The Robot and I:
How New Digital Technologies Are Making Smart People and Businesses Smarter by Automating Rote Work

Enterprise robots may not resemble the automatons from your favorite sci-fi movie, but our latest study shows that when applied to automating core business processes, they can extend the creative problem-solving capabilities and productivity of human beings and deliver superior business results.

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Executive Summary

Robby the Robot. Optimus Prime. C-3PO. Cyberdyne Systems Model 101 (a.k.a. "The Terminator"). Cute, helpful or just plain terrifying, these are what come to mind when the word "automation" is invoked: classic interpretations of humanoid robots that replace people to do "things" better (or sometimes worse) than we can.

Of course, the most common real-world robots are the ones that make cars, unload ships, assemble any number of products or even vacuum floors. But our latest research reveals that an entirely different scenario is emerging, in which humans are working smarter with sophisticated software to automate business tasks, which, in turn, is generating rich process data that drives meaningful insights, value and outcomes for businesses.

To understand what the future holds for intelligent automation, we surveyed 537 North American and European organizations, ranging from banks and insurers (property/casualty/life), to healthcare payers (see methodology, page 22).

Our findings reveal significant new trends. The first centers around the ability of intelligent automation to improve materially upon what people can do, as well as unlock meaning from data using process analytics. In some cases, organizations are automating work completely through digitization by re-imagining and instrumenting a process from its inception to harness the power of emerging digital technologies, such as social, mobile, analytics and cloud (or the SMAC Stack™). Our research also shows that through these technologies, humans are attaining new levels of process efficiency, such as improved operational cost, speed, accuracy and throughput volume. By using increasingly more astute technologies, smart businesses are doing a much better job of tackling complex process opportunities. In short, they are fast becoming force-multipliers to people who are still essential to process work in banking, healthcare, life sciences and insurance.

Three key data sets and findings substantiate this point of view:

- **"Money:"** Process automation is saving substantial amounts of it,

today. Automation is empowering businesses to work smarter, with fewer people "doing the process;" nearly one-fifth of respondents achieved greater than 15% cost savings through automation in the past year. Executives also predict that the number of people directly tasked with performing process delivery will contract significantly in the coming years – and in some areas, this may be happening faster than we realized.

- **"Meaning-making:"** The data generated by automation will radically improve process outcomes. Beyond cost savings, the yield of process data generated by automation is perhaps a far more profound benefit. Roughly 50% of respondents see automation (and 44% see analytics) as significantly improving processes over the next three to five years – compared with only 30% for onshore process delivery (and only 28% for offshore/nearshore). Moreover, nearly half of the banks surveyed (45%) have seen at least 10% revenue growth from analytics aligned with their front office and customer-facing functions, a number that is anticipated to rise to nearly three out of every four banks during the next three to five years.

- **"Money *and* meaning:"** Digital value chains can reform processes that are smart and data-rich. Sometimes, "doing analytics" or merely automating an existing process falls short. Prompted by innovative competitors, a full digital re-think for making money *and* meaning may be crucial to transform core processes in the future of work. By using next-generation SMAC-based technologies, companies are completely re-imagining customer, supplier and partner interactions. By igniting the digital information surrounding these entities – or Code Halo™ – organizations can realize business process insights in far greater fidelity than has ever been possible before.[1] At the same time, impregnability is essential, and data security cannot be compromised: 52% of respondents told us that data security "is, will be and shall remain" the biggest digitization issue they confront now and in the future.

- **"Monday morning:"** Where to begin. The automation of knowledge processes derived from digital strategies is no longer fiction. Data from many progressive adopters reveals a set of practical actions that leaders can take now to start generating value, quickly.

A New, Complementary Symbiosis for Repetitive and Rote Process Work

Humans performing knowledge work today are complemented by technology in increasingly high-value ways. As a result, we are entering a new era of human-machine interface for repetitive and rote processes, in which software tools have emerged as "the robots" for knowledge work. Because they are not taking over physical work such as welding or painting, these automation tools aren't immediately recognizable as "robots" − but the impact they're driving is real.

Some have called this "robotic process automation." While true, use of this semi-technical term can convey the wrong impression. In spite of significant software tool development, we still do not have Robby the Robot or "the Borg" running around our call centers, medical management facilities or insurance enrollment offices.

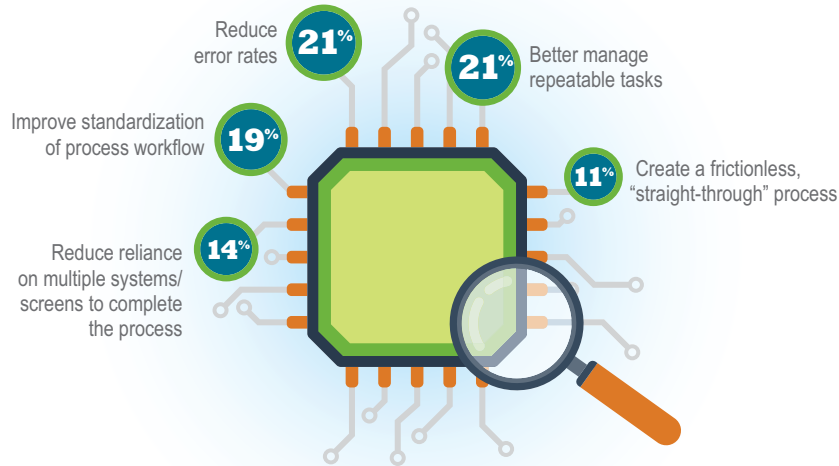> Software tools have emerged as "the robots" for knowledge work.

Nevertheless, technology luminaries from innovators such as Tesla Motors and SpaceX worry about "summoning the demon" of artificial intelligence, "our biggest existential threat."[2] Extraordinary theoretical thinkers like Stephen Hawking warn that automation and artificial intelligence could potentially be "the worst mistake in history,"[3] without additional evidence of their positive business and societal impact. Consider the counterpoint from Google's Executive Chairman Eric Schmidt: "There's lots of evidence that when computers show up, wages go up ... get people prepared for this new world, so they can maximize their income." [4] The debate rages, presenting huge societal and political issues that are outside the scope of this paper but are poised for intensified debate for years to come.

But instead of worrying about "the Terminator," consider a different metaphor from the canon of classic sci-fi films. In the 1986 movie sequel *Aliens*, Ellen Ripley (Sigourney Weaver's character) commands and controls a robotic exosuit cargo loader to triumph over her greatest challenge. Ripley harnesses the strength and power of the loader's hardware and software to dramatically augment her human grit, creativity, determination, decision-making, adaptability and will to succeed. In short, instead of "I, Robot," think about a new plotline of people and machines working in tandem, one that features "the Robot and I."

Our new research spotlights a deeper understanding of "how far, how fast" developments in process automation, analytics and other operational models will play out. While we have miles to travel, our findings reveal that robots don't dominate the process automation space, but rather work in tandem to help make smart humans smarter and businesses more agile.

What's a Human to Do? Use Robots to Get Smarter

What are the current or potential impacts of the following process automation attributes on your business?

Reduce error rates **21%**

Better manage repeatable tasks **21%**

Improve standardization of process workflow **19%**

Create a frictionless, "straight-through" process **11%**

Reduce reliance on multiple systems/ screens to complete the process **14%**

Source: Cognizant Center for the Future of Work
Base: 537
Figure 1

Show Me the Money: Process Automation Is Saving Substantial Amounts of It, Today

Saving money – and driving greater impact from process optimization – has been a managerial mantra governing automation technologies since the dawn of computing. Organizations want new and innovative ways of achieving and maximizing efficiency from people and processes. For years, the business process services industry has been massively focused on lean principles (or process elimination by another name). What levers remain to be pulled? Now that "the robots have arrived," intelligent automation is the next wave of efficiency gain in business processes. And, as shown in Figure 1, the top drivers for automation go beyond cost savings, to reduced error rates, better management of repeatable tasks and better standardization of process workflow.
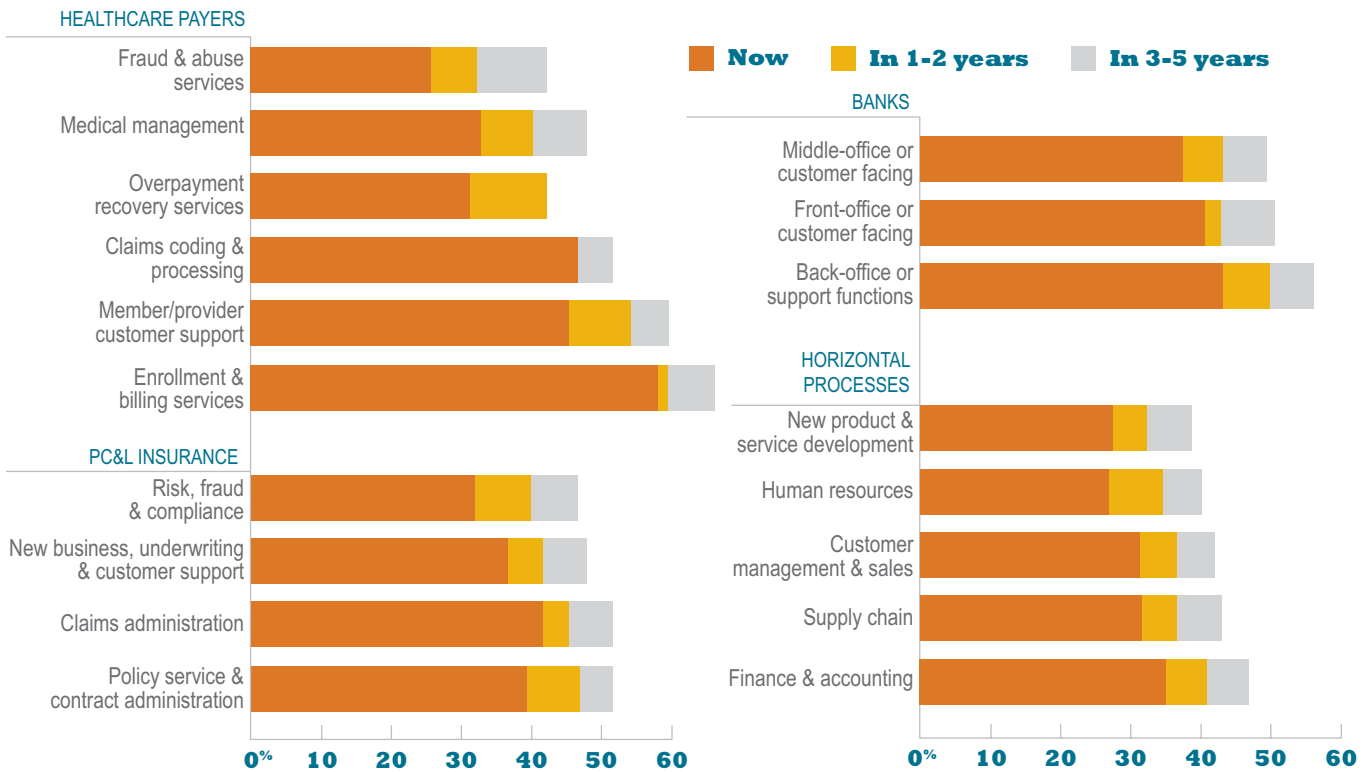
SMART HANDS AND SMART ROBOTS: "I envision the seamless integration of automated processes, manual processes, instructions and learning materials required to execute manual processes, audit trails, checklists, etc., all combined in a single tool or view." – *IT Manager, Information/Media/Entertainment, Nordic region*

All Things Being Equal, Robots and Humans Aren't

Standardization leads to scale. And while both humans and robots can drive standard process delivery at scale, an open question is which can do it better? Something has to give: Process standardization is the leading value ascribed by respondents to their people-based resources today (see Figure 9, page 14). But many organizations are also starting to use robots as a powerful lever for process standardization too, while leveraging skilled human workers for their unique talents (e.g., five years ago, would a Twitter-wrangler have been someone's job description for customer management processes?). In other words, when robots can do the rote tasks less expensively, leaders need to take stock and shift people to more complex processes that allow them to apply innate human talents and creativity in ways that robots just can't do.

Persistent and Pervasive Automation – Today, Tomorrow and in the Future

Percent of process automation as gauged by workflow, where automation is defined as "any area that was done manually and is now done via technology platforms, process automation tools and even macros to support the process."

Source: Cognizant Center for the Future of Work
Base: Healthcare payers: 102; PC&L Insurers: 115; Banks: 153
Figure 2

To Find the Money, Go with the (Work)Flow

To establish a meaningful baseline, we asked leaders where their processes were most automated today (see Figure 2).

For this purpose, we defined "automation" as including any functional activity that was previously performed manually and is now handled via technology platforms or process automation tools like robotic process automation (RPA) platforms. Thus, what a lot of leaders currently regard as "automation" is likely driven by core IT investments (i.e., the implementation of specialized enterprise apps such as ERP, CRM or BPM). All of these can drive automation – but not to the level that robotic process automation can by mimicking human actions at the software presentation layer or user interface, and interacting with multiple applications, just as a human would.

"

BPM TO STREAMLINE WORKFLOW: "Link every process to one software and follow *one* workflow. Right now, we have many programs and processes running in parallel." – *SM Operations Director, Retail & Hospitality, Benelux region*

Against these parameters, our findings are surprising on two levels:

1. There is a large amount of workflow that respondents think is currently "automated" (25% to 40% of workflow, in most cases).

2. Against that backdrop, the expected increases in business process automation over the next five years may seem insignificant (10% to 20%, in most cases), pointing to a lack of understanding by business leaders and decision-makers as to what's at stake.

For example: Think about the "long tail" of process steps that haven't been automated by core systems. These are usually process workarounds that entail manual inputs to get systems "ready to get ready" for processing knowledge work (i.e., claims processing, audit preparation, logging customer contacts, verifications, etc.). As a percent of overall workflow, these steps may be more generalized in terms of specialization, follow rote procedures, involve regulatory requirements or require rapid response. With further process automation, those incremental steps are likely to be handled by robots, and the collective, cumulative impact of the "long tail" — in terms of cost — is likely to be significant.

AUTOMATION FOR THE "LONG TAIL:" **"The more we move toward mobile work, the more time we'll have. We want to see the automation of all the very time-consuming, 'little,' tiresome things."** *— Finance & Compliance Manager, Technology Products & Services, UK/Ireland region*

In aggregate, nearly one-fifth of respondents have achieved greater than 15% cost savings through automation in the past year (see Figure 3, next page). Moreover, 66% of *all* respondents expect at least 10% cost savings (again, using 2013 as a baseline) from automation in the long-term future. As a result, buyers and business process services providers will need to start anticipating and incorporating these levels of projected savings into their future plans and commercial models.

Let's look at it by industry: While 26% of banking respondents have enjoyed 15%-plus cost savings from automation in their front office and customer-facing functions compared with one year ago, 55% expect those same levels of savings (15% or more savings) within three to five years. It's a similar story in just about every vertical and horizontal process domain. That's good for all participants — especially when success is measured based on the outcome of cost savings, and less on the operational cost tied to the number of people "doing the process."

⟹*Quick Take*

Standards – Hold Them High and Automated

When workflows become standardized, that process is very likely a good candidate for automation. For example, how many "right ways" are there to run a payroll or to adjudicate a straightforward insurance claim? Consider horizontal functions like accounts payable (through e-invoicing) and claims management (through auto-adjudication) as great examples that exist today. Tomorrow, you'll see more automation (and just as likely, digital transformation) among industry processes like revenue cycle management in healthcare, and clinical data management in life sciences.
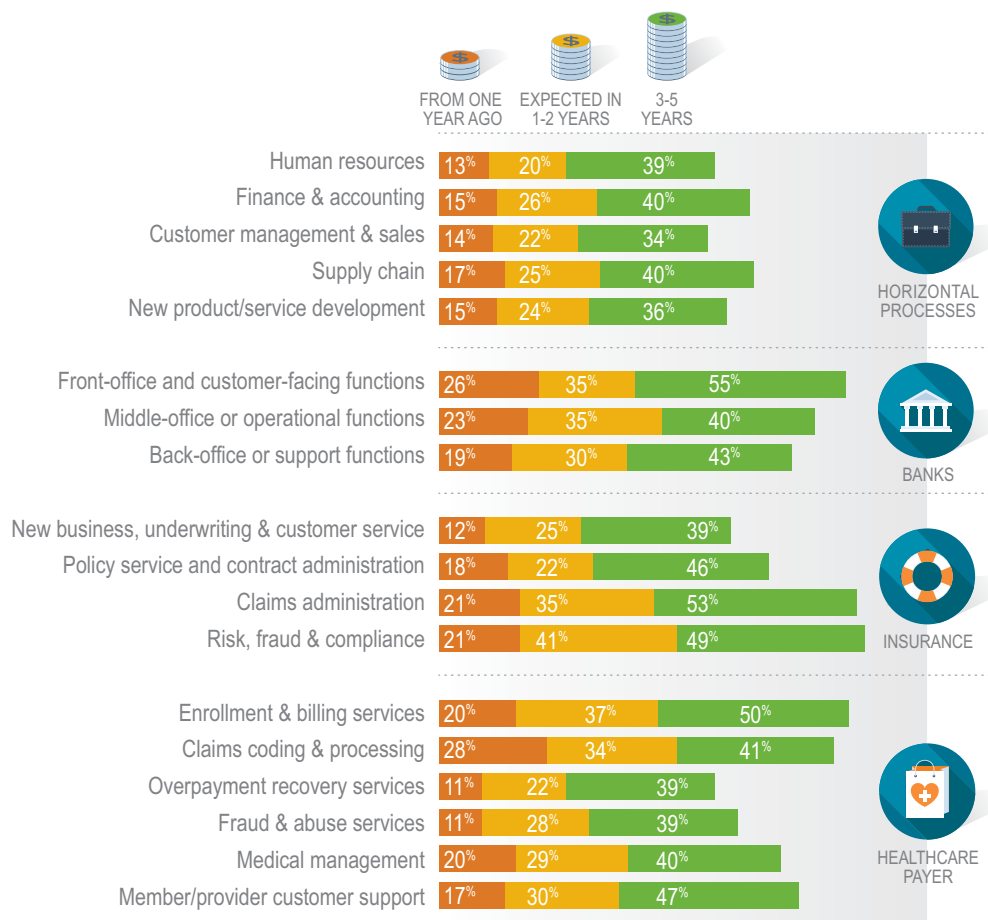
The Impact on People Performing Non-Differentiating, Rote Tasks Is Potentially Massive

The executives we surveyed also predict that as a result of process automation, the number of people directly tasked with performing process delivery will contract significantly in the coming years – and in some areas, it may be happening faster than we realized.

- **Our data shows that the more "industrialized" general and administrative (G&A) functions are being impacted the most.** As Figure 4 (page 10) shows, at least one in five companies surveyed have already seen a 25% reduction in employees across supply chain, HR and F&A functions.

- **In the short term, healthcare payers are vertical-industry trailblazers.** They're pushing frontiers of cost reduction through automation, especially when it comes to middle-office functions such as claims coding and processing, in which over one-quarter of payer respondents have seen at least 15% cost savings year-over-year (see Figure 3).

Robots Make a Money-Saving Assembly Line

Percent of decision-makers realizing at least 15% cost savings across front-office, middle-office and back-office functions as a result of automation.

	FROM ONE YEAR AGO	EXPECTED IN 1-2 YEARS	3-5 YEARS	
Human resources	13%	20%	39%	HORIZONTAL PROCESSES
Finance & accounting	15%	26%	40%	
Customer management & sales	14%	22%	34%	
Supply chain	17%	25%	40%	
New product/service development	15%	24%	36%	
Front-office and customer-facing functions	26%	35%	55%	BANKS
Middle-office or operational functions	23%	35%	40%	
Back-office or support functions	19%	30%	43%	
New business, underwriting & customer service	12%	25%	39%	INSURANCE
Policy service and contract administration	18%	22%	46%	
Claims administration	21%	35%	53%	
Risk, fraud & compliance	21%	41%	49%	
Enrollment & billing services	20%	37%	50%	HEALTHCARE PAYER
Claims coding & processing	28%	34%	41%	
Overpayment recovery services	11%	22%	39%	
Fraud & abuse services	11%	28%	39%	
Medical management	20%	29%	40%	
Member/provider customer support	17%	30%	47%	

Source: Cognizant Center for the Future of Work
Base: Healthcare payers: 102; PC&L Insurers: 115; Banks: 153

Figure 3

≡*Quick Take*

Making the "Swivel-chair Process" Obsolete

Even though many processes are technology-rich, they're still people-intensive and require staff to toggle between multiple systems and screens to achieve "last-mile" integration of data checking, inputting, searching or collating to drive an outcome. This type of "swivel-chair" work is eliminated as manual process steps are diminished, leading to straight-through process compression. And with scalability built into the code and architecture of these processes, the need for people-based process delivery is further reduced with rule- and value-based logic of machine-learning and artificial intelligence — or in some cases, subjective judgment — that is, smart people working in tandem with intelligent automation.

- **Among industry verticals, banks will see the highest levels of staff reduction.** As Figure 5 (see page 11) illustrates, banks are more inclined than other industries to automate their processes, often due to their need to better focus on customers. Banks emerged from the sub-prime crisis with the realization that standardized systems (technology), better risk underwriting (analytics) and differentiating customer service (SMAC platforms) can help drive stronger growth and expansion. We see these beliefs being reflected in the numbers around automation as an on-ramp to these new approaches to process efficiency.

To stay ahead of the curve, people performing routine business functions (and those tasked with managing them) will need to rethink how work is conducted, and how others in their organization will harness process automation for better outcomes.
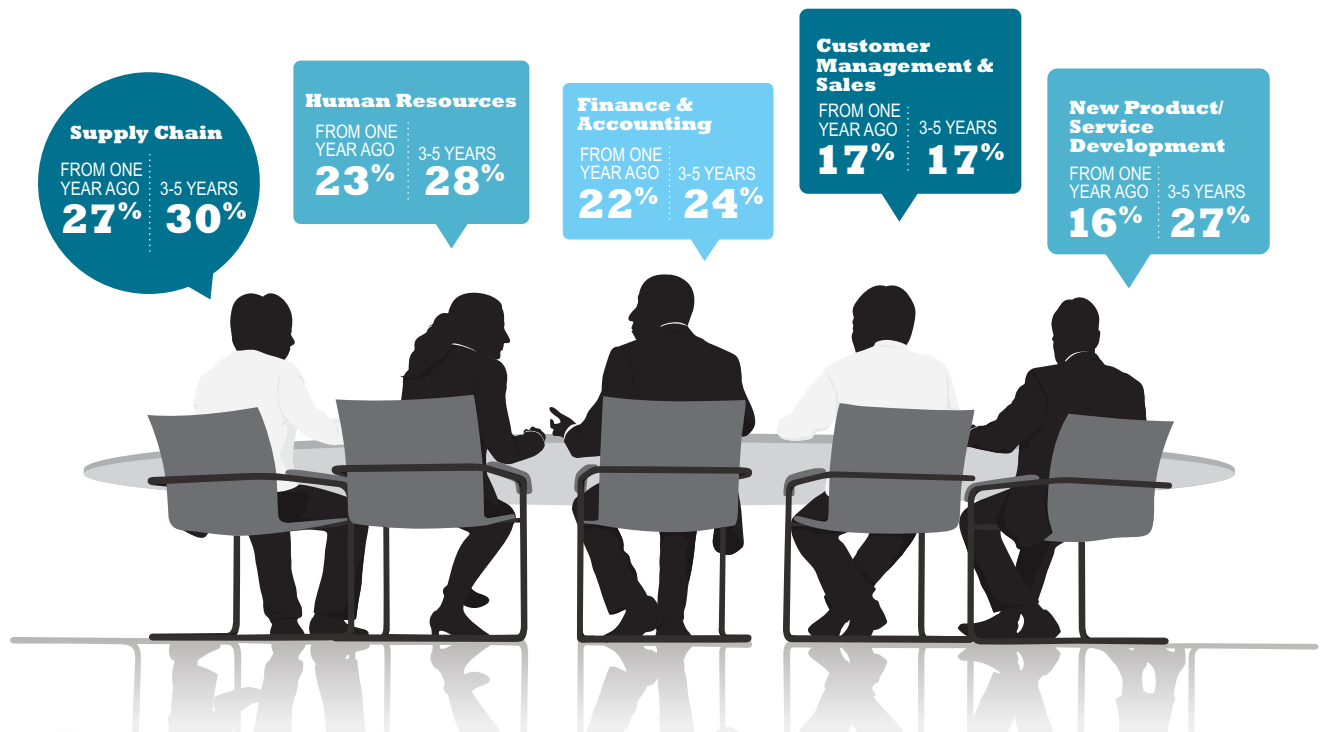
"HELLO COMPUTER" – VOICE-ACTIVATED DATA RETRIEVAL: "(I envision being able to) search for files simply by a code name spoken into a microphone that's attached to a laptop. No need to search in documented folders." – *Operations Manager, Retail & Hospitality, North American region*

As shown in Figures 4 and 5 (on pages 10 and 11), this is happening with a similar degree of impact in horizontal and industry-specific process areas. Depending on the environment, the degree of staff reduction can be highly dynamic; the speed with which automated process robots perform is limited only by underlying systems. For continuous processes (say 24x7 functions such as customer service and support), automation provides almost unlimited availability, performing the same tasks over and over, with near-zero defects and complete auditability.

Automation's Force-Multiplier to Work Smarter, with Fewer People 'Doing the Process'

Percent of decision-makers realizing or anticipating greater than 25% FTE reduction as a result of automation in their horizontal processes.

Supply Chain

FROM ONE YEAR AGO	3-5 YEARS
27%	30%

Human Resources

FROM ONE YEAR AGO	3-5 YEARS
23%	28%

Finance & Accounting

FROM ONE YEAR AGO	3-5 YEARS
22%	24%

Customer Management & Sales

FROM ONE YEAR AGO	3-5 YEARS
17%	17%

New Product/ Service Development

FROM ONE YEAR AGO	3-5 YEARS
16%	27%

Source: Cognizant Center for the Future of Work
Base: 537
Figure 4

As a result, people need to stay ahead of the curve, not by being "faster or cheaper" but by developing, honing and capitalizing on the capabilities that are uniquely human and cannot be replicated today by automated software. Such activities include collaboration and teamwork with a highly diverse workforce (and yes, that includes robots), creativity, curiosity, constructive problem-solving, inventiveness, empathy and physical touch (say, in medical management). And of course, humans must focus on jobs that require a high degree of intelligence – at least more than what can be applied today by any robot.[5]

Show Me the Meaning: The Data Generated from Automation Will Radically Improve Process Outcomes

"Tools help make delivery better" may sound simple, but it hides a significant trap: An automation-for-automation's-sake strategy fails to focus on the real prize – an explosion of rich process-level data. That's where analytics comes in.

The importance of analytics for processing insight and meaning-making is immense. The reality is that today's digital age – compared with last century's industrial age – presents an unprecedented ability to make business meaning from massive amounts of data. If you aren't "doing" big data, the story goes, you're in trouble, and terrible things will happen.[6]

An automation-for-automation's-sake strategy fails to focus on the real prize – an explosion of rich process-level data. That's where analytics comes in.

The list of game-changing and differentiating examples of process analytics is immense, especially when RPA tools using artificial intelligence and machine learning to drive time-sensitive outcomes are applied. Examples include real-time dynamic fleet optimization for destination and delivery capacity for logistics; millions of miles of analysis of "hard brakes" for dynamic auto policy pricing; or collation of huge volumes of clinical data for optimized pharmaceutical trials. But leaders we interviewed are currently limiting the use of analytics – for the most part – to process optimization alone (see Figure 6, page 12). At the same time, they *are* succeeding with using analytics in customer-facing processes to boost revenues. That's great news for their customers, and is a trend we see continuing across most customer-facing work.[7]

- **Cost savings plus new revenue streams.** Well over half (55%) of respondents say that reducing costs is *the* key outcome of their analytics efforts today – and importantly, another 47% say understanding customer requirements is a core strategic goal. In essence, buyers are using insights to improve operations, while also opening new channels to revenue by understanding customers better – directly as a result of their business analytics activities.

- **Keeping process mechanics in plain sight – but what about doing things differently?** Optimizing processes and driving deeper business insights dominates current analytics thinking. For a lot of companies, analytics may present unanticipated insights that allow them to change and run their businesses *differently* – especially in the face of disruptive moves brought by digital innovation. Over 40% of survey respondents say they value better process mechanics – such as throughput, quality and streamlining of processes – more highly than outcomes such as prioritizing business needs, better market penetration and segmentation or, last on the list, creating new products/services.
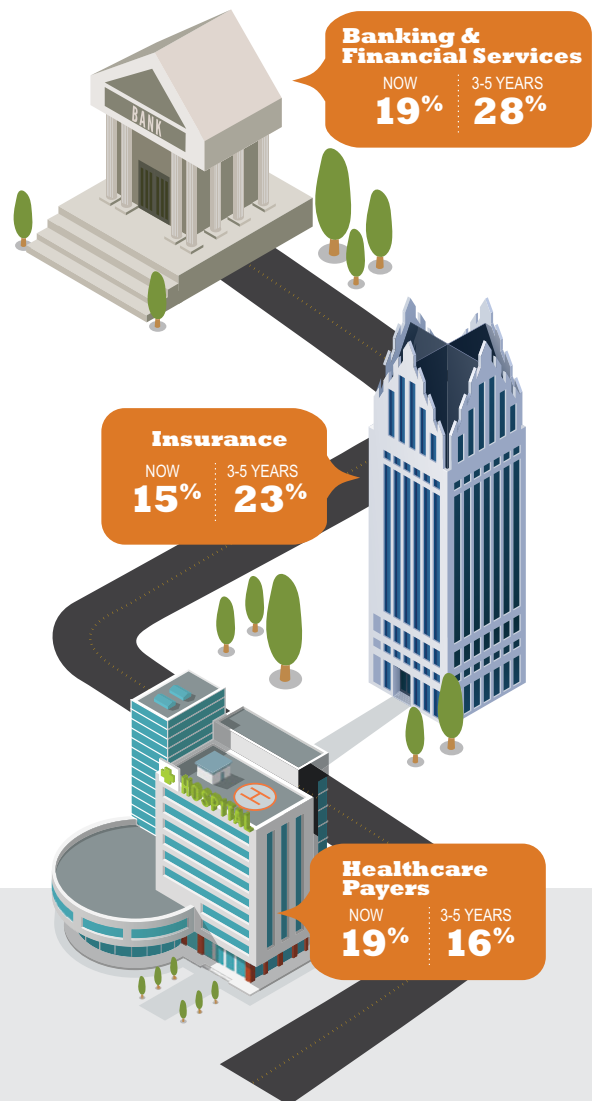
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IT'S NOT JUST ABOUT CUTTING COSTS: "We don't want to cut costs, but increase sales. We want to optimize workflows and align business processes to speed up sales cycles and customer satisfaction. Big data analytics are needed to pinpoint those trends." – *IT Manager, Information/Media/Entertainment, Benelux region*

Generating substantial revenue growth among customers is also a major outcome. As illustrated in Figure 7 (page 13), among vertical industries, nearly half of banks (45%) have seen at least 10% revenue growth from analytics aligned with their front-office and customer-facing functions, a figure that is anticipated to rise to

The Industry Outlook for People and Automation

Percent of decision-makers anticipating greater than 25% FTE reduction as a result of automation in their industry-specific processes.

Banking & Financial Services

	NOW	3-5 YEARS
	19%	**28%**

Insurance

	NOW	3-5 YEARS
	15%	**23%**

Healthcare Payers

	NOW	3-5 YEARS
	19%	**16%**

Source: Cognizant Center for the Future of Work
Base: Healthcare payers: 102; PC&L Insurers: 115; Banks: 153
Figure 5

nearly three out of every four banks in three to five years (a collective 73%). It's a similar story among insurance companies and healthcare payers as well, where customer processes are already analytics-driven and revenue growth is already flowing today, and is anticipated to continue in the future.

Organizations that can master smart robots tethered to smart data will outpace rivals who don't (or can't).

Using Intelligent Automation and Insights to Make Smart People Smarter

The benefits are clear for using automation to release new volumes of data that is ripe for analytics. But today, calibration of service delivery models – from onshore and offshore sourcing, big data analytics and automation – is essentially a toss-up. Respondents clearly envision a future generation of processes that will be automated and intelligent. As shown in Figure 8 (next page), exactly half of respondents see automation – and 44% see analytics – as delivering a positive impact to processes in three to five years. Compare that with only 30% for onshore process delivery. In other words, organizations that can master smart robots tethered to smart data will outpace rivals who don't (or can't).

Process Analytics: Show Me the Meaning (Making)

Creating new products/services 23%
Enhancing process accuracy 36%
Understanding customer requirements 47%
Optimizing product portfolio 28%
Streamlining processes 42%
Reducing costs 55%

Percent of decision-makers citing the current use of analytics for the following outcomes

Better process throughput & quality 43%
Prioritizing business needs 39%
Better market penetration & segmentation 37%

Source: Cognizant Center for the Future of Work
Base: 537
Figure 6

Leaders concur that robots are here today, and more are coming. Our research unequivocally shows that smart robots automate processes to save money but that they also improve accuracy and reliability. Yes, robots do the same tasks over and over, with zero variance and significantly fewer errors. But this is not just a story about the rise of the smart machines. Robots still need oversight to monitor, orchestrate, coordinate and remediate problems if something goes wrong. While much focus is placed on making smart people smarter (see Figure 9, page 14), the leading benefit of people-powered processes today is to standardize delivery (primary benefit, cited by 26% of respondents), followed by improved domain

Fifty percent of respondents see automation (and 44% see analytics) as delivering a positive impact to processes in three to five years.
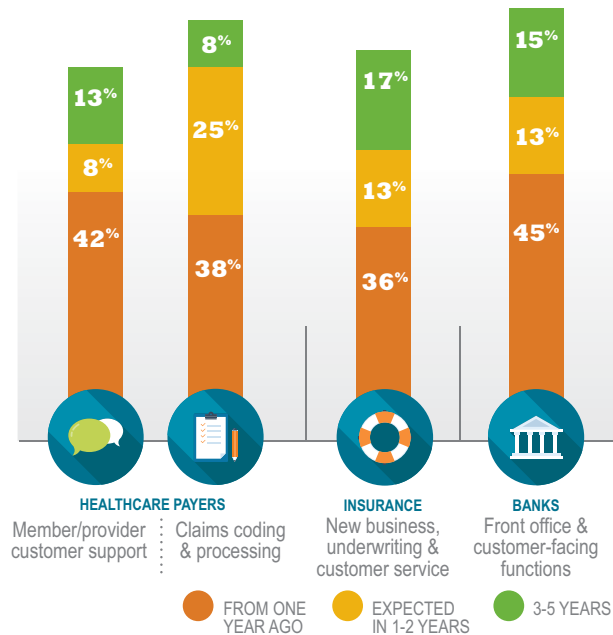
expertise and skills of subject matter experts, including language capabilities (second most popular response, at 20%).

But automation has its limits − and there are some things that robots just can't do (medical management, underwriting, case reviews, speak or comprehend colloquial slang, etc.). While automation is currently perceived as the "hot" delivery model, hot things still need a trivet so the proverbial table doesn't get burned. That's where a blended model of automation working in tandem with people can provide complementary outcomes. And there is no doubt that the domain skills of many subject matter experts will continue to exist outside the realm of what we can expect from robots, at least in the short term.

In order to really capitalize on the interplay of people and automation, organizations must master the resulting data. And that data is the product of automation and digitization. By automating systems to better sense, predict and interpret the data they produce, employees can work heads up, not down, with intelligence from digital processes supporting

Ramping up Analytics ... To Ramp up Revenue

Percent of respondents realizing/anticipating at least 10% of revenue growth achieved as a result of data analytics within the following selected industry-specific processes.

	HEALTHCARE PAYERS		INSURANCE	BANKS
3-5 YEARS	13%	8%	17%	15%
EXPECTED IN 1-2 YEARS	8%	25%	13%	13%
FROM ONE YEAR AGO	42%	38%	36%	45%
	Member/provider customer support	Claims coding & processing	New business, underwriting & customer service	Front office & customer-facing functions

Source: Cognizant Center for the Future of Work
Base: Healthcare payers: 102; PC&L Insurers: 115; Banks: 153
Figure 7

Global Delivery, Analytics, Automation Working in Tandem – Today and Tomorrow

Percent of respondents rating the following four service delivery models as "significant" or "profound/transformational" (4 or 5, on a scale of 1-5) in terms of their overall ability to positively impact business processes.

Now — 3 to 5 years

16% Off-/near-shore process delivery
27% Process automation
20% Onshore process delivery
24% Process analytics/big data

50% Process automation
44% Process analytics/big data
30% Onshore process delivery
28% Off-/near-shore process delivery

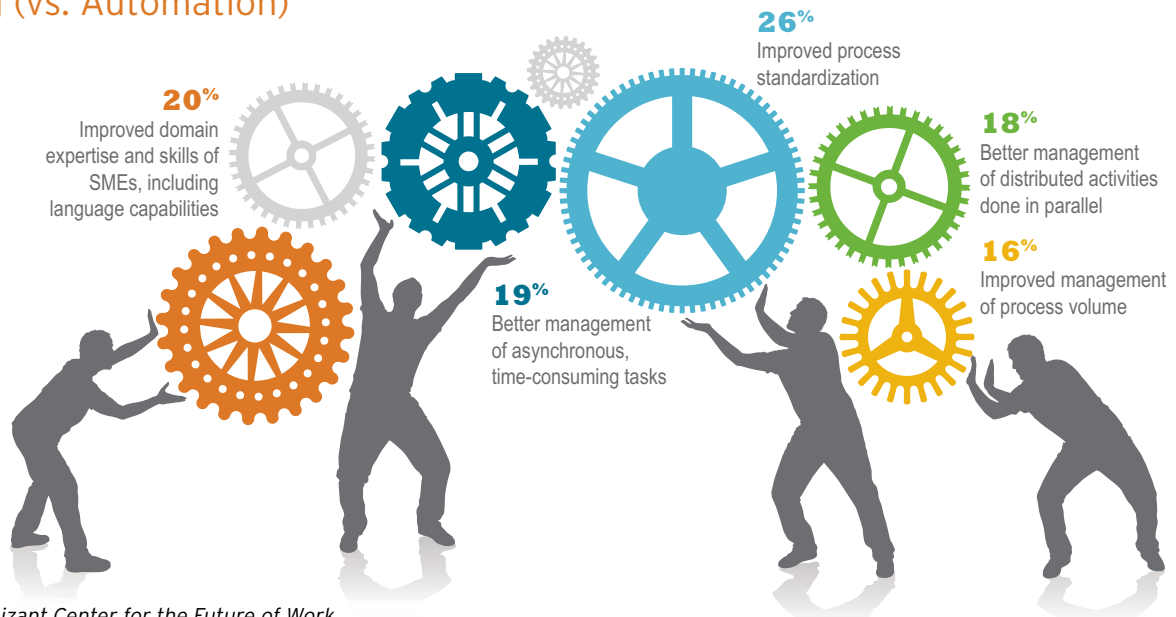*Source: Cognizant Center for the Future of Work*
Base: 537
Figure 8

To Err Is Human — at What Cost to Process?

Ask yourself a question: Are the people delivering my processes today adding value or injecting risk? For example, in insurance, the cost of miscoding on claims adds up to millions per year, not to mention the decline in client satisfaction resulting from multiple claims. It doesn't have to be that difficult; with automation applied, insurers can achieve 80% first-pass accuracy through auto-adjudication.

their own smart brains. By making processes digital from the outset, businesses can capture information about the movements of people, goods, information and services through space and time, shrinking customer decision times. Consider the Internet of Things, where sensors — sure to include nanotechnologies coupled with artificial intelligence — are beginning to totally digitize and automate processes in a straight-through data flow. Digitizing one or several pieces of an industry process value chain can impact the health of the whole business. Consider the steps you need to take now by picking your process pressure points for success. And then calibrate where, how and when smart technologies like automation can complement the workforce, and make smart people smarter.
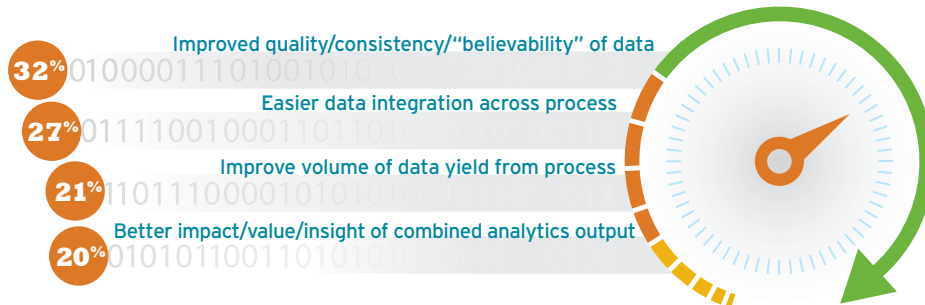
Power to the People: The Value of Onshore-Nearshore-Offshore Human Staffing (vs. Automation)

20%
Improved domain expertise and skills of SMEs, including language capabilities

26%
Improved process standardization

18%
Better management of distributed activities done in parallel

19%
Better management of asynchronous, time-consuming tasks

16%
Improved management of process volume

Source: Cognizant Center for the Future of Work
Base: 537
Figure 9

Digitize to Analyze: The Impact of Digital Processes on Meaning-Making

Percent of respondents citing the impact of digital process technologies on running better analytics across processes (multiple responses allowed).

32% Improved quality/consistency/"believability" of data

27% Easier data integration across process

21% Improve volume of data yield from process

20% Better impact/value/insight of combined analytics output

Source: Cognizant Center for the Future of Work
Base: 537
Figure 10

Applying a robot as a dance partner to an "as-is" process still leaves organizations woefully short of the truly differentiated ballet of today's high-flying, competitive outliers that have disrupted entire industries through process digitization.

Show Me the Money and the Meaning: Digital Value Chains Can Reform Processes that Are Smart, Data-Rich – and Secure

It's no surprise that analytics conducted at the process level can deliver a quantifiable return on investment today, a result that is expected to accelerate over time. But there may be a gnawing concern that applying a robot as a dance partner to an "as-is" process, for instance, still leaves organizations woefully short of the truly differentiated ballet of today's high-flying, competitive outliers that have disrupted entire industries through process digitization.[8]

SOCIAL MEDIA FOR PRODUCT DEVELOPMENT: **"The potential of social media is immense. [It will have a] revolutionizing impact on processes like product and technology development, and communicating with customers."** – *SM & IT Director, Banking & Financial Services, Germany*

Process digitization can also radically accelerate and transform data analytics – and business models. As shown in Figure 10 (above), nearly one-third of respondents cite improved quality/consistency/believability in the data they're getting from digital process initiatives, and 27% report easier integration across processes.

What's also changing is the impact of digital processes on value chains and operating models. Each industry and its processes − whether claims management in insurance, or reconciliation or mortgage processing in banks − is swiftly adopting new process models. Harnessing the power of digital smart machines and AI, relationships that were traditionally transactional are now "interactional;" that is, rather than being "once-and-done," they involve multiple interactions, and the more you can learn about a customer, supplier, partner − or even employee − the more meaningful each subsequent transaction can become.
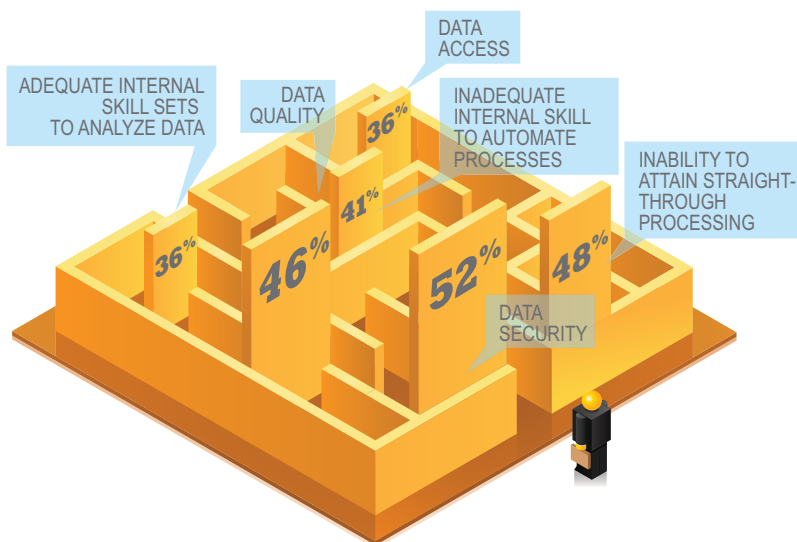
By the same token, value is more aligned with process data than with the process itself. As operational models focus more on services or outputs, they enable organizations to build new, truly flexible and adaptable process models that can be quickly piloted and refined − or allowed to "fail fast." As a result, digital processes are being re-formed in new, cost-effective and powerful ways that unlock meaning through analytics.[9] The power of autonomous machine learning and artificial intelligence is amplified in scenarios such as these, especially when data is created at massive scale. When an intelligent robot finds an anomalous or novel situation, it can flag it and ask, "So now what?" This initiates a verification process that can be fine-tuned using machine learning, covering everything from name-matching, to graph analysis and workflow decisions. The larger the sample size of data, the better the decision-making will be.

Making the World of Digital Data Safe for Smart Process Adoption: The Security Imperative

Digital technologies and digital processes can only be effective if the data source is credible and usable. However, it's not as simple as it sounds. When asked about the biggest challenges associated with efforts to digitize processes, executives said that data security "is, will be and shall remain" the biggest issue they confront, now and in the future (see Figure 11). Looking at these and other top challenges demonstrates that − despite current excitement for future process innovations − leaders are proceeding with "eyes wide open" to the potential risks:

- **Data security tops all challenges related to digital processes.** Fifty-two percent of respondents cite data security as the chief issue today. As digital processes proliferate, and as leaders see the value they create, an entirely new ecosystem of value-added services will develop to ensure the security, risk, privacy and compliance of the value chain of information these processes generate.

- **The issue isn't likely to go away.** Forty-five percent of respondents continue to foresee data security as the defining digital process challenge, even three to five years out.

It's All About the Data: Challenges Associated with Efforts to Digitize

Percent of respondents citing the following issues as being the biggest challenges associated with their efforts to digitize processes (multiple responses allowed).

DATA ACCESS

ADEQUATE INTERNAL SKILL SETS TO ANALYZE DATA

DATA QUALITY

36%

INADEQUATE INTERNAL SKILL TO AUTOMATE PROCESSES

INABILITY TO ATTAIN STRAIGHT-THROUGH PROCESSING

36%

41%

46%

52%

48%

DATA SECURITY

Source: Cognizant Center for the Future of Work
Base: 537
Figure 11

Three Distinct Types of Companies on Various Stages of the Digital Journey

Percent of respondents – by industry - that fall into the segments.

Progressives

BANKING	INSURANCE	HC PAYERS
31%	30%	40%

Laggards

30%	38%	52%

Fence Sitters

39%	31%	8%

Source: Cognizant Center for the Future of Work
Base: 537
Figure 12

Creating a Progressive
Pole Position in an Unevenly Distributed Race

Organizations need to do much more than articulate intent to modernize their processes. We see distinct characteristics for companies that have implemented some form of automation, and use analytics to create newer products and penetrate new markets. However, our study also shows that not everyone is completely onboard. There is general agreement on the benefits of intelligent automation and digitization, but organizations are at various stages of adoption and implementation of digital strategies.

Among our respondent base of 537 leaders, we further segmented the leaders – a group we call "Process Progressives" – from the rest of the pack (see Figure 12). "Fence-Sitters" are primarily characterized by having dipped their toes into some automation of front-, middle- and back-office functions (less than 10% cite automation of core processes) and, as such, are far behind the Progressives. "Laggards" are far behind the Progressives in their current automation practices and don't tend to use analytics for process optimization and other benefits.

Progressives are characterized by significant use of automation for functions outside of core back-office functions; they are also aggressive users of process analytics for innovation (creating and optimizing new products and services). They also – wisely – attach a premium to data security and are more acutely aware of the technical barriers and skill deficits that could potentially slow down or inhibit the adoption of digitization. Progressives constituted about one-third of respondents.

- **Progressives are generously rewarded for their process automation with cost savings.** About half (49%) cite a 10% or higher reduction in process costs due to automation.

- **Progressives are further along the journey of automation than other segments.** At least half have automated some part of their back-office processes, such as HR, finance, CRM and supply chain.

  Progressive adopters have also taken automation to some of their middle-office and customer-facing functions (such as risk, fraud and compliance). Since Progressives draw from all verticals equally, this broader adoption is evidence of organizational attitude and drive toward digitization, rather than simply a reflection of industry dynamics.

Calibrating a sourcing strategy that carefully balances process automation and digitally-fueled analytics is one of the most important trends in business services, and leaders need to take steps now to win in the coming era of change.

Analytics among Progressives Spurs Innovation Leading to Revenue Growth

Our study shows that Progressives are about three times more likely to employ analytics to feed into their innovation process than the other two market segments.

- **A third of Progressives cite revenue growth of at least 10% from process analytics today.** Tomorrow, 50% expect revenue benefits of more than 10% as a result of analytics, and that number rises further to 61% in the long-term (three to five years).

- **Progressives have a keen awareness of how to leverage process analytics for top- and bottom-line benefits.** This ranges from identifying new market opportunities and better serving customer needs (revenue generation), to optimizing various internal processes (cost optimization).

All business process leaders need to address the fast-arriving enabling technologies, techniques and tools that will allow them to digitize their processes as a new basis for competition and "managing on meaning." The change is already happening: Many progressive adopters are already well ahead of their peers by embracing ways to begin the journey to new levels of process efficiency, driving different paths to revenue growth, and applying new possibilities for operational models and their process-level industry value chains.

Calibrating a sourcing strategy that carefully balances process automation and digitally-fueled analytics is one of the most important trends in business services, and leaders need to take steps now to win in the coming era of change.

To accelerate your journey to the future of process automation, don't wait. Start today, by imagining how the future of work will look tomorrow when digital machines, information and processes help humans do their jobs better, faster and with greater impact.

Monday Morning: Where Can I Begin? Starting Points to Assess Process Readiness for Change

Inertia is not an option, and for almost every business, it won't be enough to simply flip a light-switch and drive process change overnight. Organizations will need to accept and embrace different process approaches for better outcomes to deliver higher impact. (Hint: it's not about the number of "people doing the process.")

Among the key considerations:

- **With automation, make sure you're keeping business outcomes as the "prime directive"** to drive, guide, scale and test for success. Look for transaction-based or outcome-based pricing models.[10] In other words, the days are over for simply "throwing more bodies at the task" to get it done. With powerful new technologies of automation, the capabilities of fewer people are magnified by robots.

- **Extract data (and distill meaning-making) to refine the fuel that drives process excellence.** Leaders will prioritize data that drives down costs, improves understanding of customers, boosts speed and quality, and streamlines processes. Revenue potential starts – not surprisingly – with customers. Use those processes to get started – and apply new technologies of automation and digitization to know customers, as well as focus on the right sets of data that help drive that knowledge.

These are the "big" considerations, and you'll not only want to rate them on Monday morning, but also continuously revisit them as lodestars for your organization's process journey in the years ahead. But there *are* approaches, especially around readiness for process automation, in which months of readiness assessment can be compressed into as little as a week, and piloting and testing compressed into two to four weeks of development to showcase results.

Some simple questions to ask prior to a process readiness assessment include: "How do I get rid of paper-based process inputs, such as invoices or claims, and get my process truly 'digital' from the outset?" "Do the people delivering my processes today add value or inject risk?" "What are we learning about our business or industry value chain as data is analyzed, and does it help smart people to make better judgments?"

> The days are over for simply "throwing more bodies at the task" to get it done. With powerful new technologies of automation, the capabilities of fewer people are magnified by robots.

Steps to Take Now on the Journey to the Future of Process

It's not a radical fantasy to view automation and digitization as disruptors of the "old way of doing things." Intelligent automation is here, today. But the emphasis on sheer people power is different and changing fast. Remember "the Robot and I" – this is about "Ripley and the Loader:" smart people, working powerfully with intelligent automation to impact processes that can efficiently and effectively move the needle on business strategy.

How will you respond? Scan your process topography and target processes (or fragments or pieces of sub-processes, say, auto-adjudication in claims management) that might lend themselves to being low-hanging fruit for automation. Consider the following as a simple, yet effective checklist to begin the assessment:

- **Perform an automation readiness assessment.** Map processes to a level of detail that includes inputs, processes and outputs. Scan the market for tested and ready-to-implement technologies that have established tangible proof of success. Apply minimally invasive automation technologies for efficiency gain today, but keep your eyes on the prize for where transformation for differentiation makes the most sense tomorrow.

- **Analyze your company at the process level.** Review in detail your processes as they exist today (new product/service development, sales and customer relationship management, operations, etc.). Infuse a digital process plan by re-imagining moments of customer engagement or constituent journeys. Target tangible process metrics: cost-per-claim, clinical trial yield, healthcare unit cost, fraud prevention rates, etc.

- **Help humans evolve toward the work of tomorrow.** Start by giving employees access to digital processes and machines that help them do their jobs better, smarter and with more meaningful impact to the business. It's not about the number of people tied to "doing the process;" it's about outcomes and making smart people even smarter.

- **Create, educate and inculcate "the vision."** Move from recognizing that something "needs to happen" to "making something happen." Business processes — automated, digital or otherwise — are useless if they don't support a business strategy. That means helping smart people make smarter decisions in support of differentiating activities. Get true alignment and buy-in to design, develop and deliver — and move fast to get "runs on the board" to maintain and sustain interest.

> Infuse a digital process plan by re-imagining moments of customer engagement or constituent journeys. Target tangible process metrics: cost-per-claim, clinical trial yield, healthcare unit cost, fraud prevention rates, etc.

- **Assign "tiger/SWAT teams," including a mini-CIO (plus experience/design).** Most IT professionals are hard-pressed to fulfill the demands of current delivery, but there are likely many extremely valuable (and digitally-savvy) resources that would jump at the chance to become automation experts or join a digital process tiger team. Physically sit and co-locate these digital process change agents into the BUs.
  - › Keep them thinking about the new process anatomy, data and the "art of the possible," including participatory design/research principles.
  - › Have them re-code moments of engagement (internal and customer-facing), using new technologies of intelligent automation.

- **Execute specific process projects — to learn fast, or "fail fast."** Be specific — don't place resources and "hope for the best." IT resources landing in a business unit without work assignments are often quickly marginalized and abandoned. Get creative and get moving — but within the "swim lanes" of the business or process strategy. Identify, develop and implement solutions for process automation or digital business transformation — fast — to successfully outrun the competition.

The human spark is, and will remain, essential to how knowledge work is orchestrated and managed.

- **Make "meaning-making" mean something powerful — fueled by process data.** The imperatives to "do analytics" or "use big data" are just too broad to be meaningful. Instead, focus on a specific business process. Whether it's your underwriting process, clinical drug trials, wealth management service, supply chain or customer relationship management process, focus on work that shapes at least 10% of your costs or revenues. To seize competitive advantage, look at the data that is — and could be — exchanged and used for value.

Looking Forward: Racing Together — and Thriving — with the Robots

Businesses need a fresh approach to their organization models and processes — and they need to digitize to analyze. Automation is a crucial new delivery model to make that happen. This study reveals new market insights that chart the progress in the journey so far, where process change is most likely to occur next in specific industries and, importantly, what you should do about it.

Robotic process automation with sophisticated technologies is here to stay, and the "Robot and I" model — vs. "I, Robot" — is crucial to understanding what the future holds. The human spark is, and will remain, essential to how knowledge work is orchestrated and managed. What's different is that technologies can now create more effective knowledge workers while simultaneously generating and capturing data that can improve processes and eliminate wasteful steps.

Staying put is not an option; automation drives further efficiency gains by flattening, streamlining and straightening process workflows. The resulting data — ripe for analytics — becomes a force-multiplier of differentiation and process-level meaning tied to business strategy and successful outcomes.

Our research opens the aperture on the possibilities. Some of them are intriguing, some are mind-bending, but all will usher in profound change. This is one of the most important trends in business services, and organizations need these insights to help them win in the era of automation and digital processes. And like a good science fiction movie, whether you like it or not, it's coming soon — to a process near you.
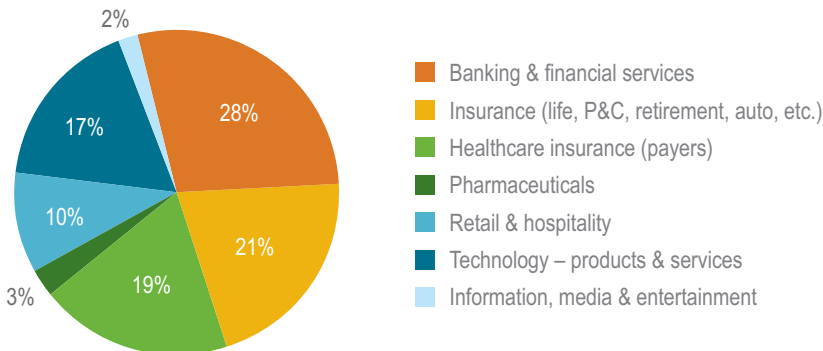
Appendix 1: The Methodology

Online panel-based research was conducted with decision-makers from banking and financial services, insurance and healthcare companies across North America and Europe. The sample also included companies from the pharmaceuticals, retail, hospitality and technology industries. The research was spread over four weeks during Q3 2014, with data gathered from 537 respondents, representing companies with $500 million to $3 billion in revenue. The research was conducted by an independent research agency (E2E Research) on behalf of Cognizant.
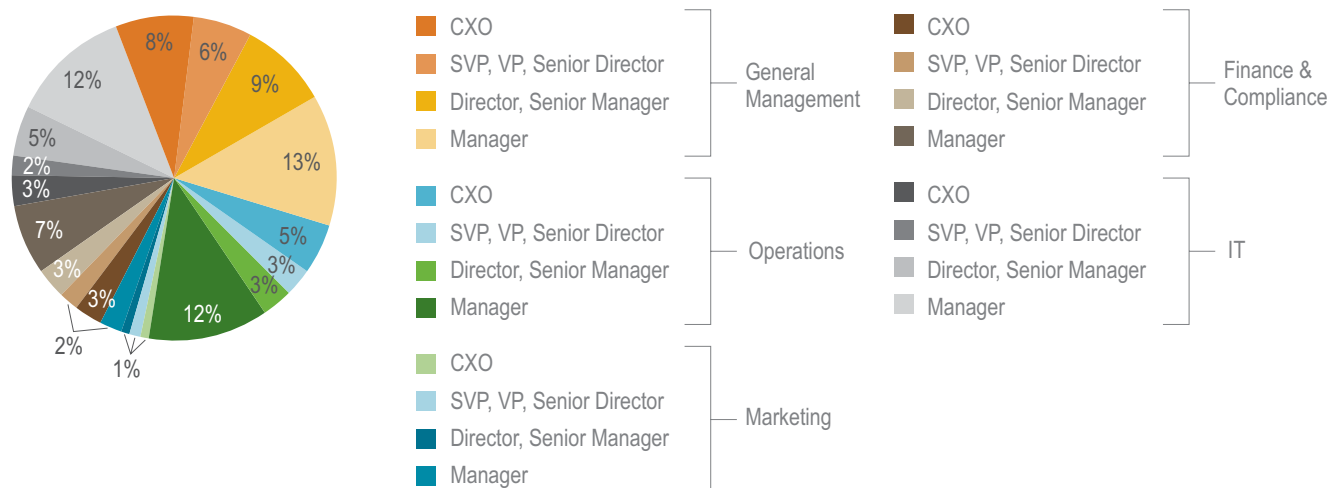
Areas studied include:

- Current automation, analytics and digital plans for key processes (list of processes provided in Appendix 2).

- Anticipated plans for those processes in 12 to 24 months.

- Anticipated plans for those processes in three to five years.

- Changes in process architecture and staffing levels due to automation.

- Relative impact of process automation, people-based staffing, analytics and strategic outcomes from digital processes.

- Skills required for process digitization initiatives.

This study was conducted across a variety of sectors, functions and geographies.
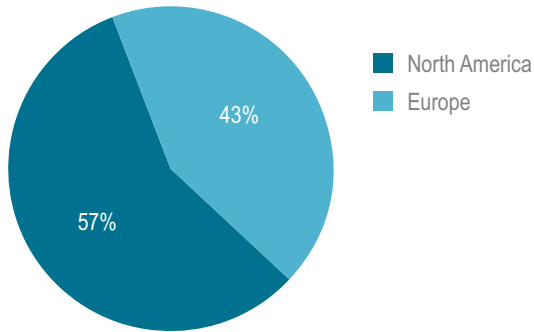
Sectors

- 28% Banking & financial services
- 21% Insurance (life, P&C, retirement, auto, etc.)
- 19% Healthcare insurance (payers)
- 3% Pharmaceuticals
- 10% Retail & hospitality
- 17% Technology – products & services
- 2% Information, media & entertainment

Functions

General Management
- CXO
- SVP, VP, Senior Director
- Director, Senior Manager
- Manager

Operations
- CXO
- SVP, VP, Senior Director
- Director, Senior Manager
- Manager

Marketing
- CXO
- SVP, VP, Senior Director
- Director, Senior Manager
- Manager

Finance & Compliance
- CXO
- SVP, VP, Senior Director
- Director, Senior Manager
- Manager

IT
- CXO
- SVP, VP, Senior Director
- Director, Senior Manager
- Manager

Operating Regions

- North America
- Europe

43%

57%

Appendix 2: Process Definitions

The processes studied are detailed below.

Banks

- Front-office and customer-facing functions
- Middle-office or operational functions
- Back-office or support functions

Horizontal Processes

- Human resources
- Finance and accounting
- Customer management and sales
- Supply chain
- New product/service development

Insurance (Life, Property, Casualty)

- New business, underwriting and customer service
- Policy service and contract administration
- Claims administration
- Risk, fraud and compliance

Healthcare Payer

- Enrollment & billing services
- Claims coding and processing
- Overpayment recovery services
- Fraud & abuse services
- Medical management
- Member/provider customer support

Footnotes

1   Understanding where, when and how that happens is a core principle of our book *Code Halos: How the Digital Lives of People, Things, and Organizations are Changing the Rules of Business*, by Malcolm Frank, Paul Roehrig and Ben Pring, published by John Wiley & Sons, April 2014, www.wiley.com/WileyCDA/WileyTitle/productCd-1118862074.html.

2   Macrina Cooper-White, "Elon Musk Says Artificial Intelligence Research May Be 'Summoning the Demon,'" The Huffington Post, Oct. 27, 2014, www.huffingtonpost.com/2014/10/27/elon-musk-artificial-intelligence_n_6053804.html.

3   "Stephen Hawking: Transcendence Looks at the Implications of Artificial Intelligence, but Are We Taking AI Seriously Enough," The Independent, May 1, 2014, www.independent.co.uk/news/science/stephen-hawking-transcendence-looks-at-the-implications-of-artificial-intelligence--but-are-we-taking-ai-seriously-enough-9313474.html.

4   Issie Lapowsky, "Google's Eric Schmidt: Don't Fear the Artificially Intelligent Future," *Wired*, Dec. 9, 2014, www.wired.com/2014/12/eric-schmidt-ai/.

5   Ben Pring, "How to Beat the Robots," Cognizant's Center for the Future of Work, Nov. 28, 2014, www.futureofwork.com/article/details/how-to-beat-the-robots.

6   This is especially true when tied to "moments of magic" driven by Code Halos, when business processes can seemingly read the mind of their customers (i.e., "if you enjoyed product x, you'll probably love product z") and make their customers' purchasing process easy, enjoyable, fun and seductive.

7   Paul Roehrig and Ben Pring, "The Value of Signal and the Cost of Noise," Cognizant Center for the Future of Work, October 2013, www.cognizant.com/InsightsWhitepapers/The-Value-of-Signal-and-the-Cost-of-Noise-The-New-Economics-of-Meaning-Making.pdf.

8   Malcolm Frank, Paul Roehrig, Ben Pring, "Code Rules: A Playbook for Managing at the Crossroads," Cognizant Center for the Future of Work, June 2013, www.cognizant.com/Futureofwork/Documents/code-rules.pdf.

9   These findings are in line with those published in The Center for the Future of Work's 2013 study, "The Value of Signal (and the Cost of Noise): The New Economics of Meaning Making," June 2013, www.cognizant.com/InsightsWhitepapers/The-Value-of-Signal-and-the-Cost-of-Noise-The-New-Economics-of-Meaning-Making.pdf.   This report — which examines the return on investment that data analytics generates — found that organizations had generated $766 billion in total economic benefit from their business analytics initiatives over the course of the last year. Much of that activity was oriented toward understanding the code being generated by digital processes.

10 Outcome-based process models might include providing incentives like business-benefit-based contracting or gain-sharing with a business process outsourcer, or moving from a people-based model to volume-based transaction pricing.

About the Authors

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