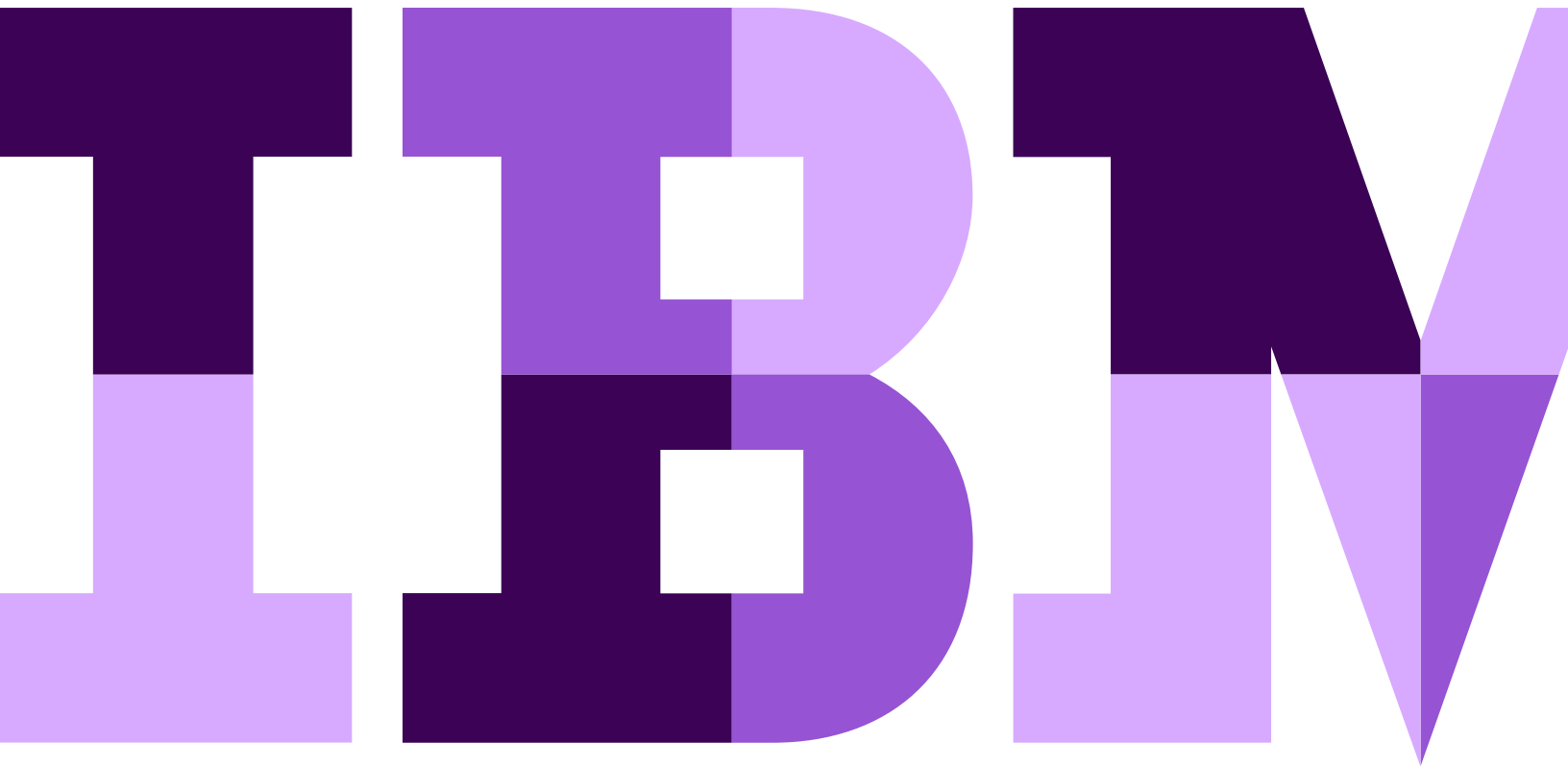# Cognitive Business Operations:

Processes and decisions that sense, respond, and learn

Contents

Welcome to the Cognitive Era

Business operations are in the midst of massive transformation.

The convergence of technologies including mobile, social, cloud, predictive analytics, and the Internet of Things (IOT) has helped organizations compete and disrupt by becoming digital businesses. But digital is not the destination. Rather, it's the foundation. Digital business is converging with digital intelligence. Cognitive capabilities are real and accessible, ushering in a new era of business and technology.

What makes a cognitive system? Cognitive systems:

- **Understand** unstructured data, through sensing and interacting
- **Reason** by generating hypotheses, considering arguments and recommendations
- **Learn** from training by experts, from every interaction, and from continually ingesting data. In fact, they never stop learning.

Due to recent marketplace trends (see sidebar), one of the most impactful ways businesses can bring cognitive into their organizations is through their operations. Operational weak spots represent a particularly heavy drain on revenue and other resources, and are opportunities for applying the transformative potential of the new cognitive era. A few examples:

- An estimated $30 billion is wasted every year as a result of poor coordination among supply chain partners.

- The average billion dollar company spends about 1,000 person hours a week managing its suppliers.

- Close to 20 percent of all healthcare claims processed in the United States are inaccurate, amounting to estimated annual losses of $1.5 billion.

- U.S. organizations spent $164.2 billion on employee learning and development in 2012.

Cognitive Business Operations present an opportunity to strengthen or entirely eliminate those weak spots by enabling knowledge workers to focus on performing work that actually adds value to the business.

Marketplace Trends

Cognitive business operations are being powered forward by three key and interrelated dynamics:

Rising customer expectations. Customers have high expectations for simplicity, speed, and value from every interaction. They are looking for robust self-service capabilities and expect employees in service-related functions to be empowered, efficient, and understanding of their particular needs.

Increasing amounts of data. 80 percent of the vast and growing amounts of data collected from social networks and connected devices is unstructured and unable to be interpreted by existing systems.

Shortage of skilled knowledge workers. The worldwide shortage of highly skilled knowledge workers is projected to reach 40 million by 2020. Organizations need to find a way to augment the knowledge of all their employees to make everyone, regardless of experience, perform at the level of the smartest and most experienced workers.

- **Autonomous Work:** Automation is critical to effectively perform operations such as claims processing, credit scores, or eligibility determination. Exception paths, however, must be handled manually. According to the American Medical Association, almost $210 billion is lost in the United States every year, due to healthcare claims errors, costing medical practices up to 14 percent of revenue. When cognitive capabilities power your operations, known exception paths are virtually eliminated, reducing errors that result from manual intervention.
- **Augmented Work:** Cognitive capabilities enhance the knowledge worker's ability to draw insights from previously unusable data. Those insights can replace guesswork with informed decision making. This augmentation can be achieved by applying case management capabilities of business process management with cognitive APIs, including sentiment and personality analysis. According to McKinsey & Company, close to 20 percent of a knowledge worker's time is spent searching and gathering information to take the next step. With cognitive operations, "dark data" can be consolidated and deciphered to provide actionable information to knowledge workers at the right moment.
- **Insightful Work:** Much of the external data available to your systems, such as analysis of customer sentiment that can affect your brand reputation, can't be understood or acted on by traditional systems. This dark data is unstructured, time-bound, and fleeting. Advanced decision management capabilities help you draw insights from this data, build context, and act in near real-time.

Cognitive Business Operations

Cognitive business operations are processes and decisions that can sense, respond, and learn. These processes and decisions can learn from structured and unstructured data to improve the quality and consistency of decisions, and the aptitude and effectiveness of knowledge workers to deliver exceptional customer experiences. Harnessing formerly undiscoverable insights, you can identify and resolve issues that your organization was previously unaware of—while shortening the path to decision and action. As a result, your business operations, processes, and decisions get smarter the more you use them.

Use Cases

Cognitive business operations can be applied across a variety of industries and use cases.

Insightful Processes

In healthcare, hospital systems can leverage data from social media to examine the spread of diseases and track outbreaks. For example, a hospital can continuously monitor Twitter to identify tweets about symptoms the public is experiencing. Cognitive technologies such as geolocation analysis identify locally sent tweets, while natural language processing determines which tweets are about a particular ailment, such as the flu, or about symptoms specific to that ailment. By analyzing all that information in real-time, the hospital can track and predict outbreaks and then take action proactively to inform patients to take precautions, such as to get a flu shot or stock up on supplies.

Customer Satisfaction

In banking, after customers are approved for a loan, they get passed on to a loan servicing department, which is primarily focused on ensuring that customers pay their loans on time. A customer might reach out to them if they'd like to change their payment date, or if they are having trouble making their payments. Over the life of a loan, there will likely be a number of both inbound and outbound calls—all of which will generate call transcripts. By applying cognitive content analysis to their business processes, a company can determine whether agents are asking the right questions, if they're being polite, and if their service is effective. This allows the banks to find opportunities to improve their customer service processes and consistently deliver positive customer service experiences.

Companies can also use cognitive technologies to analyze information they receive from their customers. The information can be in the form of letters, emails, or other communications. The company can perform sentiment analysis on those communications from customers and in turn, inform how certain processes are executed. If a company knows, for example, that a customer writes an email expressing a very strong negative sentiment, they may want to avoid a straight-through processing and hand off the customer to a human knowledge worker who can more effectively interact with the customer, providing a higher degree of customer satisfaction. This analysis traditionally requires numerous person hours, but with cognitive business operations, it can be automated, freeing up knowledge workers for innovative and challenging tasks.

Improved Decision-making

Recruiting managers faced with dozens of openings and hundreds of resumes typically spend enormous amounts of time trying to identify the best candidates based on intuition and the limited tools at their disposal. Imagine the impact, not just to the recruiting manager's efficiency and effectiveness, but to the entire enterprise, if there was an option of digging deeper at the very outset of the recruiting process. With cognitive business operations, they can go beyond the formal attributes of a candidate, such as their degree and years of work experience. Integrating the Watson Personality Insights API—which applies linguistic analytics and personality theory to infer attributes from a person's unstructured text—with IBM BPM, a candidate's digital exhaust, such as their tweets from the past several years, quickly brings insights about their character and potential red flags into sharp focus. This new expanded information allows recruiting managers to make improved decisions and hire the best person for the job.

Get Started

Every business can get started today with cognitive business operations. The journey involves putting three critical elements in place:

- **A strong process and decision foundation.** Create a digital footprint with business process and decision management systems, including all the "dark data" you're collecting, but not applying. You need to be documenting it somewhere in a system so that you can then use the information. Once you have the information, you can choose an initial process. The digital footprint shows a clear picture of which processes are generating a large amount of unstructured data that might benefit from applying cognitive technologies.
- **A cognitive platform.** Build on the digital footprint by applying cognitive technology to your business process and decision management systems. Cognitive APIs allow you to pick and choose how you'd like to start applying cognitive, and do it in bite-size chunks that can be built upon.
- **An economic and rapid delivery model.** Leverage hybrid cloud to get started quickly, regardless of the size of your business or your capital expenditure budget. The hybrid cloud liberates cognitive computing, making cognitive APIs readily accessible to developers. The result is the potential to build into every digital application, product, process, and service, distinct new levels of intuition and effectiveness and a vast expansion of possibilities.

Look for ways in which you can apply cognitive capabilities to your business operations, whether that's pulling insights from videos, social media feeds, and other unstructured data, or arming employees with more context in their work so they can make better decisions.

The IBM Advantage

IBM offers the entire scope of capabilities and resources to provide companies with the competitive advantage that results from customer-centric business transformation. An unsurpassed depth and breadth of solutions comprise a comprehensive set of collaborative, role-based capabilities

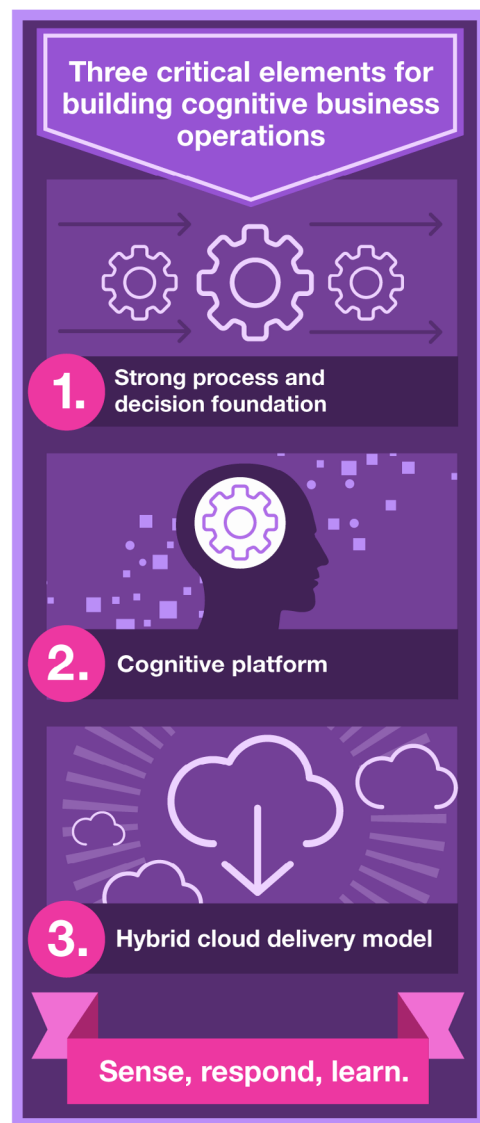designed to help model, simulate, execute, change, monitor, and optimize core business processes.

Figure 1: Three critical elements for building cognitive business operations infographic

IBM's process transformation solutions involve the infusion of every process with intelligence and expertise to create a framework in which all processes are built around a determination to delight the customer. With more than 5,000 customer engagements that represent three times the install base of the nearest competitor and 20 data centers around the world, IBM offers unsurpassed capabilities.

As we enter the next evolution of business operations in the new cognitive era, IBM is playing a leading role in researching and deploying solutions that enable your processes and decisions to sense, respond, and learn. By combining IBM's market-leading business process and decision management software with its market-creating Watson APIs, you will be able to reinvent your operations to drive unsurpassed innovation, customer centricity, and competitive advantage.

Learn how the cognitive capabilities of Watson APIs have vastly expanded the power and potential of IBM Business Process Manager and IBM Operational Decision Manager, and what this means for your enterprise operations.

For More Information

For more information, visit us at www.ibm.com/cognitive-business-operations