



Forbes insights

**Intelligent Automation:
How AI and Automation Are
Changing the Way Work Gets Done**

IN ASSOCIATION WITH:



TABLE OF CONTENTS

4	INTRODUCTION
6	INTELLIGENT AUTOMATION: TAKING THE ROBOT OUT OF THE HUMAN
7	THE AUTOMATION JOURNEY: IT'S ABOUT THE VALUE CHAIN
8	THE HUMAN SIDE OF INTELLIGENT AUTOMATION: GETTING BUY-IN FROM THOSE MOST AFFECTED
10	PROCESSES THAT THINK: THE FUTURE OF INTELLIGENT AUTOMATION
11	CONCLUSION
12	ACKNOWLEDGMENTS

INTRODUCTION

For years, executives have been automating for efficiency, freeing workers from repetitive tasks, streamlining the back office and looking for cost savings. Now, they are exploring intelligent automation to establish thinking processes—processes that communicate real-time insights to employees, customers and partners across an expanding ecosystem. The ability to add intelligence to automation opens a new universe of possibilities that will have a profound impact on the way organizations operate and the way work gets done. More than anything else, intelligent automation will be a defining factor for the future workforce.

There is great momentum across nearly every industry as organizations embrace intelligent automation. KPMG predicts an acceleration of investment in intelligent automation, with overall spending expected to reach \$232 billion by 2025 compared with an estimated \$12.4 billion today.¹ But even that massive growth does not tell the whole story. Intelligent automation is not a simple technology deployment; it is about business and operating model transformation.

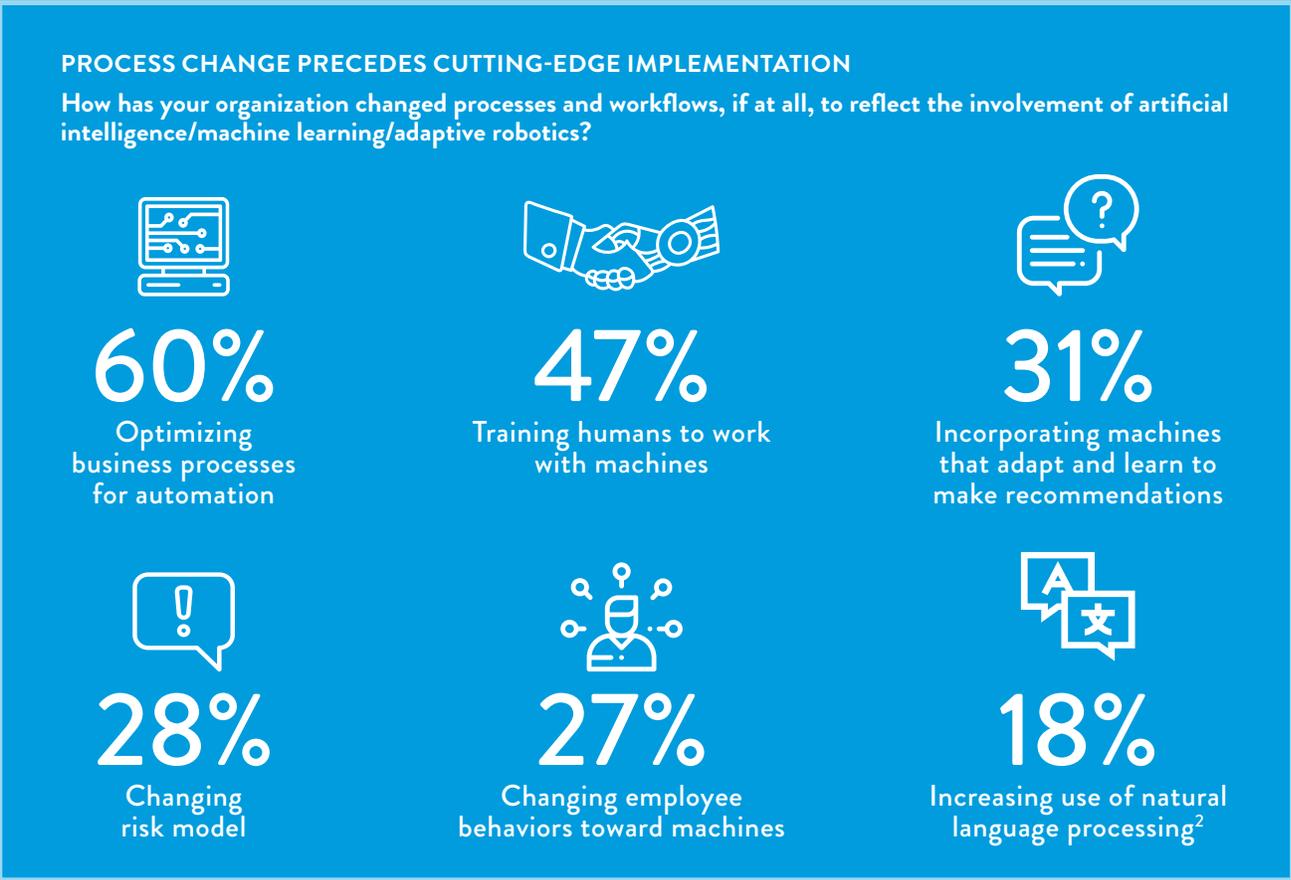
Senior operating executives take a comprehensive view of the impact automation will have on their organizations. They view automation through the lens of their company's strategic vision, and generally as a means to a greater goal: not only speed, efficiency or cost savings but as a means to capture data more comprehensively, improve the customer experience, reduce risk, capitalize on artificial intelligence (AI) and ultimately enable innovation in their organization.

When senior operating executives describe their automation journey, their stories begin with the value chain. For a consumer-facing firm, it is a means to speed delivery, reduce inventory, revolutionize the supply network and enhance the customer experience. For R&D, automation is expanding the possibilities of what can be accomplished in the lab and in the field, shortening time to market. For financial services, it is part of a digital strategy to improve customer knowledge, put more tools into the hands of the workforce and better manage risks. For manufacturing and other businesses with physical assets, automation is an integral part of Industry 4.0. For a municipality, it is part of a smart city strategy, enabled by the Internet of Things (IoT) and tied in with cyber-physical systems. These sound like perennial concerns, but under the surface, automation is changing the structure of work in nearly every industry.

1 KPMG, "Ready, set, fail? Avoiding setbacks in the intelligent automation race," <https://advisory.kpmg.us/articles/2018/new-study-findings-read-ready-set-fail.html>

The vision is grand, but the realities are challenging. Automation technologies are developing at a breathtaking pace, and business leaders are faced with prioritizing the areas of the business to automate, and then understanding and choosing among technology options. Progression to truly intelligent automation requires first defining and streamlining processes, and then restructuring the organization around those processes, all of which will be driven by technologies that have never been available before. This exercise will impact the workday of many individual employees, and it will test communication and change management

To understand how operating executives view their automation journey and how they are managing the seismic changes that intelligent automation is bringing to their organizations, we spoke to five operating executives in different industries around the world. They shared their aspirations, defined a few pain points along their journey and described the ongoing challenge of managing the cultural change at their organizations.



² IBM, "Human-Machine Interchange"
https://public.dhe.ibm.com/common/ssi/ecm/gb/en/gbe03879usen/human-machine-interchange_GBE03879USEN.pdf

INTELLIGENT AUTOMATION: TAKING THE ROBOT OUT OF THE HUMAN

Intelligent automation is an emerging area that brings together new technologies, like AI, and process reinvention in a partnership between digital and human resources. As McKinsey describes, intelligent process automation, in essence, “takes the robot out of the human.”³ Many firms are already using some form of intelligent automation: Think virtual assistants, risk management and other forms of automation that require natural language processing, analyzing unstructured data and ultimately making decisions based off that information. But the full impact of establishing thinking processes is still in its earliest stages.

“Automation is not a new thing,” says Maziar Doustdar, executive vice president of international operations at Danish pharmaceutical company Novo Nordisk. “It’s been around for a long time in R&D to reduce occupational health and safety risks and increase productivity,” he explains. At Novo Nordisk, automation has streamlined the back office, processing vendor payments and generating compliance reports, for example. It is already an integral part of the manufacturing process as well. What Doustdar is most excited about is what intelligent automation will mean for the future of R&D.

“What is increasingly on the radar is a growth in the scope of automation—integrating individually automated processes, enabling faster and more precise handling of repetitive activities, and also ensuring full digital integration to enable ML and AI facilitating data analysis of large data volumes for medicine discovery,” he explains. The use of robotics and AI in digital health will also be key in developing ways to optimize patient medicine administration.

“We see rapidly increasing adoption of intelligent automation by our clients,” says Gene Chao, vice president and general manager of IBM Automation. “Those companies that have implemented intelligent automation are achieving benefits

that provide significant competitive advantage through their ability to innovate around their operating models and user experience channels.” He predicts these companies will widen the gap as leaders in their industries.

WHAT IS INTELLIGENT AUTOMATION?

Intelligent automation incorporates recent advances in technology to manage and improve business processes automatically and continuously.⁴ At its core, intelligent automation includes:

- **Artificial intelligence**—The application of systems equipped with software that simulates human intelligence processes, including learning without explicit instructions
- **Natural language processing**—The ability to understand human speech as it is spoken
- **Robotics**—The use of robots that can act on IoT and other data to learn and make autonomous decisions
- **Smart workflow**—Process-management software that integrates tasks performed by groups of humans and machines
- **Predictive analytics**—The practice of predicting outcomes using statistical algorithms and machine learning

McKinsey offers this example of intelligent process automation in action: Robots can replace manual clicks (robotic process automation), interpret text-heavy communications (natural language processing), make rule-based decisions that don’t have to be preprogrammed (machine learning), offer customers suggestions (cognitive agents) and provide real-time tracking of handoffs between systems and people (smart workflows).⁵

³ McKinsey, “Intelligent process automation: The engine at the core of the next-generation operating model,”

<https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/intelligent-process-automation-the-engine-at-the-core-of-the-next-generation-operating-model>

⁴ IBM, “Human-Machine Interchange”

⁵ McKinsey, “Intelligent process automation”

THE AUTOMATION JOURNEY: IT'S ABOUT THE VALUE CHAIN

Deciding what to automate might begin with a goal of saving time and money on specific processes, but it doesn't end there. Automating repetitive and administrative tasks ultimately leads to fundamental questions about where organizations add value to their customers, how they can improve the customer and employee experience and where automation can help achieve strategic goals.

For Aon, the London-based risk, retirement and health consultant, the need to automate was defined by a compelling event: The divestiture of several business lines left a greatly reduced workforce and the need to reinvest in a single-segment operating model. "What we first started to look at was cost reduction, reducing the need to hire and retrain workers but also the opportunity to pursue new business models," explains John Bruno, chief operations officer at Aon plc and chief executive officer, Data & Analytic Services. At the center of it all, however, was customer service. "We wanted to create a more personalized experience in our contact centers around making the customer experience better, more accurate, more reliable at a faster pace," he says.

He defines automation as a "key lever" to fulfilling Aon's commitment to clients with an approach of continuous improvement. "While our focus on the customer hasn't changed, the automation technology has. We can provide new ways to accelerate and expand measurable improvements in liability, accuracy, speed and cost," he adds. Aon had 30 different service sectors all serving clients around the world. Not all of those were unique, and not all provided much added value. Process automation allows Bruno and his team to think of all those processes as a more holistic workflow. "That holistic view is really the role process automation has played in our strategic vision and organization," explains Bruno.

When it comes to managing traffic in a major metropolitan area, automation is a key component both to achieve immediate goals and as a means to broaden and deepen smart city capabilities. In Miami-Dade County, for example,

the installation of sensors and intelligent technologies, in a cyber-physical system of IoT and automation, is already showing measurable results. Alice N. Bravo, P.E., director of the Department of Transportation and Public Works, Miami-Dade County, explains how adaptive smart signals are cutting travel times.

"We're installing new detectors that tell the speed of traffic in real time and where traffic is backing up," she explains. "Through automation, we're taking all of this data and continuously tweaking—every minute or two—the signal timing, to make each intersection as efficient as possible and to increase the number of cars that get through every cycle."

With the growing number of sensors and the increasing flow of data, the system can start to prioritize some traffic. "The signal can detect if a bus is coming and hold the green light a little longer, or end a red light more quickly so the bus can cross through." In a pilot program for one bus route along a 20-mile corridor of smart signals, the county was able to shave 25% off the travel time—a result that surprised everyone, says Bravo.

The growing network of sensors and automation is also establishing a framework for increasingly more-autonomous and connected vehicles. As the network is built out, vehicles and the signals will be able to communicate in real time. Every connected vehicle would know when the light was turning green and when to begin accelerating to maintain a safe distance from other vehicles. "In theory, when the light



turns green, all the cars could move forward together at the same time, making each signal phase very, very efficient," she explains. For public transit vehicles, Bravo sees groups of buses being able to convoy and travel together, much like a train.

"That means we could implement something that operates like a billion-dollar system but with only \$300 million of infrastructure," she explains. The changes that machine learning and autonomous vehicles will bring to travel and transportation—particularly in an urban environment—present an exciting challenge to all infrastructure planning. "Transportation projects—whether they be transit or highway—are planned traditionally on a 20-year horizon, but we don't even know what technology is going to exist in the next three years," says Bravo. "We have to build in some flexibility."

For Procter & Gamble (P&G), automation starts with the consumer, but the impact will be felt most visibly on the supply chain. "Our global supply network is being designed so that P&G and our suppliers can rapidly meet retail customer and consumer demand for our brands, such as Pampers, Tide and Pantene, in a replenishment-centric manner that reduces inventory while increasing on-shelf availability," explains Yannis Skoufalos, global product supply officer at P&G. The firm aims to create an end-to-end synchronized supply network where retailers, P&G and its suppliers operate seamlessly to deliver products from the point of manufacture to the store shelf in 24 to 48 hours, 80% of the time. "Automation across the entire supply network helps make that process faster and more efficient," says Skoufalos.

The company will be testing the possibilities of intelligent automation and other advanced technologies at its nearly completed manufacturing site in Tabler Station, West Virginia. This new plant represents a major shift in P&G's operating and supply-chain model. "From the delivery of raw materials, production and distribution, the brands are not touched by a single human hand until they are put on the store shelf," Skoufalos explains. There will be people at the site—P&G is in the process of hiring 900 full-time employees to work there—but they will be highly skilled and trained to work in an intelligent-automation environment. "With their talent, automation and digitization, we will reduce costs, increase on-shelf availability and revolutionize our supply network in a way we never have before," he says. "That is automation at its finest."

⁶ IBM, "Human-Machine Interchange"

THE HUMAN SIDE OF INTELLIGENT AUTOMATION: GETTING BUY-IN FROM THOSE MOST AFFECTED

Automation is not a plug-and-play solution. In "The Human-Machine Interchange: How intelligent automation is reconstructing business operations," IBM's Institute for Business Value points out that organizations cannot just buy the technology, flip the switch and watch robots run the business without any human intervention. "In reality, work with intelligent machines is much more complex and is not something that happens all at once."⁶ It requires defining and rationalizing processes, redefining work and bringing employees in on key decisions.

Novo Nordisk's Doustdar understands there are many iterative stages between deciding on an automation strategy and achieving true intelligent automation. He believes the progression from process automation to AI requires an aligned buildup of four highly interdependent enablers:

- 1) Automation
- 2) Data infrastructure and automated data capture
- 3) Data science, AI components and advanced analytics
- 4) Competences of staff to work in a digital and automated environment

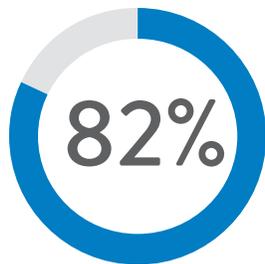
For all the complexity of the first three, the last enabler is by far the hardest to get right. "People are the biggest challenge," says B. Madhivanan, chief technology and digital officer of ICICI Bank in India. But the bank has worked with employees to find the best way to define processes and automate them to make their jobs easier. Productivity tools mean fewer late nights at the office, as well as the ability to finish tasks on time and do

things more accurately in a compliant way. “On the operations side, our employees are much happier,” he points out. That opens the door to look across all existing processes at the bank and ask, “What can we automate next?” in an iterative process.

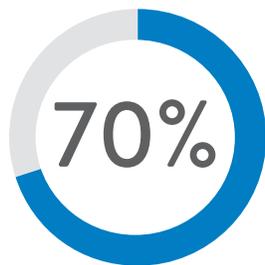
“Our intent has always been to enhance the skill sets of our people, since some of their work will eventually be robotized or automated,” says Madhivanan. “This move away from the mundane activities to much more complex activities is a good thing.”

TEACHING HUMANS TO WORK WITH MACHINES BEGINS WITH ESTABLISHING ACCEPTANCE

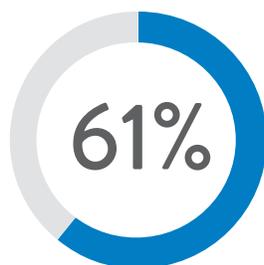
To what extent do you agree with the following statements about human-machine interactions? “Agree” and “Strongly agree” responses



Employees need training and encouragement to feel comfortable working with intelligent machines



Intelligent machines will lead to higher-value work for our employees



Intelligent machines will have a meaningful impact on job descriptions and activities in the next three years⁷

Aon’s decision to prioritize automation came out of a need to replace some of the talent the company lost with a major divestiture. “We had a choice: We could backfill and hire people to do things the way we always did them or use machine learning and process automation to make what’s left of our labor force more productive,” explains Bruno. “What we chose to do is to try and automate much of the work that we didn’t think was a value-add for humans.”

Aon discovered that to make automation work, you have to recognize that different people have different skill sets and work with their own individual processes. “The goal really is to listen to them and let them tell you about their processes and how they see the challenges of their day-to-day work,” he says. “It is very important that you’re not forcing people to do something they are not equipped to do—to become left-handed when they were right-handed,” he explains.

What Bruno and his colleagues discovered is that almost everyone said there is something they wish they had more time to do. That begs the question: “What’s taking up that time that you don’t have?” Perhaps it is the processing of invoices or other repetitive or clerical work. “And then all of a sudden you have opened a discussion: Is there a way to use technology to change the way the data is ingested into the system, therefore creating capacity at the beginning of the process that can then be applied elsewhere?” asks Bruno.

In Miami-Dade County, Bravo discovered that coordination was the biggest challenge. “People are used to doing things a certain way,” she explains. “And the whole idea of implementing automation is not to just replicate your process,” she says. Nevertheless, people are usually wary of trusting a newly automated system. When the county started using an intelligent process to monitor security cameras, staff insisted on storing the images as they had always done. “Sometimes you need a culture change, too,” says Bravo.

⁷ Ibid.

ACCEPTANCE, SKILLS, AND RESOURCES ARE THE BIGGEST HURDLES TO AI ADOPTION

Greatest challenge to your organization's use of AI⁸



PROCESSES THAT THINK: THE FUTURE OF INTELLIGENT AUTOMATION

Many organizations begin their AI journeys by applying intelligence and advanced automation capabilities to better understand their customers and their employees and create a more captivating experience. They look to AI to enhance decision making, drive new business models and revenue streams, and enable a new classification of connected products and services with the ability to reason and learn.

There is no doubt that the business case for intelligent automation and AI is compelling, but achieving truly intelligent operations remains a challenge for most organizations.

She has had tremendous success approaching automation from the other direction: asking people what they would like to do and what they think is the best way to utilize their time. "People always have ideas. They just don't know how to voice them so that they actually get implemented," she says. "So when we give them that opportunity, it's well-received."

Automating business processes may seem like a science, especially with all the tools available today. But it is still more of an art. Who doesn't have some part of their job that takes up more time than it's worth, or undergoes a process that never made any sense in the first place? Process automation allows for a deep rethinking of not only "the how" but also "the why" of business processes—they need to be not only defined and digitized; they also need to be rationalized and understood in order to introduce machine learning and intelligent automation. On the other side, staff involved need to understand where they can add progressively more value as automation becomes increasingly more intelligent.

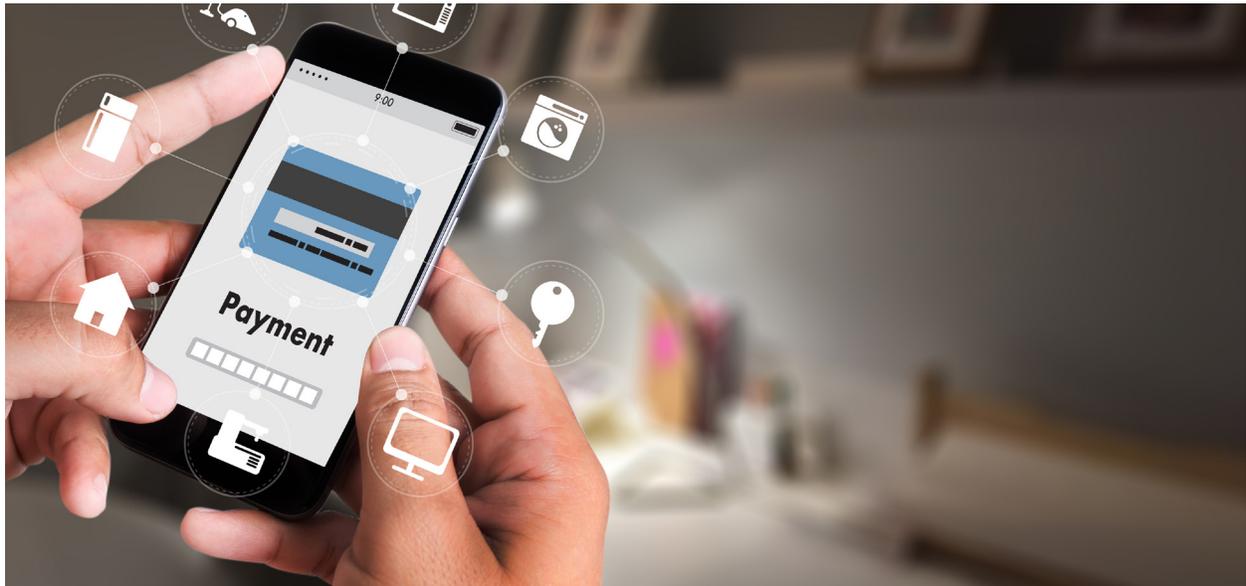
"You just have to be very wide open," says Bruno. "Rescaling, talent training and development are all part of it, and HR is a critical component."

⁸ Ibid.

At ICICI Bank, the quest for intelligent automation began with a push for efficiency in the back office. "The question is, 'Where can we remove human intervention and convert to an automated process?'" says Madhivanan. Any process that cuts across three or four systems, both internal and external, is something that the bank will look to automate. "The metric in these cases will always be efficiency for the customer experience," he explains.

The bank is also automating customer service. "Anything to do with chats and emails, our ability to convert using natural language programming and process engineering has been reasonably successful," says Madhivanan. More than half of customer queries that come through email, the website or mobile devices are handled by a combination of robotic processes and chat bots.

ICICI is now venturing beyond natural language processing and experimenting with AI in processes that require judgment, such as credit processing and underwriting, to see if they can be automated. The plan is to apply intelligence to risk management across the underwriting processes, improve transaction effectiveness and assist with fraud management. So far, says Madhivanan, the



bank has not found a magic bullet that can replace the judgment of a human, but he and his colleagues continue to experiment with intelligent applications.

Madhivanan also has high hopes that automation and AI can help the bank and the country operate more effectively in an environment with scores of different languages and dialects and a large unbanked population. The advent of mobile banking and government initiatives to help create more financial opportunities for the disadvantaged by establishing national accounts for everyone in the country are a challenge that can be met only by intelligent technologies.

CONCLUSION

Intelligent automation is more complex than simply a technology deployment. It has many moving parts that, when deployed optimally, have the power to transform operating models. Operations executives must prioritize the focus of their automation efforts and choose technology and organizational options that will scale broadly and deeply. Intelligent automation requires first defining and understanding individual processes, then applying technology and resources to transform those processes—a progression that leads to new ways to organize

work and ultimately structure an organization.

To prepare for the change, operations executives need to recognize some key factors:

- Intelligent automation is an iterative process built on new technologies and data sources, and it requires a long-term vision of where intelligent operations could truly lead
- Adopting intelligent automation will require new blueprints and operating architectures that can work across enterprise systems and technology platforms
- Working in an intelligent, automated environment will redefine many occupations—and the skills and talents needed for success
- Getting buy-in from those most affected by intelligent technologies will be a major challenge to the ultimate success of the intelligent automation journey

Intelligent automation is more than simply a technology deployment. Success starts with first defining and understanding individual processes in the context of the industry and customers it serves. There are many interconnected parts that, when deployed optimally, have the power to transform operating models. Operations executives must prioritize the focus of their automation efforts, select the right mix of technologies, and deploy them in parts of the organization where they can scale and drive the most value.

ACKNOWLEDGMENTS

Forbes Insights and IBM would like to thank the following individuals for their time and expertise:

- **B. Madhivanan**, Chief Technology and Digital Officer, ICICI Bank
- **Alice N. Bravo**, P.E., Director of the Department of Transportation and Public Works, Miami-Dade County
- **John G. Bruno**, Chief Operations Officer, Aon plc, and Chief Executive Officer, Data & Analytic Services
- **Maziar Doustdar**, EVP, International Operations, Novo Nordisk
- **Yannis Skoufalos**, Global Product Supply Officer, P&G

Forbes insights

ABOUT FORBES INSIGHTS

Forbes Insights is the strategic research and thought leadership practice of Forbes Media, a global media, branding and technology company whose combined platforms reach nearly 94 million business decision makers worldwide on a monthly basis. By leveraging proprietary databases of senior-level executives in the *Forbes* community, Forbes Insights conducts research on a wide range of topics to position brands as thought leaders and drive stakeholder engagement. Research findings are delivered through a variety of digital, print and live executions, and amplified across *Forbes'* social and media platforms.

EDITORIAL & RESEARCH

Erika Maguire

EXECUTIVE EDITORIAL DIRECTOR

Kasia Wandycz Moreno EDITORIAL DIRECTOR

Hugo S. Moreno EDITORIAL DIRECTOR

Ross Gagnon RESEARCH DIRECTOR

Scott McGrath RESEARCH ANALYST

Deborah Orr REPORT AUTHOR

Zehava Pasternak DESIGNER

PROJECT MANAGEMENT

Casey Zonfrilli

DIRECTOR, ACCOUNT MANAGEMENT

Tori Kreher

PROJECT MANAGER

Brian Lee

PROJECT MANAGER

Todd Della Rocca

PROJECT MANAGER

SALES

North America

Brian McLeod VICE PRESIDENT

bmcleod@forbes.com

Matthew Muszala EXECUTIVE DIRECTOR

mmuszala@forbes.com

William Thompson DIRECTOR

wthompson@forbes.com

Kimberly Kurata MANAGER

kkurata@forbes.com

Europe

Charles Yardley SVP MANAGING DIRECTOR

cyardley@forbes.com

Asia

Will Adamopoulos

PRESIDENT & PUBLISHER, FORBES ASIA

wadam@forbesasia.com.sg