The Impact of Automation on Modern Business

39 Experts Share Their Experiences, Results, and Vision for the Future

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INTRODUCTION

There's no turning back from the fact that disruptive business automation is here. As artificially intelligent functionality delivers more capabilities that we increasingly take for granted, it's difficult to grasp all the implications of this transformation. In this eBook, we aim to illustrate what it means for business, for the people who work in those businesses, and for people served by those businesses every day.

To better understand how automation is changing business, and with the generous support of CA Technologies, we reached out to 39 experts. After many fascinating discussions on this topic, we developed essays that address four key questions:

- How has business automation changed your operations?
- What business processes would you like to automate?
- What best practices can you offer to someone who is implementing a large automation project?
- What does the future hold for businesses actively pursuing automation?

In speaking with experts from different industries in both the public and private sectors, it became clear that cost reduction and gains in efficiency are not the only factors that drive automation. They may not even be the most important ones. Successful automation must also deliver greater value in the form of more accurate processes, better products and services, or entirely new value propositions not previously possible.

By providing practical insights into what is happening today and what may be just over the horizon, I believe this eBook will be a valuable resource for anyone planning an automation strategy.

All the best,

David Rogelberg
Publisher, Mighty Guides, Inc.
At CA Technologies we are excited about business automation. We think it is the critical enabler to help drive business and empower digital transformation. We have worked with the Mighty Guides team to ask leading practitioners across different industries for their thoughts on the power of automation within their business. We hope you enjoy this compilation of stories.

We believe that, in today’s ultra-complex, fast changing world, business automation is not just a differentiator, but an essential component of the modern enterprise. With the prevalence of digital disruptors, the ever-growing influence of big data and the increasing importance of the Internet of Things, automation is the only way businesses can achieve the agility and scalability required to compete. As a gateway to innovation, business automation increases productivity, drives revenue growth, reduces time to market and breaks down silos.

Here at CA Technologies, our automation solutions are designed to help you become more agile and to execute your key business imperatives faster. This will shorten your time to value and help you delight your customers with the best possible user experience. As your usage of automation expands, our solutions will help you orchestrate across different functions and different use cases to drive automation as a critical enabler of your digital transformation. Whether it’s attaining continuous delivery for new applications, modernizing legacy systems, harnessing vast amounts of data, or delivering self-services to the business - our solutions provide high availability, unrivalled scalability and end-to-end visibility across all your processes, and from a modern unified interface.

Central to our portfolio is the industry-leading CA Automic One Automation Platform. This unified, open and scalable automation platform acts as a central point of control across your entire business. The overarching architecture ensures agility and stability, standardizing management and configuration of IT processes. It’s our ‘secret sauce’, helping distinguish CA Technologies by driving scalability, openness and performance.

I hope you enjoy this book,

Dr. Chris Boorman
VP, Automation Marketing
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thanos Lagios</td>
<td>Head of Rapid Automation, Allianz Global Corporate &amp; Specialty</td>
<td></td>
</tr>
<tr>
<td>Aaron Gette</td>
<td>Chief Information Officer, The Bay Club Company</td>
<td></td>
</tr>
<tr>
<td>Peter Malek</td>
<td>Director of Process Performance &amp; Operational Excellence, VMware</td>
<td></td>
</tr>
<tr>
<td>Valerie Vessey</td>
<td>Head of NA Small Business Operations and Pricing, Online Payment Company</td>
<td></td>
</tr>
<tr>
<td>Mike Wons</td>
<td>CTO, State of Illinois</td>
<td></td>
</tr>
<tr>
<td>Dmitri Poukhovski</td>
<td>VP Operations and IT, Head of HR, Parallels, Inc.</td>
<td></td>
</tr>
<tr>
<td>Mike Huskins</td>
<td>Head of Product Operations, Twilio</td>
<td></td>
</tr>
<tr>
<td>Todd Simpson</td>
<td>CIO, FDA</td>
<td></td>
</tr>
<tr>
<td>Ratnesh Sharma</td>
<td>Customer Analytics Specialist, Compuware</td>
<td></td>
</tr>
<tr>
<td>Deborah Fritz</td>
<td>Senior Director, Global Head of Sales Operations, Acxiom</td>
<td></td>
</tr>
<tr>
<td>Jay Hemmady</td>
<td>Chief Information Officer, Oia Global</td>
<td></td>
</tr>
<tr>
<td>Aaron Gette</td>
<td>Benefits of Automation Often Go Beyond Operational Gains</td>
<td></td>
</tr>
<tr>
<td>Peter Malek</td>
<td>Focus on Automating High Volume, Error Prone Tasks</td>
<td></td>
</tr>
<tr>
<td>Valerie Vessey</td>
<td>Business Automation Generates Change and Productivity</td>
<td></td>
</tr>
<tr>
<td>Mike Wons</td>
<td>Business Automation Delivers Efficiency</td>
<td></td>
</tr>
<tr>
<td>Dmitri Poukhovski</td>
<td>Business Automation Brings Efficiency, Accuracy, and Speed</td>
<td></td>
</tr>
<tr>
<td>Mike Huskins</td>
<td>Improving Customer Satisfaction Through Business Automation</td>
<td></td>
</tr>
<tr>
<td>Todd Simpson</td>
<td>Automation Allows the FDA to Extend Services</td>
<td></td>
</tr>
<tr>
<td>Ratnesh Sharma</td>
<td>Critical Customer Insights Can Only Be Gained with Automation</td>
<td></td>
</tr>
<tr>
<td>Deborah Fritz</td>
<td>Business Automation Requires Effective Change Management</td>
<td></td>
</tr>
<tr>
<td>Jay Hemmady</td>
<td>Measure Automation Success in Terms of Total Business Value</td>
<td></td>
</tr>
<tr>
<td>Ratnesh Sharma</td>
<td>The Secrets to Business Automation Success—and Failure</td>
<td></td>
</tr>
<tr>
<td>Mike Wons</td>
<td>Automation Is a Journey</td>
<td></td>
</tr>
</tbody>
</table>
APPLICATIONS ARE KEY TO AUTOMATION: P59

RODRIGO GONZALEZ
CIO & CSO, TGI FRIDAYS
More Detailed Information Improves Automation Outcomes: P76

SCOTT ANDERSON
CHIEF TECHNOLOGY OFFICER, CREATIVE TECHNOLOGY AND INNOVATION
Automation Is Improving Speed, Efficiency, and Security: P80

PAUL HOFFMAN
CTO, SPACETIME INSIGHT
Automation Is Like Industrialization Before and After Electricity: P84

IAN GORDON
SENIOR VP, OPERATIONS, REGENE INSURANCE HOLDING COMPANY
Using Artificial Intelligence to Transform an Entire Industry: P88

SHERIF MITYAS
CIO & CSO, TGI FRIDAYS
Serving Up Change While Strengthening the Brand: P63

KEVIN PRICE
PRINCIPAL INFRASTRUCTURE ENGINEER, INFORMATION SECURITY, GE APPLIANCES, A HAIER COMPANY
Automation Frees Up IT to Focus on Operational Needs: P67

MARCOS BUENO
HEAD OF MEDIA TECHNOLOGY, VOX MEDIA, INC.
Automation Can Enhance Media Production and Consumption: P72

BRIAN TIMMENY
GLOBAL HEAD OF ADVANCED ENGINEERING, DEVOPS, ENGINEERING PROCESSES, BBVA
The Speed and Agility of DevOps Makes Process Automation Possible: P92

GARY TULLY
People and Design Are Key to Automation: P59

SHERIF MITYAS
CIO & CSO, TGI FRIDAYS
Serving Up Change While Strengthening the Brand: P63

KEVIN PRICE
PRINCIPAL INFRASTRUCTURE ENGINEER, INFORMATION SECURITY, GE APPLIANCES, A HAIER COMPANY
Automation Frees Up IT to Focus on Operational Needs: P67

MARCOS BUENO
HEAD OF MEDIA TECHNOLOGY, VOX MEDIA, INC.
Automation Can Enhance Media Production and Consumption: P72
HOW BUSINESS AUTOMATION CHANGES BUSINESS

In this Section...

Aaron Gette
Benefits of Automation Often Go Beyond Operational Gains..............................................................7

Valerie Vessey
Business Automation Delivers Efficiency........11

Mike Wons
Business Automation Is a Journey......................15

Todd Simpson
Automation Allows the FDA to Extend Services.................................................................19

Thanos Lagios
Business Automation Generates Change and Productivity.........................................................23
Aaron Gette is a proven thought leader and influential IT professional with over 19 years of experience. He has worked with startups and Fortune 500 companies in the Bay Area, delivering CIO- and CTO-level leadership. Drawing on his ability to build and manage high-functioning teams, he has driven growth in companies he has worked for by converting traditional IT infrastructure into revenue-generating powerhouses. He is currently redefining the IT culture at The Bay Club and delivering a business-minded IT team to push the health and fitness resort chain into new affluent markets.

"We've been going through an extensive digital transformation," says Aaron Gette, chief information officer at The Bay Club Company, a chain of health and fitness resorts headquartered in San Francisco. This has involved all aspects of the business and has required collaboration between business leaders and the executive team, department heads, and managers. "It's been an exciting and challenging transition, and it's been really good for us as an organization," Gette says.

A big part of the transformation involves sitting down with people in different parts of the business, particularly areas where a lot gets done manually, understanding how they do things and why, and then designing automation tools to improve those processes. "Initially we looked at manual-intensive work like massaging data, or using spreadsheets for things that could be done more effectively with other tools," Gette explains. "We worked to integrate the right systems, create the right bridges between systems, and really take a lot of the manual work out of what needed to happen."

"Since the self-service portal went live, we're seeing 2,000 fewer tickets per month. That happened almost immediately, which has been great."
That produced a number of immediate benefits—for example, it has streamlined financial reporting. “Just from a finance perspective, reporting happens at least 50 percent quicker, and we’re closing the books month to month 70% faster than we were before,” says Gette. But he also points out it’s not just about streamlining an operation. Customer onboarding is a good example. Gette says, “People used to fill out paperwork, and that information had to be uploaded to another system. It was slow, labor intensive, and there were too many places to lose information.” Automating that process not only streamlined it, but provided a way to make more use of the customer data to deliver more personalized service. “Onboarding customers is faster, we can now easily find any relevant information around a membership, and it allows us to create a more sophisticated way to work that is based on better analytics,” Gette adds.

Another example of a collateral benefit of automation comes from the new self-service portal club members can use to review their account, pay bills, register complaints, set preferences, and more. This had an immediate operational benefit of reducing service-desk calls. “Before the self-service portal went in, we were consistently running 5,500 to 6,500 tickets a month. Since the portal went live, we’re seeing 2,000 fewer tickets per month. That happened almost immediately, which has been great,” says Gette.

“Now we are gathering real data about how you actually utilize the facilities, and we do a better job of shaping a more unique and engaging experience around those areas of interest.”
Although automation streamlines operations, it can also have collateral advantages, such as adding value to core business offerings.

Beyond that operational benefit, however, the self-service portal has enabled the club to provide better service. “Now we are gathering real data points about how you actually utilize the facilities, and then we do a better job of shaping not only the marketing and sales outreach campaigns around those specific areas, but when you’re in the club you have a more unique and engaging experience around those areas of interest,” he explains.

He sees opportunities to automate processes that will improve inventory management and control, and other business areas as well. It’s a prioritization process that requires planning to tie those kinds of changes back to business goals, and then working with people across the organization to get their buy-in. “Ultimately we want to shape a very unique experience for our customers that includes both their physical experience in the club, and their digital experience,” Gette concludes.
“We don't have a crystal ball to gaze into the future. However, considering the level of innovation taking place in the business automation and management industry using ML, RPA, AI, and Low Code BPMS solutions, businesses can take advantage of these technologies to improve efficiencies, which will help them focus on delivering better customer service.”
For Valerie Vessey, efficiency is the chief benefit of business automation. “Any time you can automate anything and get the human touch out of it, you’re going to reduce or negate error,” she stresses. Automation also provides a streamlined foundation upon which a business can build to gain even greater capabilities. “Through good business processes, you can learn the most advantageous way to execute or bring something to market or create a new offer,” she explains. This applies to a whole range of areas including but not limited to product development, marketing, and even pricing.

Vessey, who heads small business operations and pricing execution, North America, at a leading online payment company, has found business automation particularly useful for marketing initiatives involving search engine optimization. “We can drive our future content based on what we collect,” she explains. “And in turn, it can drive what our customers are looking for.” Vessey and her colleagues measure their results with various types of paid digital campaigns and compare those results with performance on other channels such as email or direct mail. Whether they’re running an ad campaign or another type of outbound campaign, they can track the results and even optimize the campaign in real time if needed.

“Any time you can automate anything and get the human touch out of it, you’re going to reduce or negate error.”
Vessey has also found business automation instrumental in executing her company’s overall pricing efforts. “We are extremely customer-centered, so we have to have our customers top of mind in everything we do,” she explains. When it comes to pricing, the business cannot afford to make a mistake—it must be 100 percent accurate. Fortunately, business automation can help eliminate pricing errors that could negatively impact customer satisfaction. “I believe good business automation also drives accuracy, so it tends to eliminate mistakes,” Vessey says. This helps the company deliver a high standard of customer service to its clients.

One process Vessey would like to automate is business case preparation. “It’s one thing to complete a template,” she says, “but it would be another thing to be able to actually create something where you input specific variables and have the output be automatically generated.” It would be challenging for someone to sort through all of the necessary information, which would have to be customized for the business, in order to make this possible. First you’d need to have the research—the foundational information required to generate the analyses that are used to create the business case you would ultimately present to leadership for approval. “If someone could actually take that from end-to-end and not have it be 100 percent human touch through the entire process, I think they would probably be quite successful and sought after,” she says.

“I believe good business automation also drives accuracy, so it tends to eliminate mistakes.”
Vessey believes that artificial intelligence and machine learning will help her firm achieve even more impressive results with business automation in the near future. To this end, they’re creating a new tool incorporating artificial intelligence and social media analytics that they anticipate will give them better insight to aid in strategic decision-making. While they’ve only just rolled out the prototype, they’re very excited about its potential. In this way, Vessey and her colleagues are building upon the efficiencies they have gained through business automation to achieve strategic advantages as well, realizing even greater benefits for their company.

**KEY POINTS**

1. Business automation creates efficiencies that lay the foundation for future innovation of strategic benefit to the company.

2. Through business automation, a company can also increase its accuracy and reduce the instances of human error.
The greatest value in improving our processes comes from an end-to-end consideration. Restricting ourselves to isolated business process automation strategies reminds me that putting lipstick on a pig still leaves you with a pig.
MIKE WONS

CTO, State of Illinois

Mike Wons joined the State of Illinois in 2015 as the first state-wide chief technology officer (CTO). Focused on establishing and implementing the Illinois “FIRST” strategy for shaping the future of technology and innovation across Illinois, he leads all aspects of strategic technological execution by setting priorities for enterprise systems/software and infrastructure; evaluating current and future technologies; and most importantly, accelerating the execution of the state’s strategy by launching new innovative solutions at a rapid pace.

As CTO for the State of Illinois, Mike Wons believes business automation offers governments a powerful opportunity to create meaningful change in people’s lives. “When I went in, the state was made up of essentially 40 different businesses and each one of those businesses could operate autonomously,” he says. And, not surprisingly, a lot of duplicate systems had been created over the years, but Wons has been tackling the challenges posed by such outdated technology head-on.

“Our role is to enable innovation at these individual businesses and agencies,” he says. As most of us know from direct experience, many of the interaction points for government are very antiquated. “Maybe if you’re lucky you can fill out a form online, but when that form is received it’s printed out and then it’s sent to one department and then to another department, sent somewhere else, copied 27 times and stored,” Wons explains. This old-school approach results in an enormous amount of paper-based processes.

Our role is to enable innovation at these individual businesses and agencies.
Upon encountering this challenge, Wons said, “OK. There are some really simple things you can do to automate paper processes.” Applying the principles of the lean organization and the concept of business improvement to initiate a change, he launched a program called Rapid Results. “We educated 500 different people in government across the state,” he explains. “They came together with their individual work teams to solve common problems. When we looked at what the teams came up with, we found that 95 percent of them wanted to automate paper-based processes.”

Wons believes that it wasn’t the processes themselves that were broken—it was that the technology was not allowing government employees to do their jobs better. “The state police processed something one way and then if you went into the Department of Public Health you’d find that they were processing something a different way, even though they were both doing the same thing,” he explains. Fortunately, Wons and his colleagues were able to generate several best practices for how to harmonize these disparate processes.
Wons and his colleagues also launched an initiative called Going Mobile in Illinois. When they started the project in 2015, only 1 percent of citizen-interaction points were mobile-enabled, which meant that people had to pick up a phone, go to an office, or send a form in the mail to do anything. “So we went down this path of mobile-enabling all the citizen-interaction points and we’ve made tremendous progress. Ninety-seven percent of our websites are now mobile-enabled,” he says. And now, Illinois residents can access the information and services they need using their mobile devices.

Ultimately, Wons believes that business automation is not a destination but a journey. If your organization can show incremental wins in a quick time frame, it provides the momentum for even greater successes, and then he says, “I think you have a unique opportunity to make change.” This is how he has approached automation initiatives in Illinois, making government services more accessible and streamlined for both government employees and the citizens they serve.

**KEY POINTS**

1. If processes aren’t working efficiently, technology might not be enabling people to do their jobs as effectively as they could.
2. Business automation is a journey, not a destination. At the beginning, you build momentum by achieving quick wins.
A company with strong automated processes will be more innovative than its competitors, resulting in greater value for its customers.
Quite transformative,” is the phrase that Todd Simpson, chief information officer (CIO) of the US Food and Drug Administration (FDA) uses to describe business automation. He should know. Since he began working with the FDA, he's helped to automate numerous business processes.

For example, one of his earliest projects involved shadowing California cabbage inspectors to really understand the seal-of-inspection process. “I saw inspections from beginning to end,” Simpson says. “It was very telling because inspectors carried green books, and there was water dripping on the pages, and the pens would stop writing. It was just a mess because everything was wet.” Simpson also noted that customers often asked to see the results of a previous inspection. The inspector would make note of the request and then go back and try to locate the old report in an enormous paper warehouse filled with reports.

Since then, Simpson has automated the entire seal-of-inspection process. “We've fully automated that entire inspection process from end-to-end. Within just a couple of years, we’ve amassed almost 30,000 electronic inspections.” This has enabled inspectors to perform more checkups, but that is only part of the story. The new digitized records have improved report accuracy and resulted in better customer communications. Now when a customer asks for a past report, the inspector can produce it immediately.

“We've fully automated that entire inspection process from end-to-end. Within just a couple of years, we've amassed almost 30,000 electronic inspections.
Automation has also strengthened collaboration between agencies. The FDA often receives requests from US Customs and Border Protection (CBP) to investigate suspected contraband. Simpson is implementing an electronic interface between the FDA and CBP. This interface automates auditing and tracking of contraband items that are intercepted by CBP. “It’s all electronically tracked, so we can more rapidly move on that contraband,” says Simpson. “The system, which we call ACE, is our interconnected presence with Customs and Border [Protection]. It enhances our regulatory presence on intake and allows our staff to have all the data at their fingertips when operating at docks and warehouses.”

An unexpected benefit of automation is a strengthening of the collaborative spirit. “It’s always been there,” says Simpson, “but as we run up against more constrained resources, we have to find ways to extend ourselves through shared services. Automating businesses has been the mechanism that we have used at the FDA to build trust with our user base and to get more opportunities to go deeper into other areas of the business.”

One area of automation that has helped facilitate automation itself is application containerization and configuration management automation. “We’ve deployed nearly 400 automated containers, and we’ve also rolled out an auto-compliant service desk tool that has automated a lot of our interconnection points, as well as dozens of products that have automated our monitoring capabilities, our security vulnerability scanning, our training, and all of the downstream processes,” Simpson says.

“As we run up against more constrained resources, we have to find ways to extend ourselves through shared services.”

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“From a self-service standpoint,” he explains, “I’m tracking 3,591 automated configurations, where we’ve used a tool that allows users to click a button to spin up an entire environment and then load data into our configuration management database. That used to require four or five people working for several days. We’ve reduced that down to hours and with very little manual input.”

According to Simpson, 7.2% of the FDA’s applications are in the cloud. “We did that with the help of automation,” he says. This has enabled the agency to redirect resourcing to the cloud, and to operationalize some of the cloud management that needs to be done. “I’m confident that we’re going to move in the direction where we have a lot more automation in our traffic management and in our network optimization,” he says. “We spend a lot of time manually configuring things. Software-defined networking will relieve that burden.”

**KEY POINTS**

1. Digitized records improve report accuracy and have resulted in better customer communications so that a customer request for a past report can be filled in real time.

2. One area of automation that has helped facilitate automation itself is application containerization and configuration management automation.
Automation is a fantastic opportunity for streamlining and ‘de-frictioning’ customer experience. The problem is that you should only be automating after making sure the process or experience is as good as it can be beforehand. If you automate crap you just get fast crap.
Thanos Lagios believes that as business automation becomes more commonplace in the business world, it is profoundly changing business operations. “In the last few years, automation has become approachable to a lot of organizations that didn't have the technology or the knowledge to embark on something like this,” he says. Now that more businesses have the capability to pursue business automation initiatives, they are noticing its impact in two areas: change management and business productivity.

“The first and foremost thing that I've observed, from a change-management perspective, is that companies are organizationally shifting,” says Lagios, who is head of rapid automation at Allianz Global Corporate & Specialty. Some employees may harbor concerns that robots are quite literally coming to take their jobs. “It's hard to think of something that may be able to replace you or something that does things faster than you as non threatening,” he explains. This is especially true for experienced professionals who have been with the company for a long time or who manage large teams.

“At AGCS, the message is that automation is here to help you.
But by paying careful attention to change management, a business can show its employees how automation enhances their jobs. "At AGCS, the message is that automation is here to help you," Lagios says. "It's here to take away those repetitive tasks and those menial, tedious jobs that you do on a day-to-day basis that take up 20 or 30 minutes of your time and add up over the course of a week or a month to something that is wasteful." He adds that by preparing the marketing and the communication on automation in a very friendly and inclusive way, businesses can gradually transform the concept of change into a norm rather than a feared outcome.

Business automation also boosts business productivity. "Once you've removed the burden of repetitive, time-consuming tasks from the staff," he says, "you have more time for your people to focus on the customer relationship, product innovation, or new technologies. Then they can actually give you more value." For example, Lagios's company already has about 80 bots performing tasks that were previously carried out by humans. "We've noticed that already deployed BOTs are providing a faster turnaround and that data is flowing in synchronized fashion," he says. "We found that timely collaboration and communication with IT was integral to our success."
Lagios's firm found that collaboration and constant communication with all parts of the organization, and specifically IT was integral to success of the department. Ensuring there is buy-in across the technical and business teams is required in order to avoid delays and to provide the maximum business benefit. To that extent, the sooner the teams are brought in, the better. Operating procedures and governance is mandatory, not only for compliance but for transparency to the business.

Any business pursuing business automation can expect to experience changes in two areas: change management and business productivity. By including employees in the process and showing them the benefits that automation can bring to their work, it can ensure greater staff buy-in for future changes. And as the business becomes more efficient, it will be able to maximize its employees’ talent. Ultimately, says Lagios, “It is about making the company better at what it can do.”

KEY POINTS

1. Business automation brings significant change to an organization while also generating increased productivity.

2. By including employees in the process, companies can ensure greater organizational buy-in for a business automation initiative.
Business process automation has allowed our organization to improve our customers’ experience dramatically—providing them with actionable data—sourced across disparate systems in hours or days instead of the weeks or months traditional software development initiatives offered.
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THE BUSINESS AUTOMATION WISH LIST

In this Section...

Dmitri Poukhovski
Business Automation Brings Efficiency, Accuracy, and Speed..........................29

Mike Huskins
Improving Customer Satisfaction Through Business Automation........................33

Ratnesh Sharma
Critical Customer Insights Can Only Be Gained with Automation.......................37

Peter Malek
Focus on Automating High Volume, Error Prone Tasks........................................41
For Dmitri Poukhovski, business automation involves first and foremost taking a manual process and transforming it into a faster, more efficient automated process aided by technology. He's already achieved this goal through several projects spanning multiple business areas at Parallels, where he serves as VP of operations and IT, as well as head of HR. One example of a successful business automation project Poukhovski recently undertook was in his HR role. Certain HR activities, including recruitment, originally relied on what was essentially a manual handoff between different business units. Now, says Poukhovski, “We get much quicker results as we go throughout the entire recruiting process, from creating the job description on to the interview loop—bringing the candidate on board, screening, and things like that.” His HR systems analyst is almost finished migrating all of their manual HR business processes. The updated, automated processes will now be natively served by a platform the company uses, which was the end result Poukhovski and his colleagues had hoped to achieve.

“This, to me, is what process automation means. It's basically how to take things from a manual process into an automated process where they make sense.”
Once this newly automated HR process is in place, the relevant staff will be able to issue automatic notifications related to recruitment and perform the right workflows as needed. “This, to me, is what process automation means,” he says. “It’s basically how to take things from a manual process into an automated process where they make sense.”

When thinking ahead to the cutting-edge technology that will one day power even better automated processes, Poukhovski says, “Blockchain is an ultimate process automation horizon that I’m sure we’re heading towards. But this horizon is still quite far, and we’re not yet in the running for that horizon, specifically from the technology side.”

In the future, Poukhovski hopes to automate how the company tracks its vendor relationships to better understand which business units are using certain services and how they are ultimately benefiting the company. “This work is already helping us shine the light into the corners that we were just way too busy ever to look at,” he says. For example, they may find that the accounting team assigned incorrect categories to certain charges because the original process was unclear. As they are reviewing how the company tracks these vendor relationships, Poukhovski and his team are uncovering several such inefficiencies that they can address to make the overall process function more effectively in the long term.

“This work is already helping us shine the light into the corners that we were just way too busy ever to look at.”
For business automation to achieve its full potential, Poukhovski believes that leadership must have a clear understanding of its benefits and be fully sold on the project. Often the teams have a strong understanding of what’s happening, while several layers of reporting separate them from the decision-makers. “The core of the business automation should start with the leaders just getting out of their offices and spending real time with the teams,” he emphasizes. “They should listen and absorb the truth, independent of whether they agree with it or not.” This way, leadership can gain a true understanding of what a business automation project’s impact will be and the company will be that much more likely to succeed in its automation endeavors.

KEY POINTS

1. Business automation gives a company the advantages of greater efficiency, accuracy, and speed.

2. Leadership’s understanding of the company’s business processes can have a great impact on the success of a business automation project.
The best piece of advice I can give somebody who is implementing a large business automation project is to ‘improve before you implement.’ In other words, before you automate a process ensure that you improve it to the point you believe it is as effective and efficient as you can get it. If you automate a bad process you simply have an automated bad process, which doesn’t help anyone. I would also recommend that the focus always be on the customer. In the end the automation should be put in place to give an added benefit to the customer, often in terms of speed and/or quality. I have seen some organizations lose focus of that and solely look at the benefit to the organization and that normally doesn’t end well.
As head of product operations at Twilio, Mike Huskins has seen the benefits of business automation firsthand. “We’re an API company,” he says, “And because we’re a platform, our customers will often incorporate our processes into their workflows. What that means for our customers is that rather than having to enter information into our portal manually, they can incorporate that API directly into their own process. That way they can eliminate the need for manual copy-paste work.”

When necessary to deliver services, Twilio will share this information directly with its carrier partners through an API, enabling a smoother onboarding process for Twilio’s customers. “Our customers are happier because the information flows through more efficiently with less lag time, and members of my team are happier because they’re not doing as much copying and pasting of information,” he says. Thanks to the time saved, Huskins and his team can turn their attention to automating other processes to further enhance the customer experience and optimize their business. “Each incremental improvement powered by automation frees up capacity for our staff to take on new requests for our customers,” he explains.

“Each incremental improvement powered by automation frees up capacity for our staff to take on new requests for our customers.”
Huskins sees continued benefits from automation. “In terms of focus, I like to make things more self-service for customers, particularly around work intake,” he says. When work intake is not automated, the customer has to send a provider an email with a request and then the provider responds with an email saying, “Sure, we’ll do that for you. Here’s the information that we need.” A lot of back and forth often ensues in which miscommunication may arise or only partial information may be shared, which creates more work and an unnecessary layer of friction.

This is where Huskins thinks continued automation could help. “One of my beliefs around operations is that if the process starts off well, it tends to run smoothly. If things start off on a rocky footing, however, nothing gets better through the rest of the process,” he says. If Huskins and his team use automation to improve the customer request process from the beginning, he feels they could make the entire process flow efficiently from end to end. This self-service approach is also likely to appeal to Twilio’s customers, who tend to be software engineers that enjoy working as productively as possible.

“The faster that we get these things done the sooner we start to get revenue, so there certainly are business-model benefits from our automation.”
Advances in automation help Twilio’s bottom line, too. “The faster that we get these things done the sooner we start to get revenue, so there certainly are business-model benefits from our automation,” he notes. In some cases, Twilio customers can’t start using certain services until provisioning is complete, and they themselves may have end customers who don’t start paying until everything’s working, which means no revenue comes in for anyone until provisioning happens. “There’s definitely a time-to-market aspect, where the more efficiently and faster we can get these things completed the faster everybody’s up and running and the faster everybody’s making revenue,” he explains.

Having already reaped powerful benefits thanks to automation, Huskins aims to continue leveraging it for strategic advantages in the future. In this way, he aims to deliver Twilio’s clients an excellent customer experience that inspires greater loyalty while laying the foundation for further innovation.

KEY POINTS

1. Processes that begin inefficiently tend to continue that way, so it’s beneficial to optimize them from the beginning using automation.

2. Automation can also help businesses achieve faster time to market, ensuring greater customer satisfaction while driving revenue.
Companies that bring their business process management and digital transformation efforts together across their business ecosystem can harness more value for their customers and employees, and drive desired business outcomes.
Customer analytics has changed drastically since data scientist Ratnesh Sharma worked as "a spreadsheet guy" on Wall Street doing financial and business analysis. Compuware, where Sharma now heads sales operations and business intelligence, resells mainframe software. Until a few years ago, it produced its solutions using the waterfall model of sequential software design and released them roughly once a year. More recently, it has transformed its processes. "Now we are completely agile," Sharma says. "We are delivering new offerings to the customer every quarter."

A key company goal these days is achieving what Sharma calls “the ideal scenario”—automated real-time collection, processing, and analytics of Compuware's extensive customer-data feeds. Gaining insights from that information is key to making smarter business decisions, improving revenue and productivity, and meeting customer experience goals, he says. And it's a huge task. "We need an infrastructure that supports our real-time analytics," Sharma notes. "Automation is the key here."

"We need an infrastructure that supports our real-time analytics. Automation is the key here."
The company has made strides and automation has helped, even in its embryonic state. For example, Compuware clearly better understands its customers. It has cleaner insights, into which of its software features are most valued by customers and has reacted accordingly. Traditionally, the company’s software was loaded with features, but data analytics demonstrated how inefficient it was. “A good percent of those features was never touched or used by the customer,” Sharma points out. Now Compuware has a better read on which features to include and which to leave on the cutting-room floor.

The picture is improving, yet much remains to be done. Compuware wants to use more real-time analytics to gain comprehensive views into the data streams of its various business departments. Some commercially available solutions can help move in that direction by fostering machine learning and artificial data intelligence, but as a whole, that market remains immature. “You will still need a lot of customization,” says Sharma. “You have to look for a combination of products to get hold of the solutions.”

“This urgency of supplying the real-time data, and running analytics on top of it, is very critical.”
As the data scientist responsible for running and reporting analytics to management, Sharma speaks with authority on his company’s hunger to resolve the automation puzzle. “This urgency of supplying the real-time data and running analytics on top of it is very critical,” he says. “I would say that the more we automate these steps—the more we get those tools that help us automate the processes involved—the more efficient we will be.”

Every company wants to understand how and to what extent customers use their products. In Sharma’s fiercely competitive market, it’s no longer good enough to run end-of-the-month data analyses and poke around for red flags.

Automation is the only way to truly get beyond that. “This is something that, I believe, is the most critical factor,” Sharma concludes. “It’s going to be a key component for any company that wants to be successful in winning or retaining its customers.”

**KEY POINTS**

1. Automated real-time collection, processing, and analytics is the ideal scenario.

2. Automation depends on more real-time analytics to gain comprehensive views into the various business departments' data streams within an organization.
Integrate. The most important thing to consider when implementing a large process automation project is not to duplicate your data repositories, and to integrate throughout the enterprise architecture and between legacy systems. Make sure that you have one source of truth for the data, and that you are using it for your automated process (not talking about data security and backups). If in some cases the data is needed in another form or format, do not just create a new source and duplicate everything to it, you can use ETL integration (Extract, Transform, Load) and connect it to your automated process. An integrated process automation project would allow better data quality in the entire enterprise and support your strategy in decision-making.
VMware leader Peter Malek became a strong believer in business automation tools after the company streamlined its opportunity management process. The implementation of a robotic process automation solution at VMware freed up half the number of resources assigned to that work. “We were able reassign 8-10 resources in under 60 days with the help of robotic automation,” says Malek, director of process performance and operational excellence.

Malek’s team has automated keying and rekeying of data across multiple systems and information sources, replacing manual and standardized tasks involved in processing more than 1,000 orders a day. Shared services representatives once spent roughly 20 minutes per order while working rotating 24-hour shifts. With automation the amount of time required for orders dropped significantly (3-4 min per order), as did the resources required to support the process.

Malek contrasts robotic automation with other business management solutions, which monitor performance and progress against some basic measures. “Robotic process automation is not about tracking where the work is in the flow. It is about performing the work,” he says. “That’s not something that a business management solution can perform.”

Robotic Process Automation is about introducing a virtual workforce integrated with existing skilled resources. Automation isn't about replacing jobs with robots. We'll still need experts and people with knowledge and experience.
The role of spreading business automation in VMware is assigned to Business Transformation and Automation (BTA). Working as the internal consultants, BTA partners with business units to enable transformation and automation using a capability and process led approach in partnership with business IT and the Information Innovation Center. One of the services BTA provided was to drive efficiency and effectiveness is through use of “business process excellence.” The BTA developed the methodology for business process excellence by pruning best practices from Lean, Six Sigma, Agile with Scrum, Theory of Constraints, and Design Thinking. In the first year of introducing process excellence methods and frameworks across the business, BTA was able to achieve and measure more than five million dollars in combined saving, cost avoidance, productivity gains, and revenue generation from grass roots efforts alone, demonstrating the power of process excellence put in the hands of individual employees.

Malek’s team focuses on four facets as part of building a community and culture of process and operational excellence. The first is building the capability and capacity across the business to employ process-excellence principles, methods and tools. The second is providing surge support, training, mentoring and coaching for those efforts. The third focuses on innovative capabilities to document and manage core business processes, and automate tasks. And finally, adoption of a standard benefits and value realization framework measured the process transformation impact for the business and customers alike. Combined, these facets are applied to enable the transformation of existing, and design of new, processes in a rapidly evolving business that requires continuously improving and transforming to meet business and customer needs.

“In an SaaS environment people want to access capabilities, information and services as quickly as possible. This is another area where automation becomes more critical to customer experience, customer satisfaction, and compliance.”
Deciding which processes to automate becomes an important question because it must make economic and business sense. Malek says that high-volume tasks and those with little room for error appear ripe for automation.

VMware still has many processes requiring manual handoffs across multiple stakeholders, systems, and a highly customized application environment. “Streamlining those processes and minimizing the errors will drive operational efficiency and allow the company to set employees minds and time free to tackle problems that require real thinking and innovation,” he says. “We can also realign resources to areas where we want employees to spend their time.”

Malek sees robotic process automation as a key component of a digital transformation roadmap that will connect with machine learning and natural language processing. Artificial intelligence will eventually be added to the mix. The goal of robotic process automation is to repurpose employees’ time toward helping the business grow, innovate, and tackle complex challenges. It is about introducing a virtual workforce integrated with existing skilled resources. “Automation isn’t about replacing jobs with robots,” he notes. “We’ll still need experts and people with knowledge and experience.”

KEY POINTS

1. Deciding which processes to automate becomes an important question because it must make economic and business sense.

2. Business Process Management is about tracking where work is in the process including measuring performance, whereas robotic process automation is about automating the actual tasks being performed in each of the steps of the process workflow.

3. Automation can lay the groundwork for a smoother transition to a new business model that is operationally efficient and effective and allows for scalability as part of managing increased customer demand and growth.
CA Automation

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BEST AND WORST PRACTICES IN IMPLEMENTING BUSINESS AUTOMATION

In this Section...

Ed Rybicki
Measure Automation Success in Terms of Total Business Value.................................................46

Jay Hemmady
The Secrets to Business Automation Success—and Failure.........................................................50

Deborah Fritz
Business Automation Requires Effective Change Management....................................................54

Gary Tully
People and Design Are Key to Automation...............................................................................59

Sherif Mityas
Serving Up Change While Strengthening the Brand......................................................................63

Kevin Price
Automation Frees Up IT to Focus on Operational Needs...............................................................67
As a global company heavily focused on finished food testing, Merieux NutriSciences depends on accurate, quality testing processes to meet its business objectives. Ed Rybicki, chief information officer (CIO) at the company, believes process automation is key to being able to meet the demand for its services and maintaining or even improving test quality. “Globally we process millions of samples each year. Handling that volume of tests and being able to ensure high-quality results would be very difficult without extensive automation,” says Rybicki.

Although some aspects of testing for biological and chemical agents cannot be automated or accelerated, many mechanical processes, data capture, and data processing are highly automated. This makes it possible to pinpoint problems more quickly, including contamination or disease, and identifying sources in ways that help prevent bad things from spreading. Rybicki sees further advances in automation, particularly around data capture and processing, as important to refining testing programs further. “We know there's an untapped mine of intelligence there,” he says. “By pulling more data together and analyzing it in different ways, we hope to use predictive analysis to identify new patterns.”

“"We have to have clear goals, desired outcomes, and we have to all be aware of what those are internally in order to know if we're doing the right things."
Rybicki has had a lot of experience in transforming businesses through automation in recent years because Merieux NutriSciences has recognized the strategic importance of IT and automation to its business. “We have great alignment on this from the top executives on down to the leadership committee and operations,” he comments. “Our company definitely looks at it as an advantage.”

When rolling out new levels of automation, there are important steps to take to help ensure success. One key part of this is aligning the automation project with business objectives to make sure the goals are understood in terms of the value they bring to the business. Rybicki explains, “We have to have clear goals, desired outcomes, and we have to all be aware of what those are internally in order to know if we’re doing the right things, putting our money in the right places, and measuring ourselves to get the right results.”

Rybicki also says that they are increasingly looking at automation in terms of the total value it brings to the business. “If we want to implement a new lab system, what do we expect out of it? Is it, for example, a 20 percent better quality rate? Is it a better turnaround time? Those kinds of metrics should be how we stay aligned, not just say, measuring only on time and on budget. I’ve been involved in plenty of projects on time, on budget, and they actually don’t provide any great value to the business,” he says.
Another element that is critical to the success of automation is getting users to accept the change. “I was involved in one project we all thought was a great success,” Rybicki says. “The implementation was on time and under budget, and everything worked great. But a few months later we weren’t seeing results. We found that our employees still had challenges in using the solution. They were still using aspects of their manual process. Human change management is an essential part of successfully automating a business.” For many global automation projects, it makes sense to start locally or regionally and scale incrementally, Rybicki advises.

**KEY POINTS**

1. Always align the automation project with business objectives to make sure the goals are understood in terms of the value they bring to the business.

2. Automation typically involves changing the way people work. Human change management is an essential part of successfully automating a business.
When performing a business automation project, choose the most flexible tools to support the transition. The challenge with implementing business process automation is that the form, fit, and function of the automation process may closely fit the specific needs you're addressing today but not be the right method or steady state in your organization's immediate or mid-range future. Choosing a flexible set of tools allows responsive design to changing goals or requirements.
Jay Hemmady’s firm, third-party logistics provider OIA Global, recently automated several business processes using a custom platform it built in-house. To ensure success, Hemmady and his colleagues examined how software was developed elsewhere, learned from others’ mistakes, and gained the knowledge to execute their project the right way.

“Before we began the custom software-development project, we found several examples of poorly executed custom software. If there were an eBook on how to do things wrong, we would have written a very fat eBook: The Secrets to Failure. We now know how to do it correctly and succeed,” he says. Here are some of the best—and worst—practices he has encountered along the way.

“Most automation projects that fail tend to be treated as an IT project driven by the IT organization,” Hemmady says. “That is not the case. That’s almost like going to the doctor and saying, ‘You’re the doctor, tell me where it hurts.’ The doctor can’t tell you where it hurts.” Unfortunately, he says, this is often the dynamic in ERP business automation projects: The business, rather than identifying its own needs and requirements beforehand, tends to rely too heavily on IT from start to finish, with mixed or unsatisfactory results. Companies striving to ensure success with their next business-automation project should avoid viewing it strictly as an IT project.

Most automation projects that fail tend to be treated as an IT project driven by the IT organization.
Businesses should also recognize that business automation introduces a great deal of change to an organization. Hemmady therefore advises that companies don’t overlook change management when undertaking a business automation project. “Change management really means that here are a group of people who are doing things one way, and tomorrow they’ll be asked to do some things differently,” he explains. “People will be threatened, people will be uncomfortable. You have to prepare them for change and carefully guide them through it.” When not correctly planned and executed, change management or transition management is often a key reason a very successful product is rejected after it has been implemented, creating the perception that the project has failed.

Executives’ comfort level with change can also impact a project. “An executive team that is unable to trust a group of strangers to execute the project will always be suspicious,” Hemmady comments. “They’ll always want to micromanage things and do things their way.” In that situation, the group in charge of the initiative needs to take proactive steps to build trust. One way they can do this is to undertake a small piece or phase of a project, perhaps a pilot, to demonstrate their competence. They can then earn the trust necessary to move forward with the enterprise as a whole.

“People will be threatened, people will be uncomfortable. You have to prepare them for change and carefully guide them through it.”
Every business faces challenges when undertaking as complex and mission-critical a project as business automation, but smart, proactive planning can minimize the risks involved and prepare the organization for the changes that will come. When that project is successfully launched, the company can build on what it has learned to implement further improvements and advancements that benefit the organization even further.

**KEY POINTS**

1. Organizations should not look at business automation strictly as an IT project but rather as a business-focused initiative involving technology.

2. Change management is a critical and often overlooked component of business automation projects that strongly affects their success or failure.
Business automation can impact your business both positively and negatively. The positive impact is seen when we follow the process steps of eliminating, reducing, and then automating. Conversely, the negative impact is seen when we take a complex problem and wrap a complex automated solution around it. The best advice I have for someone implementing a large business automation project is to ensure that you have taken the process first to its simplest form by working backwards, focusing on flow from the meeting point of your customer and your employees, and then moving that to the needs of the business. Once the process is at its simplest form and there is nothing left to eliminate, then you are ready to automate. There are massive advancements in the world of technology ready to be used by all, and through proper implementation techniques, companies can reap the amazing benefits of process automation.
Deborah Fritz has led several high-profile sales-operations automation projects at Acxiom, first in Europe and now in the United States. Ten years ago, she says, “we probably got about 90 percent of our market and client intelligence from the minds of our sales team, and we consistently heard our reps say that they were spending too much time with internal processes and not enough time with their customers.” Data collection was highly manual, prone to error, lacking consistency and ultimately difficult to interpret and respond to for the organization overall. The process wasn’t working for our sales teams, and it wasn’t working for the business. To make the information truly useful for senior management, she explains that it was clear several things needed to happen:

a. Capture data at the right time in the right place: information needed to be properly centralized and automated.

b. Only ask for data that matters: consistent definitions and metrics needed to be prioritized and agreed.

c. Automate where possible, ensure efficient workflows where not: sales teams needed to buy into the method and execute on the agreed data framework.

“We sat down and made sure that we all had one source of truthful data that we were all making calls on.”
She elaborated that, “As technology has evolved, we’re able to source many of our signals from automated AI and interpretive analytics. This has enabled us to transition to a much better system in which the business uses concrete, shared metrics from a broader base of platforms and people. This in turn has enabled the company to focus its resources on areas with the greatest strategic business value. The (wasted) time we used to spend on reconciliation and version control can be reinvested into much more valuable conversations around managing risks, realizing opportunities and ultimately revenue growth. The automation allows us to accurately identify higher-value transactions, and most at-risk opportunities as well as focusing on outliers and areas for coaching,” she explains.

To accomplish this goal, Acxiom first had to establish what sort of data the business would use to analyze risk and opportunity so it could make better informed, more effective decisions. “We sat down and made sure that we all had one source of truthful data that we were all making calls on. In doing so, we shored up the things that were known,” says Fritz. “Once we all agreed on what was objectively known, automated analysis meant we could focus our time on managing risk and opportunity. It enabled us to have a much more intelligent, action-oriented conversation with our stakeholders.” These outcomes represented a significant change in the way senior management interacted with our sales teams. “A lot of people are naturally resistant to change and technology, and they need a lot of attention during the change-management process.”
When pursuing a business-automation project, Fritz agrees that it is clearly important to be sure that the change truly increases the efficiency of the processes in question and delivers tangible value to all participants, rather than being a poster IT project. “It’s easy to get bogged down in system design details or the search for an ultimate all-encompassing automated process, catering to all eventualities. That will generally take too long to build. Rather you want to make sure that what you have is aligned to the key objectives and the metrics that you are all working towards,” she says. “It’s also important to prioritize the availability of leading metrics not just lagging metrics. The business can respond to forecasts whereas it can only report results. All of these things should be visible so all participants can see how the change affects the priorities that your collective business units are managing within themselves too.”

Returning to the initial insights, without staff buy-in the automation project will quickly prove ineffective. Results of an automated process, no matter how clever the AI, are only as good as the data fed into it. It’s therefore crucial to explain to your employees how the project will enhance their work, taking care to solicit their feedback while also clarifying what will be expected of them. It is far from given that the user base (in our case, the sales teams) will automatically see the value of the changes. Often they interpret is as either a lot of new work with unclear benefits, or worse they see it as a means of making them changing their behaviour from an established process to a new, untested process which potentially highlights shortcomings in their own activities. Therefore the automation process must clearly highlight the benefits, listen and incorporate user feedback into your design and your training. Ultimately as an agent of change, you are responsible for ensuring that the change you’re introducing truly adds value to all participants in the process. "A lot of people are naturally resistant to change and to technology, and they need a lot of attention during the development and roll-out,” says Fritz. Accordingly, they need to be reassured that the new process will enhance their workflow, be easy to use and that you have demonstrated you understand and are acting on their feedback. This includes staying with them throughout the journey, from requirements to implementation. "A single training event or webinar doesn't really have significant impact, and it definitely doesn't give the salesperson the tools they need to be successful in adapting and adopting the tool," she continues. You can do this more effectively by offering ongoing one-on-one coaching sessions to train them in the new process using data that's directly relevant to their role, preferably in a live environment so the training process adds value to their work product. 

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56
Business automation projects can create tremendous value, but they require long-term planning and a senior commitment to change management. Along the way, Fritz has found that the keys to success lie in establishing commonly shared, objective metrics and guiding employees through the process of change. By addressing those requirements, your business can ensure a smoother transition to a new automated process and, with it, a greater likelihood of accomplishing its ultimate goal.

1  For a business automation project to succeed, the business must agree on and define its success metrics.

2  Results of an automated process, no matter how clever the AI, are only as good as the data fed into it.

3  A commitment to change management and adoption is important for any business automation project.
Eric Lussier
Vice President of Steel / H&H Business System, Steel Partners and Handy & Harman

"Single best piece of advice—never automate things until after you have worked to improve them. Eliminate the waste first, simplify the process, standardize the process, and then and only then, look at automating. Otherwise, you run the risk of systematizing the waste in the process and sub-optimizing."
Efficient business processes are at the core of Gary Tully’s role at Gilead Sciences, where he strives to ensure that the company spends its money wisely and the labor resources that go into processing invoices are allocated as effectively as possible. “Business processes are connected to two other critical areas that you need to pay attention to: the people aspect and the technology,” he says. “Automating manual processes is one thing, but having automation in and of itself does not create an efficient business process. The people element and the process design are key, in my mind, before you look at a technology.”

When considering the people aspect, it’s wise to begin by identifying who owns the process. If no one has this responsibility, then no one is charged with making sure that it’s running well. At times, you might have to work with management to identify who’s accountable to that process. Then, as you go through a requirements-gathering phase, you might find that the stated requirements contradict one another. You might also encounter people who don’t agree with you. “A lot of times in my work, I find that when I go and look at a process, I discover first of all that nobody owns the process, but everybody is using it and everybody has an opinion of how it can work better,” Tully comments. 

“The people element and the design are key, in my mind, before you look at a technology.”

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GARY TULLY

As director of legal operations at Gilead Sciences, Gary Tully is responsible for legal-spend management, legal technology, and operations management. He has more than 25 years of experience in strategic-operations improvement, using a variety of techniques involving strategic planning, process improvement, and technology. Previously, Tully served as senior director of legal operations at Qualcomm Incorporated, where he established the Legal Operations organization. He holds a BS in Computer Science from California State University and an MBA from Pepperdine University. Tully is affiliated with many industry organizations, including the Association of Corporate Counsel Legal Operations, Corporate Legal Operations Consortium, and International Legal Technology Association.
The first step, then, is to define the process owner. Once this is done, Tully suggests engaging with that person and others involved in the process to gain a clear understanding of how the process currently operates. "I typically draw process maps," he explains, "and those become the basis for talking about how that process should work. Then the group has to decide on the best and most efficient process." Tully notes that the process owner has a key role to play, ultimately making the final call on how the process will operate going forward. "While I have a lot of expertise in the way legal functions operate, I don't claim to be the expert in any of them. I look for the process owner to be that expert," he says.

Having the process owner assume this leadership role is also helpful from a change-management perspective, Tully notes. "When we change to a new process, it's better to have buy-in from the business owner of that process, and from the people who will be using it." Since there can be many people connected to a business process, it's essential to have those people fully understand it. When automating a manual process, having people who are integral to the business functions involved from the very beginning improves automation decisions and smooths the transition to process automation.
Business automation is a tremendously worthwhile endeavor, but it requires more hands-on work with people than you might immediately assume. Although technology is a central component of any business automation initiative, it will only be able to deliver maximum value to the business after you’ve engaged effectively with the people involved in a process and clarified how it should work.

**KEY POINTS**

1. Business automation is most effective when the people aspect and design are fully considered before technology changes.
2. Change management is also easier when the people involved in the process fully understand it from the beginning.
Process automation has provided our business with a simplified but transformational user experience. This is reflected in both the external client and internal team member UX. Not only are things more clear and consistent, the controls lend to evidence of service and delivery. The added benefit internally is human capital management—the opportunity for team members to diversify with new skills or to more efficiently change up capacity models for a process.
TGI Fridays is a global restaurant brand with many stakeholders: customers, employees, and franchisees. All of these and more are affected by business automation projects from the central organization. As the chief information officer (CIO) and chief strategy officer, Sherif Mityas must ensure that changes to operations and customer-experience processes involving automation always lift the brand's reputation.

Consistency is key. "From a consistency perspective, we want to provide our team members in our restaurants, our servers, our back of house, our hosts, hostesses, as well as our guests, as consistent and high a level of service as automation allows us to provide," says Mityas. Reducing costs and improving efficiency through automation is important, but perhaps not as crucial as maintaining or improving the customer experience. "We still need that human element," he says. "How do you marry automation with human engagement, which is critical to our brand?"

"We still need that human element. How do you marry the automation with human engagement, which is critical to our brand?"
TGI Fridays already uses automation for basic operations, including servicing customers and rolling out recipes to kitchens everywhere in the world. “But those are table stakes,” comments Mityas. “To do something more, like social engagement, we could have an army of people monitoring Twitter and Facebook and Kik and Instagram, looking for anytime someone mentioned TGI Fridays, and being there to respond.” That of course would not be practical. “There’s no way we could get 100 millennials behind computer screens to be able to respond in real time, so we employ a chatbot, and we employ AI [artificial intelligence] on top of those chatbots so that they’re not just standard, rote responses, but actually our chatbots learn. They learn both contextually when someone’s speaking about Happy Hour versus your favorite drink versus do you have gluten-free menus, but they also learn the type of responses that a Twitter user expects versus a Facebook user, because there’s different conversations that occur based on the platform that you’re on,” he says. All of this provides better customer engagement and enhances diners’ connection with the brand.

“There’s no reward for speed. Your organization has to learn and the technology has to learn, and when they get out of sync is where you get in trouble.”
Reducing costs and improving efficiency through automation is important, but perhaps not as important as maintaining or improving the customer experience.

Longer-term automated and human interactions with customers will feed other processes. Mityas is careful to think about practical limits. One extreme example he has thought about is the ability for an AI system to take the personal order history and comments of a customer to create a customized recipe for that customer. While this sounds like an idea that would set TGI Fridays apart from the competition, Mityas says it would be an operational nightmare. To avoid potential damage to the brand, he initially prefers to test new automated processes at one test location only. If it is successful, it is then deployed to 10 to 20 stores before it is scaled up regionally and across the whole brand.

Protecting the brand is key for Mityas. “There's no reward for speed. Your organization has to learn and the technology has to learn, and when they get out of sync is where you get in trouble.” Avoiding problems is important to maintaining the brand. Incremental and tested changes in business automation are helping TGI Fridays improve operations and brand perception.

KEY POINTS

1. Reducing costs and improving efficiency through automation is important, but perhaps not as important as maintaining or improving the customer experience.
2. AI-powered social engagement can provide better customer engagement that enables customers to have a deeper connection with the brand.
IMTIAZ MOHAMMADY
CEO, Nisum Technologies, Inc.

If a business is not automating and has no future plan to automate, it will find itself bogged down with the mundane day-to-day tasks that will eventually hinder its growth. As businesses grow, they need to delegate work to be automated in order to focus on their core offering and values instead of wasting human capital and resources.
Kevin Price is an information-technology professional with more than a decade of experience in software design, architecture, project and resource management, security, and software development. He is passionate about security through automation (DevSecOps), operational consistency, technology trends, best practice, and cloud enablement.

When GE Appliances first began its initiative to automate as many business processes as possible, it found it did not have the tools or team structures to automate at scale. “The biggest challenges we faced out of the gate when we started automating some of our processes were infrastructure related,” says Kevin Price, the principal infrastructure engineer at GE Appliances. “We had a lot of options and tools, but when we tried to deploy those at scale, it created a lot of challenges for us.”

Moving to a cloud native approach for application development solved many of the infrastructure issues by providing a scalable platform and automating time-consuming integration, testing, and deployment functions that are part of the development process. This has allowed IT teams to focus on delivering apps faster and working more closely with business units to understand and fulfill their operational needs.
“We used to have a waterfall approach to application development. We would gather enhancements throughout a year, and it would take 12 months to deliver a project. As we’ve focused more on automation, we’ve shifted our project management methodology to be more agile,” Price explains. “We have freed up IT resources to work closer with the business side in terms of gathering enhancements.”

This has advantages for the IT organization and the business as a whole. “The relationship between our IT staff and the business has improved,” he adds. “We’re able to engage business resources to make sure we understand the requirements and execute on those faster. Having automated processes for management and deployment allows us to prioritize business enhancements versus focusing on infrastructure requirements.”

Price says that one mistake IT organizations make as they work to deliver on an aggressive business process automation strategy is focusing too much on end requirements and not enough on deployment. “When you do that,” he says, “you end up coming back to that same problem of potentially picking tools that don’t align strategically across the business for what you’re trying to accomplish.”

“All of your automation techniques come down to deploying new applications, so you need to have a business strategy for a consistent software development lifecycle.”
His advice for people getting started with automating business processes is to begin by defining their software development life cycle. "All of your automation techniques come down to deploying new applications, so you need to have a business strategy for a consistent software development lifecycle," says Price. "You have to define a continuous integration and deployment strategy. Once you have a strategic direction around software development, then you can make better decisions around products that help align your automation strategy with your technical stack."

Price says new tools are continuously improving software development and delivery. For example, advanced analytical tools can collect and analyze vast quantities of application usage data and identify enhancements that would make the software easier or more efficient for the end users. Analytics can also help prioritize enhancements. Price provides an example. “We had a request from a business unit to fix something, and we were able to correlate that problem to data that showed it only impacted less than one percent of users. The tool helped us see that this potentially difficult fix had little impact on our customers and didn’t need to be a top priority.”

Perhaps even more importantly, new application life-cycle tools can help provide strategic direction for implementing future business automation. “We’re gathering information about application deployment history, what’s in those applications as they’re deployed, and how they’re used. We’re starting to put that data into machine-learning algorithms to help us manage and plan future projects,” concludes Price.

**KEY POINTS**

1. One mistake IT organizations make when delivering a business process automation strategy is focusing too much on end requirements and not enough on deployment.

2. To automate business processes, companies need to begin by defining their software development life cycle. That includes defining a continuous integration and deployment strategy.
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In this Section...

Marcos Bueno
Automation Can Enhance Media Production and Consumption...............................................................72

Rodrigo Gonzalez Hermosillo
More Detailed Information Improves Automation Outcomes.................................................................76

Scott Andersen
Automation Is Improving Speed, Efficiency, and Security............................................................................80

Paul Hoffmann
Automation Is Like Industrialization Before and After Electricity..............................................................84

Ian Gordon
Using Artificial Intelligence to Transform an Entire Industry.........................................................................88

Brian Timmeny
The Speed and Agility of DevOps Makes Process Automation Possible.....................................................92
AUTOMATION CAN ENHANCE MEDIA PRODUCTION AND CONSUMPTION

Over the past six years, Marcos Bueno has been building Vox Media’s strategic capabilities for media technology. Leading the technical and physical design of Vox’s studio infrastructure, he understands that when building a modern media company, automation systems grant the ability to strike a careful balance between sustainability and scale.

Automation is having a big impact in media production, says Marcos Bueno, head of media technology for Vox Media, which does production work for a number of media brands. One example is automating the creation of closed captions for video. By using voice recognition technology, real-time transcriptions are made with over 90 percent accuracy and “baked” into published assets. This lowers the costs and makes it possible to add closed captions more easily to video. There are other benefits too, Bueno explains. “There's value in terms of video performance by committing to being more inclusive of broader audiences, creating something that's more user friendly for the social media type of content consumption, and making content more accessible to differently abled audiences. And with us shooting over 150 videos per month in NY alone, it’s the only way we can keep up with that scale.”

With metadata and digitized contracts, we’ll be able to automate permissions questions, like are we cleared to show a video or play a music track in a particular country.
Another way automation is improving media production is a system that translates high-resolution video to low-resolution, viewable proxy files that remote editors can use to make rough cuts. Those rough cuts then get automatically converted back to high-resolution edited video. “This allows us to facilitate work from home or locations outside the office,” Bueno says. “It opens up our talent pool where we are no longer tied to hiring people specifically out of certain regions, like New York or San Francisco. It can lower costs, but it’s also a way for us to be more inclusive in our process. Automation makes that possible.”

Bueno believes there is a big future for automation in media production that will affect how media is consumed and monetized, but there are also a lot of uncertainties. One area of great promise is the ability to automate the identification of concepts, objects, and brands in video images, to create a much richer body of metadata around video content. “Those things are incredibly valuable once you’re able to monetize them. That library is hard to come by, especially when we’re able to present it through our lens,” he says. >>>

“While I don’t see any real automation for creativity I can see how AI could be used to create more space for folks to focus on higher-craft work.”
Automating the identification of concepts, objects, and brands in video images would create a much richer body of metadata around video content. “With metadata and digitized contracts, we'll be able to automate permissions questions like are we cleared to show a video or play a music track in a particular country, can we use artwork that an artist made for us, or do we have the rights to play it in certain places,” Bueno comments. “You can automate that decision process because it’s all based on metadata and contract information.”

On the content-consumption side, new levels of automation can enhance the user experience. For instance, some smartphones have facial scanning capabilities that could potentially be used to analyze facial expressions in real time. “I would not be surprised if there was a future where you’re watching content and that scanner is looking and measuring your response to that content.” This would enable video publishers to adjust content in nearly real time.

On the creative side, more advanced automation tools could be used to automate some of the less skilled areas of video production, but Bueno believes there are limitations. “It is not easy to automate creativity,” says Bueno, although he does add, "I can see how AI could be used to create more space for folks to focus on higher-craft work.”

**KEY POINTS**

1. Automating the identification of concepts, objects, and brands in video images would create a much richer body of metadata around video content.

2. New levels of automation can enhance the user experience by enabling video publishers to adjust content in nearly real time.
“Automation has really helped to streamline complex and difficult processes, and to build in checks and balances that prevent mistakes that create quality issues and ramifications for customers.”
In some ways, the technical portion of automating business using artificial intelligence is the easy part, according to Softtek chief information officer (CIO) Rodrigo Gonzalez. “Automation can only serve the business if you know the problem you are solving,” he believes. When he works with other CIOs, he tells them: “Outside technologies cannot look at your business and tell right away how to automate, because in order to automate the business, the most important thing is to understand how the business works.”

Most CEOs expect business automation to improve business processes. One challenge is that not everyone always agrees on how a process should work, or a procedure is not followed the way it was intended. Gonzalez explains that often when people actually work through the process, he finds they create alternative solutions to problems. “You cannot automate a process that nobody is following,” he stresses.

Gonzalez sees automation continuing to occur, process by process, within the context of larger operations. Customer-facing chatbots are one example of automation within the larger context of customer service.

> Automation can only serve the business if you know the problem you are solving.
Addressing the issue of automation displacing employees, Gonzalez believes many workers will shift to roles supporting the automated processes, which will mitigate job loss. Citing the example of chatbots, Gonzalez says customer service employees “will need to be doing different activities. There is still going to be customer interaction, and a lot of customers still want to talk to somebody who can help them with problems.”

Gonzalez sees a big role for AI and machine learning in automation, but he points out that it comes back to understanding the business process at a granular level, and collecting a lot of data. “Most companies realize they are not collecting the right information to apply AI,” he says. “To improve your process, you need to start collecting the right information. That’s the moment when you can start thinking about machine learning or artificial intelligence.”

He notes that AI may not be right for every process. “If it is not predictable, a robot cannot do it, because the robot will not understand the data inputs. The robot requires information that is organized and predictive, so it knows that if it makes this change, it will generate these results. If the process is not predictive, nothing is going to happen.”

“To improve your process, you need to start collecting the right information. That’s the moment when you can start thinking about machine learning or artificial intelligence.”
One area that may be ripe for AI-based automation is human resources. However, automating HR successfully will require pulling together information from many sources in ways not being done right now. For example, consider an employee who quits. While it’s easy to automate processing the termination in payroll and benefits databases, the bigger challenge is to find out why the employee wants to quit, and is there information the business can leverage to improve employee retention. “You could add an AI component that figures out if you are underpaying compared with peers. It might see there are certain skills or technologies in the employee’s resume that you are not using that are more valuable in the business, and then it could check into job boards for salary comparisons and even identify similar employees,” he notes.

Gonzalez sees taking something like this a step further, to anticipate changes in personnel requirements based on business change, and actively develop your employees’ skills. Companies will be able to find people with the right qualifications, interests, and desires, and then use the technology to help with career-path management. “If you build those initial data sets, the tools are going to be there,” he says.
I think it's a competitive advantage if a company can understand and manage its processes in concert with the people and the systems one uses for the current state and any future state. But ownership, clarity, some level of standardization, and automation done well (the study of human and business system execution of a series of processes) are difficult but critical to high efficiency operations in every part of a business.
As senior principal solutions architect focused on building and delivering cloud solutions for US government agencies, Scott Anderson has been involved in many automation projects, ranging from projects that have cut the average IRS electronic tax filing time from 12 minutes to 20 seconds, to back-end processes that automatically wipe data from cloud instances no longer in use. He has also helped develop processes that issue and monitor grants to make sure their purpose is being fulfilled. This has sped up the granting process and improved grant oversight. “People administering grants or reviewing tax returns used to go through these things line by line. Nobody is doing that anymore because it’s all automated,” Anderson says.

There are many other ways automation could further streamline government operations. One area Anderson believes stands to benefit is government procurement. “I would love to help the federal government use automation to consolidate procurement through one federal government account,” Anderson says. “The government has incredible buying power. A unified, automated procurement process would reduce the cost of acquisition for the federal government.”

“People administering grants or reviewing tax returns used to go through these things line by line. Nobody is doing that anymore because it’s all automated.”
The key to implementing any automation solution successfully is first doing an in-depth assessment of current processes, creating a consumption plan, and evaluating applications for where they can improve performance. Anderson also stresses the importance of communication, especially at the executive level. “Talk to the people around you, and make sure they get it,” he suggests. “The reality of change is that there is always resistance.”

Looking over the horizon, Anderson believes that emerging technologies are on the cusp of creating dramatic improvements in the speed and efficiency of complex processes. AI and machine learning are already being applied to automation, but used in combination with other technologies such as blockchain, they could be the basis for much more complex ledger-based automation. “Blockchain is a really good tool when it is implemented with smart contracts and ledger products,” says Anderson. “It’s predominantly a secure financial transaction system for an organization. A lot of business processes are really transactions. But today, blockchain is extremely performance-limited.”

“We want machines to learn to be better at what they’re doing, and we want people to have the freedom to innovate and improve the machines.”
Part of the solution may involve splitting a complex business process into many small ones and distributing them across a blockchain environment made up of hundreds of computing instances. "This would give me a more secure process intelligently distributed across many smart devices," he explains. "Each device verifies it knows and has protected its piece of the process. If you think about some of the massive transactions that organizations run in their business processes, I could actually break it into a thousand little ones. I can now begin to look at dynamically extending my blockchain when necessary to create a true performance-based computer system."

Anderson does not see these kinds of advances as replacing people, but he believes they will improve people's lives. "We want machines to learn to be better at what they're doing, and we want people to have the freedom to innovate and improve the machines," he says. "This will give us the opportunity to have better jobs. There's something nice about the idea of sitting on a beach drinking mai tais, watching the robots do the work."
Start by systemizing and normalizing your existing processes. Once there is consistency in what you do manually, you can automate them. If there is no consistency in the manual processes (how the data is collected, stored, scrubbed, presented) it will be extremely difficult or impossible to automate.
One of the great transformations that has happened through automation, one that is actually changing the world at an accelerating rate, is the automation of software development. The shift from a traditional waterfall model, where millions of lines of code are developed before a product is released, to an agile model where code is released whenever it’s ready, has changed everything.

In the past, all the code in a product had to be done all at once. “Now it’s like getting on a train that leaves the station on a regular schedule,” says Paul Hoffman, chief technical officer (CTO) of SpaceTime Insight. “Commit schedules and testing all happen automatically. If the code isn’t ready when the train leaves the station, there’s always the next train.” This also applies to changes and fixes, which makes software development an incremental, continuous change-engineering process. “We can fix things, and we can fix them over the air,” he says. “This way of doing software engineering is delta engineering. It is evolution.”

“This way of doing software engineering is delta engineering. It is evolution.”
Further automation of this delivery model makes machine-learning processes possible, because machines can adjust their rules of operation in real time. “Now you can use reinforcement learning and unsupervised learning and prescriptive analytics to automate much more complex processes,” says Hoffman. One example is using artificial intelligence to automate crew scheduling and routing for large wind-turbine farms. The goal is to optimize crew utilization. “When you have a large facility with 800 wind turbines, how you schedule repairs and route crews is difficult because the wind is unpredictable, and people call in sick.” There are many unforeseeable factors—Hoffman likens it to putting a robot in a maze with no knowledge of how to find its way out. “It’s not supervised learning, and it’s not totally unsupervised. The system gets a little bit of critique.”

There are hundreds of examples that illustrate how advanced automation improves businesses. “A process becomes cheaper, it will follow more rules, you can audit it, it automates your governance risk and compliance because it’s the machine doing that,” says Hoffman. “It will be more efficient, more precise, and more reliable.”
Hoffman sees advanced automation as a major disruptive force that will present big opportunities as well as big challenges. “This is like industrialization before and after electricity,” he says. People and organizations need to be thinking about what this means. He cites the example of a radiologist who spends years studying in medical school for years only to find that machines are already close to being able to do what a radiologist does, only better. “The next big wave, probably in the next five years, is the automation of much of the work information workers do.” He sees opportunities in the way companies apply business intelligence. “If you are a company that can change whatever intelligence-based processes you have, then artificial intelligence-based automation can be applied to learn and help with that change.”

**KEY POINTS**

1. Automation of software development is creating a transformation that is changing the world at an accelerating rate.

2. Advanced automation is a major disruptive force that will present big opportunities as well as big challenges.
As part of a Next Generation Finance transformation strategy, every company needs to evaluate emerging technology trends like Robotic Process Automation (RPA), AI/Machine Learning, Predictive Analytics, Blockchain etc. in addition to system automation. At LinkedIn, we started leveraging RPA for reconciliations & consolidations and evaluating usage of AI/predictive analytics to determine a collection strategy based on the payment behavior of customers.
Applying artificial intelligence to business processes can totally transform industries, especially those that are data intensive and require many manual inputs. One such industry is health insurance, and for Ian Gordon, senior vice president of operations at Regence Insurance Holding Company, transformation began with a project to reduce the size of insurance application forms.

“Insurance forms are long and cumbersome,” says Gordon. “They’re similar to tax forms. In our market, people complain that the forms are too long.” His goal was to simplify the forms, but that proved difficult because so many entities had a say in the content. So Gordon took a different approach. “We declared defeat, and then we made the forms irrelevant.” He did this by turning the forms process into an online Q&A session. You answer simple questions and the system fills out all the proper forms based on your answers. “It’s a dialogue,” says Gordon. “You don’t even know you’re filling out a form. We cut cycle time for submitting and processing forms in half. We significantly increased accuracy in terms of missing information.”

“You don’t even know you’re filling out a form. We cut cycle time for submitting and processing forms in half.”
For Gordon, that was the first baby step in a much more ambitious plan for changing the relationship between insurance companies, consumers, and health-care providers. Still under development, the plan uses artificial intelligence and machine learning to automate key insurance processes, including:

- **The Claims Genie.** It's a well known fact that settling health-insurance claims, or claims adjudication, can be a painful process. “The basic claims adjudication function today is about how fast can you get the claims through the system, and paying them right,” says Gordon. Simply speeding up the process through automation increases risk of inappropriate payouts. The Claims Genie applies analytics, artificial intelligence, and machine learning to take claims adjudication to a whole new level. “We'll look at a claim to quickly see if there's anything wrong with it, and then we'll see how it compares to related claims from this person and this doctor,” Gordon explains. “Then we'll relate it to claims of others with a similar experience. We'll look for predictive patterns that say, wow, with this kind of claim, there's a high likelihood these other things will occur. We'll be able to reach out to a person, make him aware of his options, or potentially reach out and help provide a concierge level of service to the person's family.” The goal is to do all these things in real time.

“We'll be able to reach out to a person, make him aware of his options, or potentially reach out and help provide a concierge level of service to the person’s family.”
Applying analytics, artificial intelligence, and machine learning to the claims adjudication process opens the door to a whole new level of service delivered in real time.

**KEY POINTS**

1. **The Benefits Genie.** “When someone asks me if they are covered, they’re really asking four questions,” Gordon says. “Is that benefit covered? Can I see the doctor, and which ones can I see? Do I need a prior authorization? And how much is this going to cost me?” Answers to those questions depend on a lot of context and conditions. The Benefits Genie will enable consumers to ask those questions with natural language, using a mobile phone or web app. “We’ll use natural language processors and a translation suite, we’ll be using real-time claims adjudication capabilities, we’ll be codifying policies and then using all that to take a question, construct the query, create answers, and then respond to the questions you asked and others that were inferred. We’ll provide you additional information about other things you might need, like therapy, and those costs. This will all happen in real time.”

These tools stand to change how people use health insurance, improve the health-care services they receive, and lower costs. Recognizing that the health-insurance industry as a whole receives some of the lowest consumer ratings among consumer-facing businesses, Gordon believes these kinds of tools will totally transform the industry. “So many people think our goal in life is not to pay their claim,” he says. “Once you create this mechanism to allow consumers, and ultimately health-care providers, to communicate with us and trust that we’re truly trying to help them, and to see us as a valuable resource, I think we then open the door to new opportunities.”

As manufacturers, distributors and retailers continue their push to get closer to the consumer, operations have to embrace automation. Organizations must quickly evaluate their end-to-end processes and determine where large investments in 'holistic automation' may be beneficial in driving down costs, cutting lead-times, and being able to adapt to market demands.

Holistic automation in this sense means tools beyond the warehouse floor. Planning, sensing, procurement, analytics, communications all need to be taken into scope. The ability to produce same-day consumption models, while staying profitable, will determine the long-term success of one's organization.
There are many examples of process automation changing the way people work and the way businesses operate. Some are highly visible, and others work behind the scenes, enabling many of the processes we take for granted. One of the less visible areas of automation may be the most important of all, because without it, none of the rest would be possible. This is the process of software development.

A trend in modern software development involves breaking large, complex applications down into microcomponent architectures and microservices, each one of which is built utilizing automated testing and deployment environment standards often known as a continuous integration (testing), continuous delivery (deployment) pipeline (CICD). Developing, testing, and deploying code requires many steps, which used to be done manually. A person was responsible for each stage of the process, and there was plenty of opportunity for error. As Brian Timmeny, who oversees part of a large DevOps operation for a global banking organization, explains: “The old way gave you traceability in the end-to-end process, but what it did not give you was confidence in that same end-to-end process.” In other words, a well-executed process could still deliver error-prone software.

You now have end-to-end visibility from a centralized area. You can see each step happening, and the DevOps ecosystem itself is reporting on where you are within your process.
In a modern DevOps process, a developer builds a piece of code (component) and then merges that component into the CICD pipeline where all the many kinds of tests that must be performed happen automatically. In the past, a developer might not know for weeks whether his or her code had a problem, or worse, caused a problem for a downstream partner. Now the feedback is almost instantaneous. If the tests detect a problem, they kick back the code with specific information about the problem. The developer can fix it right away. If the code passes all its tests, the system immediately deploys it, and the developer continues working on the next thing.

It is the speed and agility of DevOps that makes business process automation possible. Timmeny explains many advantages that come from an automated DevOps approach. “You now have end-to-end visibility from a centralized area. You can see each step happening, and the DevOps ecosystem itself is reporting on where you are within your process. This not only minimizes the chance of a human error, we actually restrict the security groups (access) so no human can touch the pipeline. That’s really important, especially in a highly regulated industry like banking,” he says. “Now you can prove to regulators and auditors that you have integrity within your process. It gives us a level of security and assurance that all of the regulatory compliance that we expect is not only detailed, but it’s enforced and automated, 100 percent of the time.”

“The importance is not just seeing the apps that have issues. It’s also looking at the ones that don’t have issues. Machine learning can help us detect patterns of production at an epic scale.”
Another advantage of DevOps automation is that the process itself can evolve as tools become more sophisticated. “I think it will come much more from within the tool sets. Every month these tools create better integration points,” says Timmeny. And this is enabling a more rationalized, end-to-end development process, from concept to deployment. That makes the DevOps process and application development faster and more responsive to business needs. “I think that concept of high-level, end-to-end visibility of what needs to happen is going to become more and more rationalized over time as an end-to-end cycle,” he adds.

He also sees artificial intelligence and machine learning playing an important role in further automation as an improvement of the DevOps process. “AI and machine learning will see and detect patterns faster than a human can ever detect them,” Timmeny says. “There will be applications that deploy and never have a production problem. There will be other apps that deploy and have tons of production issues. The important factor is not just seeing the apps that have issues. It’s also looking at the ones that don’t have issues, and to understand the common patterns between the two, and learn from those processes. Machine learning can help us detect those patterns of production stability and instability at an epic scale.”

KEY POINTS

1. It is the speed and agility of DevOps that makes business process automation possible.

2. Another advantage of DevOps automation is that the process itself can evolve as tools become more sophisticated.
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