Robotic Process Automation:
A Breakthrough in Getting Work Done Quickly, Cheaply, and Accurately

By: Connie Moore

Robotic Process Automation Ushers in the Next Big Wave for Increased Productivity

Robotic process automation (RPA), also known as intelligent automation or robotics, is getting lots of attention from business and technology executives as companies seek big jumps in productivity by deploying tools powered by artificial intelligence (AI). At operational excellence, business process management (BPM), and AI conferences, sessions about robotics implementations, best practices, and case studies are filled to capacity.

Why the sky-high interest, especially since the terms "robotic" and "automation" may sound like low-level, low-intelligence technology instead of a breakthrough in getting work done? RPA tantalizes business and technology people with: 1) its potential for combining AI and machine learning with robotic scripts; 2) the ability for business analysts to create robotic scripts without help from IT; and 3) its track record in delivering significant productivity breakthroughs. Managers also see the potential for RPA to tackle mundane, mind-numbing tasks, thereby freeing workers to focus on more interesting, higher-value, higher-touch, customer-facing – even transformational – work. And senior executives often think that if robotics can do the work of dozens or hundreds of people, installing and testing it sooner rather than later makes good business sense.

Despite all the buzz – and even hype – about RPA at events and in the press, some technology executives are not sold on the idea because they view it as "low-level, swivel chair technology" that works through screen scraping. Others don't understand all the hoopla about what they consider to be an API tool. In reality, RPA is neither screen scraping alone nor a set of APIs. Instead, robotic scripts mimic the keystrokes that a business user would make when completing work (instead of simply copying the information the way screen scraping would).

Digital Clarity Group defines RPA software as:

> *Business software that uses rules, objects, and scripting to automate and execute manual or semi-automated activities by imitating a person's work behavior and keystrokes, including logging into multiple applications, entering data, copying information, reading and composing internal and customer-facing emails, automating repetitive typing, manipulating spreadsheets, and performing other clerical job tasks.*

As DCG's definition highlights, the scripted keystrokes could involve a robot typing a user ID and password to access a software application, then using the copying and pasting keystrokes to move information from one document to another, and next creating typed output based on rules in the robotic script. Because scripts use keystrokes, rules, and objects, and do not require programming, a non-programmer business analyst or power user can develop them.[1]

RPA is not limited to systems integration. Companies also deploy RPA for digital-outside and/or digital-inside transformation initiatives.[2] The software often appeals to companies with limited resources and funds for integration to applications using APIs, and to firms that have already streamlined and automated their business process but may have left some activities unautomated. For example, with RPA, companies can use robotic scripting to automate activities such as these:

- **Integrating and completing manual work shared across multiple applications.** This could include logging into one application system (e.g., supply chain management), copying information from it, then logging into another automated system and entering the copied information into the second system (say, enterprise resource planning). The company may not have sufficient budget or time to integrate its various applications, or may be so consumed by work on a large-scale strategic process that it's unable to allocate resources. In this example, RPA may be a stopgap approach until the organization can fund an integration project. In other situations, RPA may be the long-term solution.

- **Automating repetitive activities within applications**. This approach could involve looking up customer or product data within an application (say, customer relationship management or product life-cycle management), and then entering that data into a purchase order, invoice, or email. In many companies, these activities are still manual because the software vendor or internal developer did not automate all the steps needed to complete the task.

Despite all the automation investments that organizations have made over the past few decades, many firms still encounter significant wastage when processing transactions. This waste often surfaces when organizations launch Six Sigma and Lean initiatives that examine their processes, and is typically unseen, unconsidered, or unimportant to business and IT organizations until they count the total cost or discover an automation tool that helps them tackle what was previously written off as "the cost of doing business." (See Figure 1 next page.)

Figure 1
Eight Typical Types of Transaction-Processing Waste

	WASTE	DEFINITION	EXAMPLES
1	**Defects**	Information, products, and services that are incomplete or inaccurate	■ Inaccurate applications ■ Broken parts ■ Missed deadlines
2	**Overproduction**	Making more of something - making it earlier or faster - than needed	■ Extra copies of reports ■ Redundant storage (hard & soft) ■ "Reply All" on emails
3	**Waiting**	Waiting for information, equipment, materials, parts, or people	■ Waiting for approvals ■ Waiting for equipment ■ Waiting for large batches
4	**Non-Utilized Talent**	Not properly utilizing people's experience, skills, knowledge, or creativity	■ Employees not empowered to make decisions ■ Employees not fully trained ■ Skilled employees doing unskilled tasks
5	**Transportation**	Unnecessary movement of materials, information, or equipment	■ Hand-offs between functions ■ Multiple reviews ■ Sending, resending emails
6	**Inventory**	Accumulation of parts, information, applications, etc. beyond what is required by the customer	■ Stockpiling supplies ■ Information piling up for data entry ■ Keeping data longer than necessary
7	**Motion**	Any movement by people that is not of value to the customer	■ Repetitive key strokes ■ Walking between equipment ■ Switching applications
8	**Extra processing**	Any steps that do not add value in the eyes of the customer	■ Extra formatting, extra fields ■ Extra features, excess detail ■ Extra report information

Source: goleansixsigma.com.[3]

One could argue that companies should ditch the idea of robots and instead fix these data integration lapses by fully automating their incomplete or insufficient applications. But, as noted above, often there is no budget for that last-mile work, no appetite for tinkering with processes to automate a few manual steps, or no interest in changing already transformed, large-scale business processes. RPA provides a fast, inexpensive, and easy way to automate manual steps that involve people, data, and integration. No wonder robotics attracts business people and technologists alike.

Robots are capturing significant attention these days for business process projects focusing on digital transformation, operational excellence, or both, for these reasons:
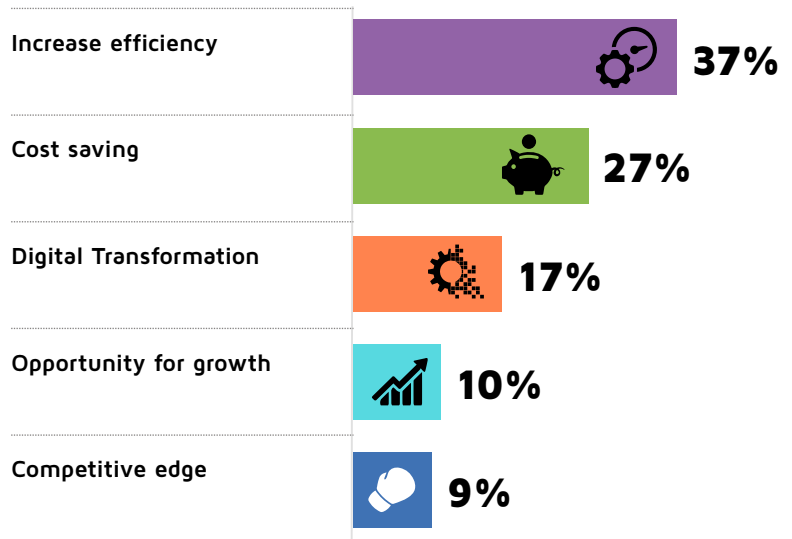
1. **Volume**. Robots can perform a *massive* amount

of boring, repetitive work that is dreary and de-humanizing for people. This work can be in the customer contact center as well as in finance.

2. **Labor savings.** The manual/semi-automated work that robots tackle finishes in seconds or, at most, a few minutes. In contrast, a person might need hours to complete the same work. And speed equals massive labor savings. For example, one shared services group processes several thousand case files per week, with each case requiring two or more hours' work. In contrast, RPA processes each case in 30-60 seconds and completes the entire case workload overnight.

3. **Speed of business.** Many hypercompetitive industries now drive as much work as possible at the speed of global networks. These firms, and the customers they serve, expect work to process instantly. For example, companies on Wall Street and in the City of London, Hong Kong, and other financial districts operate at hyperspeed. Removing clerical work can make a jaw-dropping difference in a strategic process because robots are far faster than humans.

4. **Accuracy.** Beyond speed, error-free work is usually far more valuable than faster work, and here RPA wins again by greatly reducing mistakes. Humans make more errors when they're bored and tired; for example, when doing work such as copying and pasting data from one software application to another, retrieving data from an external portal

Figure 2
What is your organization's main driver for implementing RPA?
Total respondents = 179

Increase efficiency	37%
Cost saving	27%
Digital Transformation	17%
Opportunity for growth	10%
Competitive edge	9%

Source: Robotic Process Automation Benchmarking Report 2017, PEX Network.[4]

and putting it into emails, and so forth. Investigatory, compliance, and customer-facing work all benefit from high accuracy levels (also executed at lightning-fast speeds).

According to the PEX Network's recent survey of attendees at the RPA and AI Live event, 37% of 179 respondents identified increased efficiency as the main driver for implementing RPA, followed by 27% indicating that cost savings are the primary driver. For more details, see Figure 2.

Robots Help Bridge the Back and Front Offices

Many companies are now using or considering RPA to further automate back office processing and help with integration. However, some companies are thinking beyond the back office by using RPA software strategically for end-to-end automation. To accomplish this, they combine RPA with BPM, case management, business rules, predictive analytics, CRM, and/or natural language processing to transform and automate redesigned, customer-centric business processes.[5] Combining these software solutions offers a more complete way to automate processes than deploying just one. For example, some of the thought-leading companies in financial services and insurance now combine these tools to identify the next best actions for call center representatives to discuss with customers – leading to better results, higher net promoter scores, and increased revenue. Based on anecdotal feedback, such combinations usually improve productivity by approximately 50%.

For companies focused on end-to-end, cross-functional processes, RPA bridges the front and back office, as these use cases demonstrate:

- **Running in the background with a focus on operational efficiency.** In this scenario, robots access applications, files, and data for the routine processing of large amounts of work instances. These robots working in the background make recommendations for workers based on predetermined rules. If an exception occurs, the robotic scripts automatically create a case of work for humans

to handle. The objective is greater efficiency and productivity, ideally within the context of improving operational excellence and streamlining end-to-end processes that provide greater customer experiences.

- **Engaging directly with employees.** In customer contact centers, customer service representatives usually have very busy screens that display many applications, messages, and data files. In addition, workers often create and attach sticky notes to the screen that prompt them to perform specific tasks – some manual and others possibly involving less frequently used applications. RPA can perform many of these tasks by interacting with legacy systems and other applications, freeing the representatives to engage with customers.

- **Interacting directly with customers.** Some robots, such as virtual assistants and chatbots, engage directly with customers across many channels to service requests or address issues.[6] For example, a robotic script could send highly personalized product promotions to the customer via e-mail or mobile apps, or launch the customer into Facebook. These robots also connect to back-end systems for automated processing. Robots can integrate with natural language processing to discern when a human should answer the customer's question. In those cases, the robot transfers the call to the contact center along with all relevant data and background information, so the chat can become a human-to-human discussion. Robots can also use natural language processing to read and respond to emails from customers.
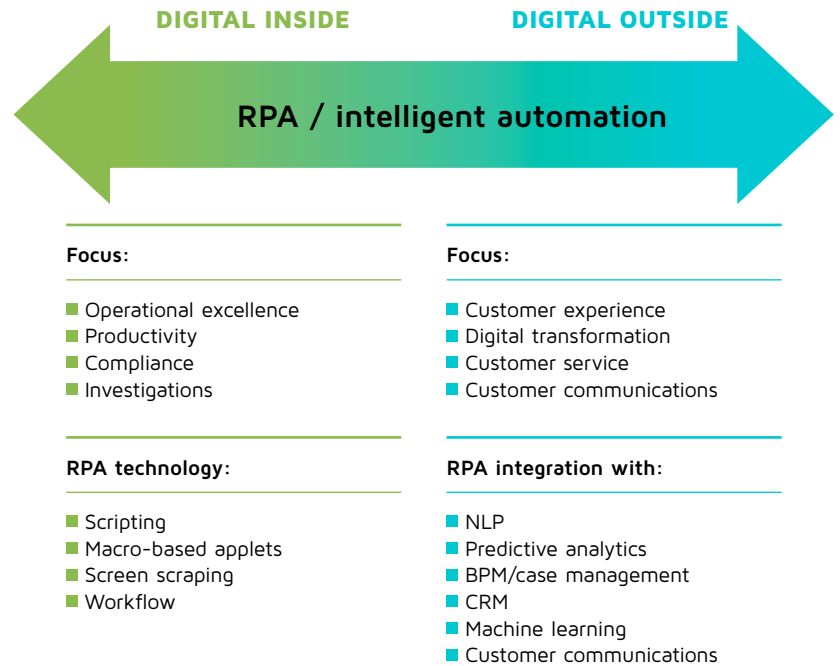
Figure 3 shows how RPA is deployed across the full spectrum, uniting the front and back offices to support both digital outside and inside.

Companies Are Putting RPA to Use Now

A growing number of companies now benefit from RPA deployments, including these:

- **A European bank relies on RPA for high-touch lending to over 8 million customers.** The bank's culture fosters growth through close relationships between employees and customers. However, recent industry changes, coupled with digital disruption and new competitors, increased competitive pressures unexpectedly. At risk of losing customers, the bank began transforming processes by developing the business and solution architectures and applying Lean, continuous improvement, and Agile. To better automate the front and back offices, the firm used CRM, BPM, business rules, and RPA to tackle arrears management, collections and customer support, tracking/resolving fraud cases, payments and claims, enterprise lending, banking services and operations, and client onboarding. By focusing on end-to-end processes and integrating robotics, the bank decreased processing time, on average, from four weeks to 24 hours (and 60 seconds in some instances); reduced the number of client documents per loan from eight-to-ten to less than four; reduced its products from thirty-nine to nine; and shifted credit scoring from expert-based to standardized. The bank plans to implement robotics to solve data/legacy issues.

Figure 3
RPA spans the full spectrum of work

DIGITAL INSIDE   **DIGITAL OUTSIDE**

RPA / intelligent automation

Focus:
- Operational excellence
- Productivity
- Compliance
- Investigations

RPA technology:
- Scripting
- Macro-based applets
- Screen scraping
- Workflow

Focus:
- Customer experience
- Digital transformation
- Customer service
- Customer communications

RPA integration with:
- NLP
- Predictive analytics
- BPM/case management
- CRM
- Machine learning
- Customer communications

- **A logistics company, operating on very thin margins, employs 380 robots to automate repetitive, white-collar tasks of the logistics business process.** Robots automate many portions of logistics across the back office and front office, such as scheduling shipments and pickups, monitoring email, and reading emails for logging information into the transportation system. These robots, which integrate with internal systems, external sources, and delivery points, can run in sequence or in parallel. In total, RPA executes 1 million robot transactions yearly, equaling 16,000 hours of work automated. Employees can now focus on value-add work that results in better experiences for customers and greater motivation for employees.

In the PEX Network's Robotic Process Automation Benchmarking Report 2017, 60% of its RPA/AI conference attendees targeted finance as the area to automate, while customer services (46%) and administrative services (45%) were virtually tied (out of 179 respondents). The next most cited area of focus was data management, at 39%. (See Figure 4.)

Robots Make a Powerful Combination with Case Management

RPA holds the potential to drive automation benefits significantly higher by increasing productivity and delivering greater accuracy. So does case management software, which is a type of BPM. Taken separately, these technologies can drive operational excellence and customer experience; when deployed together, they form an even more powerful combination.

Case management (also known as "case") differs from BPM products that automate high-volume, straight-through, "people-less" processes. Instead, case coordinates the collection, processing, and dissemination of information over many days, weeks, or even months, in support of people-intensive work. Insurance, banking, government, education, publishing, and other people-centric processes, such as managing a large, temporary workforce, are now implementing case.

Take disability insurance, for example. These complex cases involve the collection and coordination of massive amounts of information submitted by many individuals over several months, or even years, including the following:

Figure 4
Which processes are you currently automating or looking to automate?
Total respondents = 179
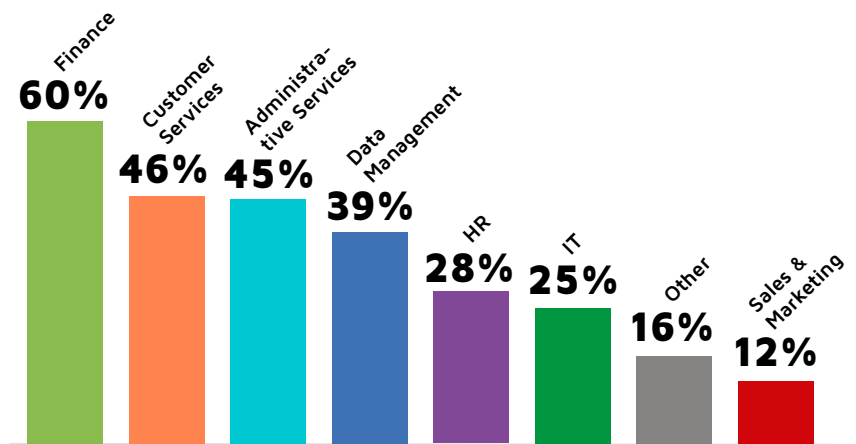
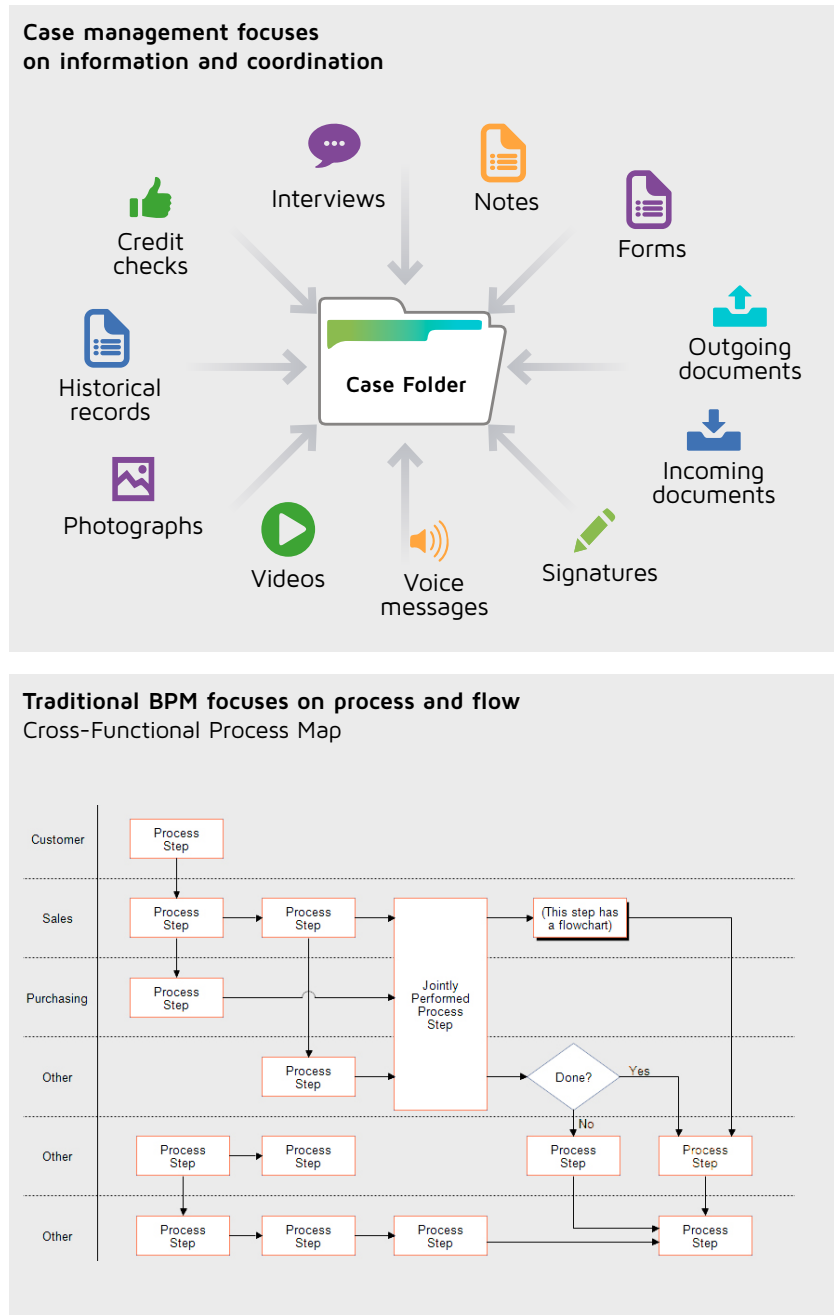Source: Robotic Process Automation Benchmarking Report 2017, PEX Network.[7]

medical records from doctors, therapists and specialists; outgoing and incoming correspondence from the insured and medical practitioners; reports from field examiners; outgoing forms and information requests to healthcare providers; internal assessments; and incoming financial records such as pay statements and tax forms. Such complex cases challenge the coordination abilities of case managers working over lengthy time periods, which is why case is so beneficial. (See Figure 5 for a comparison of case management and straight-through BPM.)

Because case management is both information- and people-intensive, RPA is a natural tool for extending the automation to also include many of the manual or repetitive tasks already tackled by case. For example, within the disability case example, RPA can read incoming faxes and

emails, compose repetitive correspondence to the insured and health providers, initiate requests for information, log on and copy information from one disability insurance application to another, manipulate spreadsheets and move data to support the case, and automate some aspects of customer service, compliance, and document capture. (For more information, see DCG's article, "Robotic Process Automation (RPA): robots that automate routine and complex work.")

When evaluating RPA for the organization, it's helpful to look at the nature of work from a philosophical or human-development point of view. When seen this way, RPA isn't just another integration or automation tool; it's also a way to transform the workplace and the individual worker's job experiences. RPA follows on the heels of case management in helping to shift work from too much routine drudgery to instead open up workers' capacity and opportunity to think creatively and thoughtfully about the work they do and how they engage with customers. The problem in many organizations is that repetitive, manual steps are so built into the system that no one thinks about what a waste of time the manual effort really is. Rather insidiously, non-value-added steps (or waste) are often accepted as "the way we do things around here" or "the cost of doing business." Unless the organization uses Six Sigma or Lean intentionally to identify and diagnose waste, manual effort becomes an accepted practice that can become a hidden crippling problem. That is, until a technology like RPA (and case management) comes along and illustrates a different way to think about unleashing worker productivity, ingenuity, and creativity.

Figure 5
Comparison of case management and straight-through BPM

Case management focuses on information and coordination

Traditional BPM focuses on process and flow
Cross-Functional Process Map

Source: RFFlow

Get Started Now with an RPA Initiative

Whether your emphasis is operational excellence (efficiency, productivity, accuracy, or compliance) or transforming the customer experience, it's time to start evaluating and implementing RPA. Given the level of interest in RPA, many business and technology executives see the opportunities for their firms. However, some are still hesitant to jump into (what may seem to them) an overhyped market fueled by an AI buzz. Also, some technology executives may be concerned about the rampant growth of citizen developers who fall outside IT's purview. These concerns are valid, but to wait may be to invite your competition to "steal a march" on your company. Here's how to get started:

- **Don't dismiss RPA's potential.** It's easy to focus on the low-level repetitive aspect of robotic automation and relegate the technology to swivel-chair automation that uses old screen scraping approaches. Don't. Instead, consider how your organization would benefit from RPA from a productivity/ efficiency perspective, even at that minimal level of automation. Also, expand your thinking into other areas that robotics can address, and consider the fact that robots are created with scripts and do not require programming.

- **Avoid the hype.** Some folks are so excited about RPA that they believe it is the hottest AI tool in the market. But it is only one of many AI-related products in the toolbox, so don't get swept away by the hype. Keep in mind that RPA is often implemented as a stopgap solution – not a strategic approach – for integrating applications that should be, and will be, better integrated over time.

- **Experiment with RPA to learn its strengths and weaknesses vis-a-vis your own organization.** For example, determine who in the organization can write robotic scripts. Vendors often claim that power users and business analysts can develop scripts, but this would also require some oversight and assistance from IT. Test to discover RPA's boundaries, capabilities, and limitations: is it a DevOps tool, a business analyst tool, a citizen developer tool, or something better suited for IT developers? Consider that one company recently told Digital Clarity Group it had expected to create 200 scripts within six months but only managed twenty. Create realistic expectations from the start.

- **Look at the role of RPA within end-to-end processes.** It does not need to be confined to the back office and working in the background; robots can also be used in the foreground to engage with and assist employees, interact

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with customers, and also automate repetitive customer-facing activities. Proactively look within your own organization for those opportunities.

■ **Consider how RPA should integrate with other technologies.** Many companies have achieved strategic advantage and tangible benefits by integrating robotics with case management, traditional BPM, business rules, predictive analytics, natural language processing, and CRM. Potentially, there are even more opportunities, such as integrating RPA with customer communications management or fax processes (still prevalent in the healthcare industry). Think outside the box when considering the integration opportunities for end-to-end processes, particularly when undergoing strategic transformation efforts.

Endnotes

1 Screen scraping technology captures information (usually data) displayed on a screen by using the copy command or other software programming. Often, screen scraping is used to integrate obsolete systems or legacy applications with newer technologies. In comparison, an API (or application program interface) technology uses routines, protocols, and tools to integrate software applications by specifying how the software components should interact. Out of the box APIs are often bundled with application software to integrate with products from widely deployed vendors such as SAP, Salesforce.com, and Microsoft.

2 For more information about digital outside and inside, see "Transform Customer Experience and Operational Excellence By Going Digital Outside and Inside," Digital Clarity Group, http://www.digitalclaritygroup.com/transform-customer-experience-and-operational-excellence-by-going-digital-outside-and-inside/

3 "8 Wastes Check Sheet," https://goleansixsigma.com/the-8-wastes-checksheet/

4   "The future of robotic process automation and artificial intelligence benchmarking report 2017," https://www.processexcellencenetwork.com/rpa-artificial-intelligence/white-papers/the-future-of-robotic-process-automation-and

5 For more information about BPM, see "Tackle Complex Processes With Dynamic BPM Suites and Business-Ready Apps," Digital Clarity Group, http://www.digitalclaritygroup.com/tackle-complex-processes-bpm/ and "Business Process Management: An Emerging Core Competency for Customer Experience Management," Digital Clarity Group, http://www.digitalclaritygroup.com/business-process-management-an-emerging-core-competency-for-customer-experience-management/

6 For more information about chatbots, see "Why Bots Should Matter To Customer Experience Professionals," Digital Clarity Group, http://www.digitalclaritygroup.com/bots-implications-customer-experience/

7 See note 4

About Digital Clarity Group

Digital Clarity Group is a research-based advisory firm focused on the content, technologies, and practices that drive world-class customer experience. Global organizations depend on our insight, reports, and consulting services to help them turn digital disruption into digital advantage. As analysts, we cover the customer experience management (CEM) footprint – those organizational capabilities and competencies that impact the experience delivered to customers and prospects. In our view, the CEM footprint overlays content management, marketing automation, e-commerce, social media management, collaboration, customer relationship management, localization, and search. As consultants, we believe that education and advice leading to successful CEM is only possible by actively engaging with all participants in the CEM solutions ecosystem. In keeping with this philosophy, we work with enterprise adopters of CEM solutions, technology vendors that develop and market CEM systems and tools, and service providers who implement solutions, including systems integrators and digital agencies.

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