degree of process optimisation. However, there is overwhelming evidence that process methodologies - such as Lean, Six Sigma or TQM - used in manufacturing and service industries can both improve clinical outcomes and reduce waste. In fact, evidence-based medicine is impossible without a great degree of process thinking.

All process improvement methodologies combine process mapping with rigorous tracking of outcomes and the application of statistical analysis. Six Sigma, for example,

originally referred the percentage of defect-free products (a six-sigma process is one in which 99.99966% of the products manufactured are free of defects). Central to all methodologies is the view that processes can only be improved by reducing variation.

The key to successful process improvement is understanding and managing the entire process of service delivery. That's the essence of business process management. Managing the organisation from a process perspective means several things: understanding how the process or care path works end-to-end; measuring outcomes; and, controlling end-to-end operations in a way that continuously optimises performance and minimises risk. It is really about translating agreed clinical and non-clinical policies and workflow rules into consistent healthcare service delivery.

What is Business Process Management?

BPM addresses the most significant challenge of all process improvement initiatives - how to make operational change really 'stick'.

It is not a silver bullet. It is not just a new piece of software. However, BPM addresses the most significant challenge of all process improvement initiatives - how to make operational change really 'stick'. Business Process Management encompasses three distinct but related things: a management discipline, a technology platform (the BPMS) and, a new implementation style for building automated process solutions.

The inputs to BPM are process maps and business rules often derived using traditional process improvement methodologies. The end result of a BPM project is the delivery of an IT solution, digital infrastructure, that day-in-and-day-out manages key human tasks and automated processes of an organisation. Making operational change 'stick' is ensured in two ways: (i) the solution drives the process (e.g. if patient consent has not been obtained, a consent form is automatically generated) and (ii) the solution provides real-time data (e.g. a report showing all patients where consent has not been obtained).

The functions of the BPM software are the modelling of processes, the automatic generation of executable models and the ease at which such solutions can be deployed. BPM is now the fastest growing segment of the enterprise software industry.

BPM as a Management Discipline

BPM as a management discipline came out of the "re-engineering" ideas of the 1980s, when Geary Rummler advised businesses to adopt a customer-centric end-to-end process perspective and better manage the "white space" in the organisation chart - the handoffs between the functional areas that get in the way of efficiency and customer satisfaction.

Over the years, a number of off-springs such as TQM, Six Sigma and Lean have emerged and today, adoption of such a process perspective continues to gain momentum. A rapidly increasing number of companies are documenting their key business processes in end-to-end process models and analysing them for potential improvement.

The well-know swimlane flowcharts have been carried forward in today's process modelling standard, the Business Process Modelling Notation (BPMN) from the Object Management Group (OMG). These process diagrams, which cut across organisational

units and IT systems, provide valuable context for measuring and managing organisational performance from a patient-centric or workflow perspective. In addition, these models play a central role in process improvement projects, which feature comparative analysis of current-state (as-is) and proposed (to-be) process models.

BPM as a Technology Platform

The benefits of Business Process Management are far greater and easier to achieve with technology that actually executes the 'to-be' process model.

Many aspects of process improvement – the elimination of non-value-adding tasks, for example – can improve business performance without automation. However, for many business processes, the benefits of Business Process Management are far greater and easier to achieve with technology that actually executes the 'to-be' process model and ensures that policies, procedures and business rules are actually followed. This technology, called a BPM Suite (BPMS), features an integrated set of tools and runtime components that enable a continuous cycle of business process improvement.

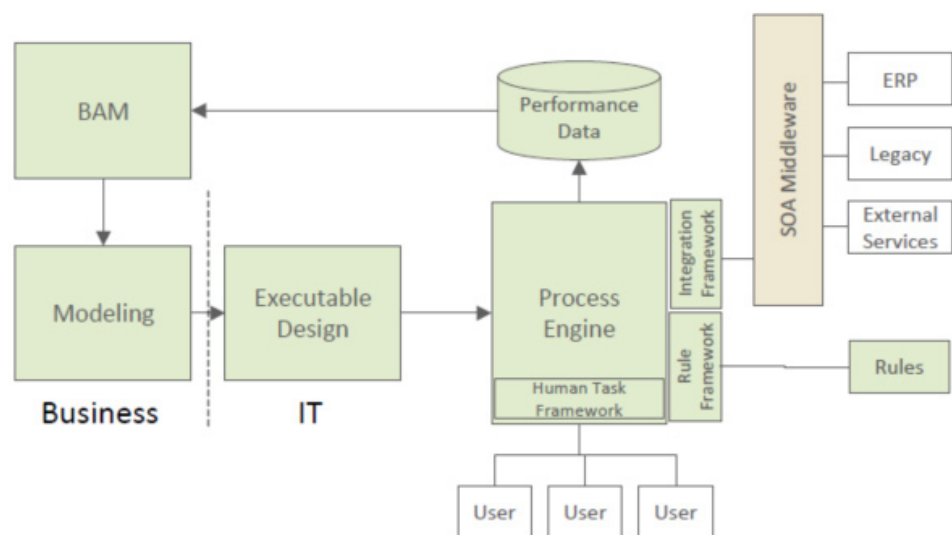


Figure 1. BPMS provides an integrated platform for model-driven process automation, monitoring, and continuous improvement

That cycle starts with process modelling, describing in business-friendly diagrams the sequence of activities end-to-end. Then executable detail is added to the model – ideally without changing its outward visual appearance – a step we call process design. Process design rarely involves programming; it is mostly point-click configuration of things like forms and user screens, business rules, integration with external systems using web services, and performance monitoring dashboards. Model-driven development is a central feature of BPMS architecture.

The process design is deployed to the BPMS process engine, which executes instances of the model. As each triggering event occurs – a new patient is referred, for example – the engine creates a new process instance and automatically routes it from step to step as described by the model.

BPMS captures timestamps and snapshots of business data that are converted into real-time performance metrics.

The process automation coordinates human and automated tasks. Human tasks are routed to the assigned performer's workflow inbox. Business rules are automatically executed at the proper time. The process interacts with backend business systems through integration middleware and SOA. And as each process step is executed, the BPMS captures timestamps and snapshots of business data that are converted into real-time performance metrics that can be compared with defined KPI targets, a capability called business activity monitoring, or BAM. Analysing performance data leads to suggestions for process changes to further optimize business performance, and the cycle of improvement begins anew.

BPM as an Implementation Style

BPM Suites (BPMS) have been around for five or six years, and over that time they have continuously evolved toward blurring the boundary between process modelling - a business function - and executable design - an IT function. The reason is that increasing business agility requires empowering business to play a more direct role in process improvement projects. Rather than toss requirements over the wall to IT, business should be able to work collaboratively with IT using a common tool for both modelling and executable design, or at least a common process model.

BPM enables a new agile iterative style of process implementation, in which business and IT work together.

Thus another important aspect is how BPM enables a new agile iterative style of process implementation, in which business and IT work together in rapid cycles of design, test and, deployment. BPM Suite architecture expects process designs to continually change and, represents a dramatic improvement over traditional waterfall project methodologies. Moreover, a BPMS provides a unified collaboration and execution platform shared by business and where all key processes are documented. The benefit of incorporating documentation is avoidance of redundant clinical policies and the risk of 'stale' documentation not reflecting actual process execution.

Benefits of BPM in Healthcare

The benefits of a BPM - better clinical outcomes & increased productivity - can be described in five general categories.

1. Better outcomes & operational efficiency

BPMS routinely demonstrate dramatic improvement in both outcomes and productivity. Much of this benefit comes from automating the workflow, providing the information needed to the right person at the right time, tracking deadlines and handling exceptions automatically. It is not uncommon that a process that once took two weeks is reduced to less than a day. Organisations can greatly increase their volume of business with no increase in staff. This hard-dollar ROI is a key driver of BPM adoption.

2. Compliance and control

In a BPMS, the process logic (including clinical protocols) is explicit, written down in the model, and enforced in operation by the process engine. The same goes for the business rules. They are not simply the best intentions of individual task performers, but enforced by the BPMS. Moreover, process fragments (or entire processes) can be reused across the organisation, enhancing standardisation and compliance. Many organisations today have grown by mergers and acquisitions, and may have units spread around the globe. BPMS allows standard policies, procedures, and best practices to be deployed uniformly across the enterprise. In addition, by maintaining an audit trail of what actually happened (and when) in each process instance, a BPMS allows the business to more easily meet regulatory, auditory, and transparency requirements.

3. Business agility

A BPMS should be designed for rapid deployment of new process solutions and continual change once deployed. Features - such as graphical model-driven design, self-generating integration components, reusable business services, real-time change using business rules, and real-time escalation through BAM - allow companies to respond to rapid changes in the competitive business environment. An important feature is the use of rapid prototyping. Often prototypes can be delivered in matter of days and the prototype is a great tool to engage all stakeholders in the development of the ultimate solution. Not only does this ensure that the solutions solve the actual issues, but it improves ownership and reduces training and roll-out costs.

4. End-to-end performance visibility

This goes back to BPM as a management discipline, and the fact that most IT systems, including enterprise applications like ERP, do not actually measure end-to-end business performance. They just measure transactions within their own narrow boundaries. A BPMS makes process performance visible end-to-end - in real time - through dashboards available to process owners and supervisors. Exceptions can be handled as they happen, with drilldown views supporting root cause analysis. And historical performance data can be sliced and diced in analytical views that suggest innovations leading to future performance improvement.

5. Innovation through analysis

This last benefit does not even require automation at all. It really comes down to process modelling, which sets down on paper - perhaps for the first time - how the current process actually works end to end. Why do we do it this way? Why does it take three days to get from here to here? Why are we doing this step here? Didn't we do it already back here? You hear this all the time from stakeholders assembled around the 'as-is' process diagram. Often the only reason a process works the way it does is because that is how it was done in the past. Modelling the 'as-is' process is almost always the first step to improvement.

SaaS = NO upfront costs, reduced project risk and lower TCO

Organisations almost always consider Software-as-a-Service (SaaS) as a cost-advantage over on-premise in the short run, due to its quick implementation times and pay-as-you-go pricing. By providing SaaS solutions in the Cloud, upfront cost can actually be zero thus reducing the project risk dramatically. All that is needed is access to the internet – so there are no IT infrastructure headaches, no deployment issues and only marginal support.

Some organisations question the long-term value of SaaS, wondering if the rent-versus-own model necessarily has a cost crossover point and if so, when? As SaaS continues to move into a broader range of applications and into larger, more strategic deployments, the researchers Forrester found that firms also obtain long-term value with SaaS solutions and lower Total Cost of Ownership (TCO). According to the research key benefits were (i) SaaS enables fast deployment, (ii) better user adoption, and (iii) reduced support needs.

Organisations that implement SaaS benefit from the ability to deploy applications rapidly - from initial deployment to adding new users and new modules. They also frequently report better user adoption and an elimination of the “shelfware” that is common with on-premise deployments, as well as a reduced burden on IT and admin for user support. The scale, timing, and duration of these benefits can be estimated by considering one or more key metrics and the value to the organisation of improving those metrics over time.

SaaS eliminates the need for organisations to acquire their own instance of hardware as well as associated testing, frequently offering a ready-to-go preconfigured solution that organisations can turn on in days or weeks with minimal configuration. SaaS also makes it easy for organisations to deploy incrementally and offers short commitments of monthly or annual contracts – which means that purchasing cycles are often shortened as well. Beyond initial deployment, SaaS also makes it easy for firms to roll out new users, new sites, and new functionality as it is often simply a matter of turning on the new logins or the new features.

Dimension	Software-as-a-service helps by . . .
Reduced cost of adoption	Reducing the licensing, training, and support costs of adding additional users.
Quicker adoption	Decreasing the time to ramp up new users, maximizing their productivity from using the application.
Improved adoption	Enabling more users to use the application.
On-premise cost Avoidance	<ul style="list-style-type: none"> • Eliminating maintenance costs. • Reducing full-time help desk and server support, and transferring staff to higher value, proactive roles.
Improved flexibility	Reducing spend on excess capacity.

Figure 2. Key benefits of SaaS by Forrester Research

About psHEALTH

psHEALTH is the UK's leading provider of SaaS-based BPM solutions for private and independent healthcare providers. On a BPM platform we specialise in rapid development of customised workflow and case management applications across Corporate Care, Disease Management, Home Care and Virtual Wards.

Our comprehensive set of natively-integrated components extends the standard set of BPM capabilities with unique real-time performance analytics, built-in content management, and a collaboration portal providing a rapidly-configurable runtime environment. These functional capabilities are exposed to process designers through a palette of pre-build healthcare sub-processes and Smart Services, essentially executable design components that perform specific tasks. The psHEALTH team will work alongside your IT and business users to model the process flow. Our platform can then automatically convert the process to executable functionality.



Figure 3. Key components of psHEALTH solutions

Through a combination healthcare experience, functional power and extreme ease of use, psHEALTH strives to accelerate the design, execution, management and optimisation of processes in partnership with our customers. Our experience ranges from designing end-to-end medical case management applications to online health assessments, virtual wards and drug compliance solutions.

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