FOR APPLICATION DEVELOPMENT & DELIVERY PROFESSIONALS

Artificial Intelligence Revitalizes BPM

New Features Will Drive Deeper Customer Engagement In Core Processes

by Rob Koplowitz
February 10, 2017

Why Read This Report

Business process management (BPM) is in the throes of an extreme makeover. The traditional focuses of process efficiency and cost reduction have given way to agility and digital automation. And BPM service providers and software vendors place a premium on evaluating and providing leading-edge capabilities. With that, the role of AI has come to the forefront for AD&D leaders as a means to drive better and deeper customer experiences within a digital process. This report examines the current state of AI and planned investments in AI among leading BPM vendors.

Key Takeaways

BPM Faces A Critical Inflection Point
The primary driver for BPM investments just two years ago was cost reduction through process optimization. Today it is customer experience, with enterprises expecting to put top priority on digital automation two years hence.

Customer Experience Drives AI And BPM
AI has become a very big topic in the market, and over half of those surveyed see benefits in the areas of customer service and experience. This intersects powerfully with BPM priorities.

BPM Vendors Are Investing Heavily In AI
Driven by customer demand and an effort to differentiate in a crowded market, BPM vendors are investing heavily to drive AI benefits into their offerings. These directions promise to breathe new life into what many consider a stagnant area of enterprise software.

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by Rob Koplowitz
with Christopher Mines and Allison Vizgaitis
February 10, 2017

Table Of Contents

Notes & Resources

Forrester interviewed 14 companies: Alfresco, Appian, Axon Ivy, Bizagi, Bonitasoft, Cognizant, DST Systems, IBM, Infosys, Newgen Software, Open Text, PNMsoft, Red Hat, and Software AG.

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BPM And AI Goals Converge On Customers

BPM is not sexy technology, but it is essential technology. Long relegated to the back office, BPM initiatives are increasingly moving toward deeper and more meaningful customer interactions. AI, on the other hand, is very sexy at the moment, and the focus of many AI efforts falls squarely on serving customers. This report for application development and delivery (AD&D) professionals explores the emerging intersection of BPM and AI.

BPM's Focus Shifts Toward Customers And Digital

BPM's roots are in optimizing the core processes that drive consistently predictable, high-quality outcomes while reducing costs. And for a long time, BPM customers viewed the last item, cost, as the primary driver. Two years ago it was at the top of the list. However, priorities have shifted and will shift even further in the next two years, toward customer experience and digital transformation (see Figure 1). Two priorities are now driving BPM initiatives:
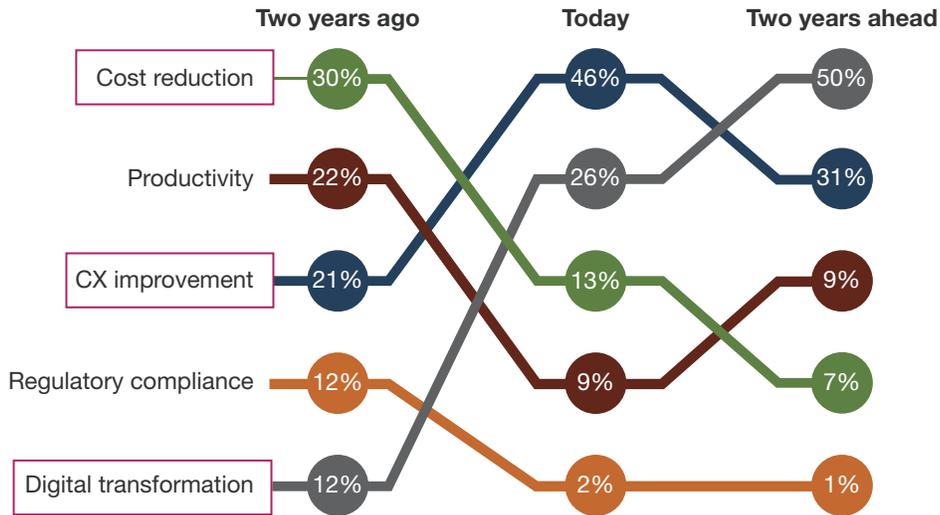
› **CX improvement takes center stage, for now.** As organizations move toward customer obsession, back-office processes extend to include an increasing number of critical customer touchpoints. As customers interact with processes, the experience must be outstanding or they will vote with their feet and flee to the competition. To drive these initiatives forward, customer experience (CX) within BPM becomes a critical requirement.

› **Digital transformation is the strategic goal.** As processes traverse the customer engagement experience all the way to the back office, the ability to drive end-to-end digital process automation moves from vision to reality. Other emerging trends, like low-code development, lower traditional barriers to automation and allow the long tail of processes to be digitized, furthering the goal of true digital automation.

FIGURE 1 BPM Initiatives Show A Dramatic Shift Of Focus From Cost Reduction To Digital Automation

"What was the primary focus of your process improvement efforts two years ago? What is it today? What will it be in two years' time?"

	Two years ago	Today	Two years ahead
Cost reduction	30%	46%	50%
Productivity	22%	26%	31%
CX improvement	21%	13%	9%
Regulatory compliance	12%	9%	7%
Digital transformation	12%	2%	1%

Base: 215 business and technology decision-makers
Note: Not all answers shown
Source: Forrester's Q2 2016 Digital Business Automation Survey

AI Is Quickly Emerging As A Means To Improve Customer Experience
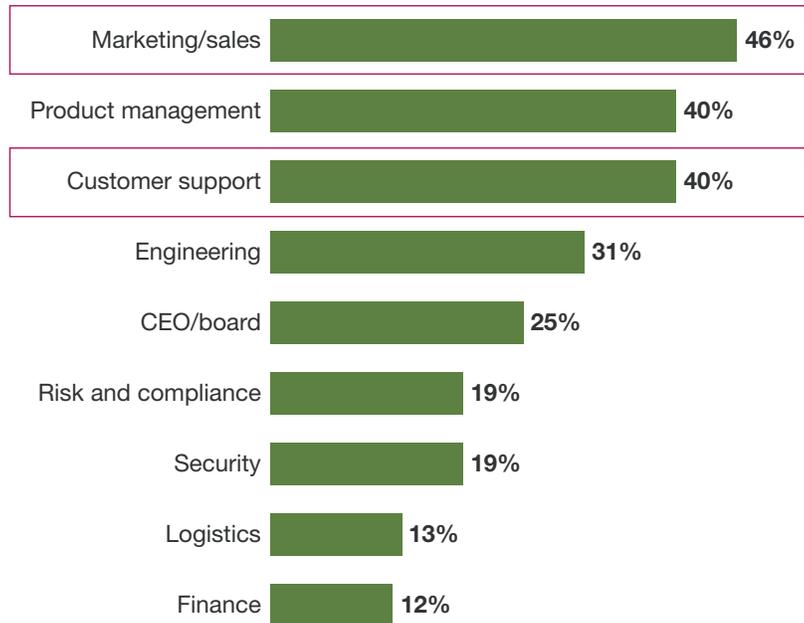
While BPM drivers are shifting toward digital automation and customers, AI is emerging as a means of better serving customers. AI's ability to take human cost and latency out of processes, as well as provide new interfaces that delight users, mirrors the new goals of BPM. In fact, in Forrester's recent AI survey, respondents identified sales and customer support as leading areas for their company's AI investments (see Figure 2).[1]

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FIGURE 2 Customer Sales And Support Lead Enterprise Investment In AI Systems

"What areas of your organization are leading or evaluating the investment and adoption in AI systems?"
(Please select the top three.)

Marketing/sales	46%
Product management	40%
Customer support	40%
Engineering	31%
CEO/board	25%
Risk and compliance	19%
Security	19%
Logistics	13%
Finance	12%

Base: 606 business and technology professionals
Note: Not all answers shown
Source: Forrester's Q2 2016 Global State Of Artificial Intelligence Online Survey

## Investment Is Happening At The Intersection Of BPM And AI

Buyers' goals for their BPM and AI investments are converging. What about the vendors? We researched if vendors are seeing the connection and, more importantly, where and how they are investing. BPM vendors have begun transforming their offerings with initial small steps, while putting in place compelling long-term strategies.

> "We need to think of AI [as] completely changing the way we do process work. Processes will change completely in dimension, scope, and the structure of the steps that are taken. Processes will become more effective with less human intervention and better decisions." (Andreas Balsiger, head of product management, Axon Ivy)

While it is always difficult to define AI, most of the investments that BPM vendors are making fall into three broad buckets: process optimization through machine learning, augmenting humans with new sources of cognitive expertise, and deploying new user interfaces (see Figure 3).

FIGURE 3 Most AI Investment Follows One Of Three Patterns

New interfaces

Cognitive expertise

Automated process optimization
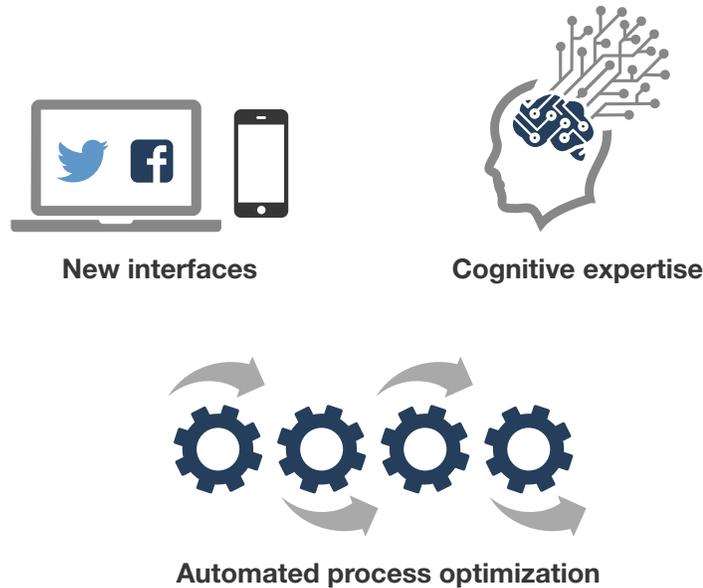
Machine Learning Will Tackle Process Optimization

Not surprisingly, many BPM vendors focus on AI as a means to reduce the complexity of tuning and optimizing the very processes the systems manage. While the idea of using analytics to monitor process execution is nothing new, AI can now take that a step further through the use of machine learning to provide guidance on optimization.[2] Bonitasoft, for example, is investing in machine learning to drive process optimization.

> "Machines are making increasingly accurate assessments. We will soon be able to detect issues or improvements in a process and recommend actions. The first version will focus on execution times like a process that is not meeting an SLA. An operator will be notified that issues are happening but could also receive recommended actions to address the issue." (Miguel Valdés-Faura, CEO, Bonitasoft)

Cognitive Capabilities Will Guide And Augment Human Decision Making

While AI will emerge in many ways, replicating human cognitive processes is a particularly difficult and valuable problem to solve. We've all seen computers and robots in movies that handle complex, human-like tasks, and we're beginning to see glimpses of these types of interactions in our world today. IBM Watson soundly defeated two of the best *Jeopardy* players in the world, while AlphaGo from Google's DeepMind team proved better than human competitors at Go.

What is common in both of these examples is that the computer was able to emulate human thought characteristics within a very narrow aperture of challenge. We'll see the same approach as cognitive comes to bear on BPM. The two near-term capabilities emerging today are:

› **Interpretation of intent from unstructured data sources.** BPM systems excel at moving structured processes forward in an automated manner. However, computers struggle with defining intent from unstructured sources, such as a request coming from a customer in an email. Instances like this require humans to intervene and read the email, then tell the system what the customer wants and what steps to take. AI technologies like natural language processing (NLP), natural language classification (NLC), and sentiment analysis analyze unstructured content and attempt to establish the intent of the request, streamlining a tedious, labor-intensive task. Newgen Software has implemented NLP of customer emails to drive faster time-to-resolution.

"When looking at unstructured input (emails, free-form text boxes, etc.), humans are part of the process so that decision-making can be more informed. We've added content analytics, sentiment analysis, NLP, and semantic processing. This allows unstructured data to be converted into structured forms. For example, a customer is unhappy and needs an appointment for service today." (Sandeep Sehgal, VP of product management, Newgen Software)

› **Insertion of cognitive subject-matter expertise.** Most BPM processes are a melding of structured system-executed tasks and human-centric tasks. In many instances, humans bring specific domain expertise to bear. A financial services process could require extensive knowledge of regulatory compliance. While these types of interactions require deep human experience and expertise, cognitive resources are emerging to augment the human component. For example, healthcare typically requires a human expert to explore possible treatment options for a patient. A cognitive expertise service, such as IBM Watson Health, augments the human element of diagnosis. BPM vendors are looking into architecting their systems to allow customers to access these types of external services.

"We're looking at providing healthcare professionals with guidance. In hospital triage a doctor enters some data about the patient and the system recommends next steps for patient care. We've also looked into incorporating Watson Health services into our offering." (Jesus Sanchez, chief technology officer, Bizagi)

New Interfaces Like Voice And Chat Will Assist Users

New interfaces always create new possibilities. We are on the brink of fully understanding and beginning to exploit the power of new interfaces like voice and chat. Most everyone has a smartphone with voice recognition today, and more and more have devices at home that can accept and execute voice commands. BPM vendors, and their customers, have begun to take the first steps toward enabling voice and chat interactions with business processes and the systems that manage them:

› **Voice-enabling insurance processing.** A global insurance provider used standard APIs to prototype an integration between Amazon Alexa and Appian's BPM software so that system administrators could query and provide simple instructions to the system without the need of a screen-based interface.

› **Chat and voice for simple process interactions.** BPM startup Tallyfy plans to offer a wide range of chat- and voice-based input to allow users to access and direct automated processes. Its ambitious goal is to replicate screen-based app functions through a chatbot.[3] Tallyfy has explored far enough to conclude that early forays will need to be simple and well-tuned to the types of interactions that can be handled through voice. Initially users can expect basic queries to the system, basic input of data, and perhaps a system prompting a user to approve a workflow item.

Early Investment In New Technology Always Comes With Risk

While BPM vendors' investment in AI paints an encouraging picture, early technology investment is always littered with failure. We expect investment in AI to be no different. BPM vendors investing in AI face three particular risks:

› **Investment areas could prove to be wrong.** Business investments can and often do drive customer demand. On the other hand, there are instances where "if you build it, they will come" is a terrible strategy. Given that most enterprises don't yet understand what is possible with AI, vendors will build and customers will decide if they see value. If the vendors are wrong, they will have wasted the investment and frustrated customers in the process.

› **AI could be applied to the wrong type of processes.** One of the dirty little secrets of AI is that sometimes it's wrong. In many instances, this is fine. A medical research service that offers an incorrect diagnosis likely does no harm because a doctor would only view it as one of many inputs, and even if it's wrong, it could lead the doctor toward new thinking. However, a system that offers incorrect information to a field service technician working in hazardous conditions could prove disastrous. There will be some level of trial and error to establish best practices and guardrails in the implementation of AI with BPM systems and processes.

› **Early efforts could lead to user frustration.** While we always approach new technology efforts with the best intentions, there are times when we become overzealous. Who can forget Clippy? This issue will be particularly acute if vendors over-rotate on voice input though chatbots. While it can be incredibly valuable under certain circumstances, like simple interactions while driving, voice can also be very cumbersome, slow, and annoying to those in proximity to the user.

A Strong Services Partner Can Help With The Journey

While it's easy to dismiss AI based on a history of hype and unmet expectations, we believe that would be a big mistake. Enterprises can reap real, near-term value from AI . . . if they set realistic goals from the start and properly manage expectations. In addition to investigating the new features

coming from the BPM software vendors, we recommend seeking a trusted partner from the ranks of the consultancies. In times when complex but potentially transformative technology emerges, service providers demonstrate value because they:

› **Invest ahead of the curve in new technology trends.** Professional services firms are always looking to gain a competitive advantage, and the best way to do that is to identify a complex emerging trend before the competition. To that end, these firms tend to invest early in technical and business consulting skills for new opportunities; AI is ripe for doing so.

› **Partner with customers throughout the process.** Partnering is often the best path to avoiding the risk of inflated expectations. Product vendors have a very strong incentive to paint a rosy picture of the future. Services vendors, by contrast, engage for the duration and share in the overall success or failure of an initiative. With bleeding-edge technology, they have strong incentives to push the envelope but not so much as to introduce unexpected risk.

› **Focus on business outcomes, not technology sales.** The landscape for AI solutions is crowded and chaotic at this point, and services vendors that focus on specific business outcomes are in a good position to help determine a promising technology direction. This will be far more powerful and complex than simply applying AI technology to existing processes.

"We're trying to rewire the thinking within our teams and within our clients." (Matt Smith, assistant VP of automation, Cognizant)

Infosys Augments Services With AI Product Capabilities

Many services firms have begun to invest in AI skills within their BPM practices. One example of note is Infosys. It views AI as part of a broader holistic solution that includes BPM as a baseline technology for process orchestration, integration, and automation. This baseline will continue to grow through the addition of new technologies like robotic automation and more advanced analytics. Infosys then layers AI in the overall solution to drive learning and recommendation.

Through an Infosys-developed product offering called Mana, the company can drive deeper automation, build decision models, and move toward more meaningful knowledge management with unstructured BPM assets. It's important to note that Mana is used by the Infosys BPM practice, but Infosys developed it as a generalized AI technology and it is technology agnostic. One application of Mana involved the ability to take process optimization to the next level by building knowledge maps that look for the root cause of inefficiency.

"Automation has evolved from technology tools to process automation and through the evolution of RPA.[4] While automation improves speed, there is a realization that many a time the inefficiencies that exist in the processes and applications are also automated and not necessarily reduced or eliminated. The ability to apply intelligence using accumulated knowledge and resultant knowledge maps, creating inferences through data and analytics in the approach to automation, will amplify the power of automation and will be the true differentiator. This will be the new reality in business,

and the faster organizations embrace and adapt to the change, the more valuable it would be to business." (Gopikrishnan Konnanath, senior VP and head of enterprise integration, BPM, and services, Infosys)

What It Means

AI Will Broaden The Reach And Value Of BPM

BPM is in a state of flux. Old goals of cost savings are giving way to digital transformation and better customer experience. As BPM, once relegated to the enterprise back office, increasingly touches customers, the opportunity to delight becomes a critical success factor. AI, properly implemented by AD&D professionals, can lead to new opportunities to interact with customers. This further positions core processes and BPM as important enablers of a digital transformation strategy. The journey will be a long one, and both vendors and customers will make missteps along the way, but it will be worth the effort.

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Supplemental Material

Survey Methodology

Forrester's Q2 2016 Digital Business Automation Survey was fielded to 215 business technology decision-makers. For quality assurance, we screened respondents to ensure they met minimum standards in terms of content knowledge.

Forrester fielded the survey during Q2 2016. Respondent incentives included a summary of the survey results and a courtesy copy of the published research. Exact sample sizes are provided in this report on a question-by-question basis. This survey used a self-selected group of respondents (Forrester clients knowledgeable about business process improvement efforts taking place within their companies) and is therefore not random. This data is not guaranteed to be representative of the population, and, unless otherwise noted, statistical data is intended to be used for descriptive and not inferential purposes. While nonrandom, the survey is still a valuable tool for understanding where users are today and where the industry is headed.

Forrester's Q2 2016 Global State Of Artificial Intelligence Online Survey was fielded in May, June, and July 2016. This online survey included 612 respondents globally. For quality assurance, we screened respondents to ensure that they met certain standards in terms of job responsibilities and the size of their organization. Artificial Intelligence was defined to respondents as a self-learning system that is able to interact with humans naturally, understands the environment, solve problems, and perform tasks that normally require human intelligence, qualities, and abilities without the need to code instructions and rules.

Endnotes

[1] Source: Forrester's Q2 2016 Global State Of Artificial Intelligence Online Survey.

[2] Billions of dollars are flowing into AI startups and software development efforts by both the internet heavies and enterprise software vendors alike. AD&D pros are transforming new business models by infusing applications with AI. For more about the pragmatic building blocks you can use today to add AI to your applications, see the Forrester report "Artificial Intelligence: What's Possible For Enterprises In 2017."

[3] Consumers are adopting messaging services at an unprecedented pace, and they're looking to use conversations for customer service and shopping. Enter chatbots, programs with the potential to offer natural ways for consumers to access services. Although chatbots are not ready to meet customer expectations, AD&D pros must still begin building the capabilities to serve customers in conversational interfaces and eventually chatbots. See the Forrester report "Chatbots 101: Building Conversational Interfaces."

[4] RPA: robotic process automation.

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