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TECHNOLOGY

Robotic process automation: A digital element of operational resilience

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20
YEAR ANNIVERSARY

# OPERATIONAL RESILIENCE

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# DEAR READER,

Welcome to this landmark 20th anniversary edition of the Capco Institute Journal of Financial Transformation.

Launched in 2001, the Journal has followed and supported the transformative journey of the financial services industry over the first 20 years of this millennium – years that have seen significant and progressive shifts in the global economy, ecosystem, consumer behavior and society as a whole.

True to its mission of advancing the field of applied finance, the Journal has featured papers from over 25 Nobel Laureates and over 500 senior financial executives, regulators and distinguished academics, providing insight and thought leadership around a wealth of topics affecting financial services organizations.

I am hugely proud to celebrate this 20th anniversary with the 53rd edition of this Journal, focused on 'Operational Resilience'.

There has never been a more relevant time to focus on the theme of resilience which has become an organizational and regulatory priority. No organization has been left untouched by the events of the past couple of years including the global pandemic. We have seen that operational resilience needs to consider issues far beyond traditional business continuity planning and disaster recovery.

Also, the increasing pace of digitalization, the complexity and interconnectedness of the financial services industry, and the sophistication of cybercrime have made operational disruption more likely and the potential consequences more severe.

The papers in this edition highlight the importance of this topic and include lessons from the military, as well as technology perspectives. As ever, you can expect the highest caliber of research and practical guidance from our distinguished contributors. I hope that these contributions will catalyze your own thinking around how to build the resilience needed to operate in these challenging and disruptive times.

Thank you to all our contributors, in this edition and over the past 20 years, and thank you, our readership, for your continued support!

Lance Levy, **Capco CEO**

# ROBOTIC PROCESS AUTOMATION: A DIGITAL ELEMENT OF OPERATIONAL RESILIENCE

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## ABSTRACT

Operational resilience has risen to the top of board and senior management agendas due to the ever-expanding threat of business disruptions. These disruptions can be caused by social unrest, cyber attacks, third party risk, climate change, pandemics, and geopolitical risk. In response to the recognized need for guidance, various regulatory authorities – such as those of the U.K., the U.S., and the Basel Committee – have issued their expectations for improving the resilience of financial services firms. They have stressed the need to limit the impact of disruptions to business functions and emplace the ability to quickly recover and restore business processes when incidents occur. At the same time, the ongoing digital transformation, with its triad of artificial intelligence (AI), machine learning, and robotic process automation (RPA), has attained the necessary maturity to begin to be implemented across the financial services industry. Specifically, RPA holds the promise of becoming an indispensable part of operational resilience, given its ability to create autonomous bots that can perform human operator tasks. This paper outlines the reasons for the adoption of RPA and why it is a necessary component of operational resilience, and explains the challenges inherent with its adoption as well outlining the benefits of adopting it within control-centric functions.

## 1. ROBOTIC PROCESS AUTOMATION – A COMPONENT OF OPERATIONAL RESILIENCE

In recent years, businesses have been facing more disruptive events, with ever-increasing severities, than ever before. Given the increasing costs of disruption, a new paradigm of operational resilience has developed.[1] While operational resilience has a number of components, one of the key ones is completing end-to-end process mapping. End-to-end process mapping is also an essential element required for the implementation of robotic process automation (RPA), which is at the forefront of the digital transformation. Hence, a successfully implemented digital transformation plan can enhance operational resilience, result in a more agile reaction during crises, and help organizations navigate future cruises more successfully.

The effects of the COVID-19 global pandemic have clearly highlighted the need for organizations to include operational resilience as a required pillar of going concern planning. This acute need has been recognized by the regulatory bodies in different jurisdictions, including the U.K., where the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA) published a shared policy summary on the requirements to strengthen operational resilience in the financial services sector. Likewise, in the U.S., the Federal Reserve System's

[1] Operational resilience is the ability of a firm to deliver critical operations and services through disruption. This ability enables a firm to identify and protect itself from threats and potential failures, respond and adapt to, as well as recover and learn from disruptive events, in order to minimize their impact on the delivery of critical services and operations through disruption.

Board of Governors (FRB), the Office of the Comptroller of the Currency (OCC), and the Federal Deposit Insurance Corporation (FDIC) issued an interagency paper titled "Sound practices to strengthen operational resilience",[2] which brings together industry standards and existing regulations and advocates for a principles-based approach to enhance and bolster operational resilience. These select principles align well with the benefits of robotic process automation, thus making it an indispensable component of operational resilience. Robotic process automation has potential to impact the following elements of operational resilience:

**Governance:** as outlined in the interagency paper, senior management is tasked with "maintaining a detailed overview of the firm's structure to identify critical operations and implementing and maintaining information systems and controls which effectively support critical operations." The implementation of robotic process automation assists with identification of critical operational processes, as these can be prime candidates for automation to ensure uninterrupted processing execution. At the same time, as robotic process automation is considered to be a robust information system with error-free processing cycles, it can be an element of a control framework supporting critical processes.

**Business continuity:** the interagency paper requires maintenance of robust business continuity and crisis management plans that identify the people, facilities, and IT systems needed to uphold the delivery of critical operations during an incident or disruption. The implementation of robotic process automation enables successful structuring of business continuity plans as identification of IT systems is one of its prerequisites. Since RPA eliminates manually intensive steps present in a process, its use will enable faster recovery of operations and transition to business-as-usual operations. Additionally, business as usual is ideally suited for remote operations, as pre-programmed bots can be run from any site in any geography.

**Secure and resilient IT systems:** the interagency paper stipulates implementation of IT governance frameworks to ensure the proper implementation, use, and safeguarding of systems across business units and geographic locations, and to ensure that proper contingency plans and controls are in place to facilitate continued delivery of critical operations and information flow in the event of an incident or disruption. Given that robotic process automation bots operate as a presentation layer and are not integrated with the various systems and software, and hence are not at risk of being hijacked by malware or other forms of intrusive software, they are ideally suited for operations in a systemically compromised environment. Furthermore, since robotic process automation is created as part of the unified digital transformation across the entire organization, it produces a standardized approach for the framework of the overall preparedness.

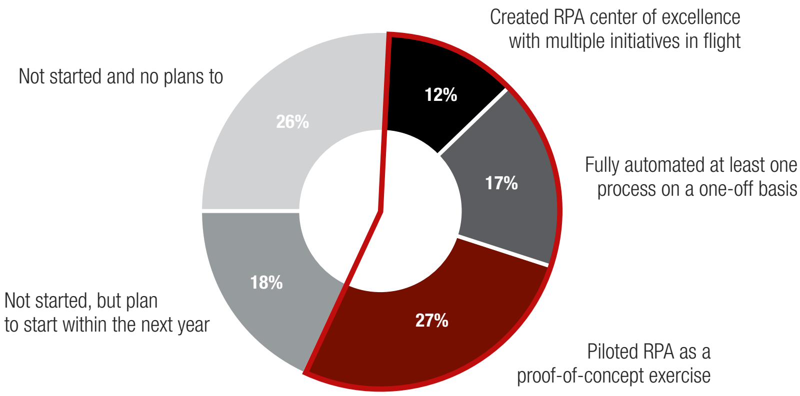
## 2. ROBOTIC PROCESS AUTOMATION – A VALUE-ADDED PROPOSITION

According to the Institute for Robotic Process Automation and Artificial Intelligence, robotic process automation is the application of technology to allow users to configure computer software to capture and interpret existing applications. Robotic process automation involves software robots, also known as bots, to autonomously execute a series of preprogramed actions in a digital system. It is worthy to note that bots interact with an organization's existing IT architecture without the hassle of a complex system integration. Robotic process automation is used to automate highly manual, repetitive, and rule-based digital tasks, such as data entry, data reconciliation, data transfer, data processing, data mapping, report generation, and gathering data from web browsers. Companies use robotic process automation to automate their internal processes to increase their efficiency, allowing their employees to focus on higher-value work.

As more companies adopt robotic process automation, all components of organizational verticals, including control-centric functions across the "three lines of defense", arrive at an inflection point: adopt to the generational change and become technologically savvy or lose professional relevance. Implementation of RPA enhances control-centric function's operational resilience by enabling restoration of its critical function and role in case of disruption and enhances its value by placing it at the forefront of new technology adoption, digitalization of data, and automation on the path to AI. Automation of redundant and manual standard control testing scripts has the potential to increase efficiency and free up available staff hours to focus on higher-order tasks and other areas, in effect truly enabling the organization to do more with less. Automation also increases effectiveness by reducing likelihood of errors and improving the overall process. Not every step present in the control testing process

[2] https://bit.ly/383mv0G

**Figure 1:** Process automation in U.S. companies




Source: Association of International Certified Professional Accountants[3]

is a candidate for automation, but routine defined testing activities that are performed frequently are prime candidates for workflow automation bots. Additionally, repetitive mundane workflow tasks, such as requesting supporting evidence, gathering, formatting data for analysis, and creation of work templates are all defined time-consuming tasks that can be easily automated.

Many control-centric functions are looking to automation as a force multiplier to increase capacity of their book-of-work coverage. Oftentimes, these functions are not the early adopters of the automation technology despite control testing being rife with repetitive and often time-consuming process steps. However, control-centric functions that reside within the second or third line of defense are not immune to the demands of the workplace automation changes that had been gathering critical mass and whose effects had been accelerated by the global COVID-19 pandemic. That may be one reason that 40 percent of professionals focused on organizational controls reported that their organizations plan to use RPA in business operations.[4] Automation will be prominently featured as part of any business plan and will take a preeminent place for years to come.[5] Worldwide, an estimated 60 percent of large companies deployed some form of RPA technology last year, lifting total annual spending on software robots by 57 percent to U.S.$680 million.[6] This number is expected to reach U.S.$2.4 billion by 2022.

Based on the survey of current process automation initiatives, more than half of U.S. companies have ongoing automation initiatives, while roughly one third are actively engaged in the scale up of their process automation initiatives.

## 3. ROBOTIC PROCESS AUTOMATION – INHERENT CHALLENGES AND LIMITATIONS

The workforce of the near future will require technological savvy capabilities, with the emphasis on hybrid developer/coding skill sets, to truly attain the potential of digital workforce.

As with any new technology that is perceived as a threatening innovation due to the automation, successful robotic process automation implementation will require understanding and socialization of both long-term benefits and near-term pain points to be successfully adopted and made a routine part of business functions. Furthermore, implementation of the automation will need to be subject to its own unique set of internal control mechanisms and may require emplacement of new internal controls that are required to support the digital workforce tools being utilized. Functions will need to consider the proper governance and internal controls around automation.

[3] https://bit.ly/3rfj9zg
[4] Pawlowski, J., and M. Eulerich, 2019, “Bots of automation,” Internal Auditor, December, 42-46, https://bit.ly/2NXWKYS
[5] Rockeman, O., 2020, “Pandemic may permanently replace human jobs,” Bloomberg, September 14, https://bloom.bg/3slEcuE
[6] https://gtnr.it/3bRsoiO

Implementation of robotic process automation has inherent risks across three dimensions: **operational, organizational, and cultural**.

**Operational:** implementing RPA is not without risks, as poorly designed bots will multiply errors and mistakes at a keystroke. Hence, post-production assessment of whether bots address stated business need is critical. The process of bot development will need to adhere to policies and procedures, change management protocols, as well as systems access controls. However, accuracy and completeness take on an additional level of criticality to ensure that reliance on bots does not produce erroneous outcomes. A significant challenge and limiting factor to creation of automation bots is their dependence on the "up-systems", where data resides and that bots access to obtain data, and "down-systems", which bots populate and write data to. By design, bots are static and are not well suited for dynamic systemic environments that require constant updates to the bots structure, since any change to the systems or to the layout of the underlying data fields will cause errors in the bot's performance and may require complete redevelopment.

One of the biggest challenges associated with the introduction of new technologically-enabled innovation is identification of use-cases that are prime for automation, such as recurring repetitive manual activities. Identification of automation opportunities will need to be balanced by the implied cost/benefit analysis and the feasibility of automation implementation. It is highly likely that only actionable elements of the end-to-end process can be automated, at least initially.

**Organizational:** one of the biggest pitfalls of the automation journey is to use a siloed approach, without alignment of the tactical initiative with the overall RPA introduction across the entire organization, and thus failing to generate synergies and causing duplication of efforts. In order to make the RPA journey successful, implementation should be aligned with the organization-wide digital strategy and should be rolled out under a unified governance perspective.

Additionally, organizations have to formulate a coherent and consistent approach to implementing bots, since a major consideration with the implementation of robotic process automation is the maintenance of the technology and structured programing. Implementation of RPA, therefore, has to address the following fundamental questions: should the bot implementation be standardized across the control testing process or should it be customized to each individual testing plan? Should bots be created and rolled out centrally to reflect organizational policy or should bot programming rest within individual control testers and reflect peculiarities of the individual approach?

> *"The benefits of RPA make it an indispensable component of operational resilience."*

Furthermore, functions will need to set a threshold and define the comfort level of how many bots are to be used. It is one thing to have a dozen or more standard bots over which oversight can be easily implemented but it is a different matter entirely to have dozens, if not hundreds of custom-made bots. Additionally, functions will need to decide which elements of the control evaluation processes, or combination of processes, are appropriate for coverage by a single bot or multiple bots.

**Cultural:** resistance to change and fear of job losses are natural reactions to automation.[7] According to the Chartered Global Management Accountant (CGMA), almost every profession has partial automation potential and roughly half of all the activities employees are paid to do could be automated by adopting current established technologies.[8] Open, two-way communications regarding the benefits of digital workforce and robotic process automation is critical to attaining cultural buy-in. A bellwether of successful RPA implementation is a proof-of-concept automation of a defined, high-importance, high-impact process reliant on multiple repetitive manual tasks. Once proof-of-concept automation is proved to be successful, adoption by the workforce and chief stakeholders is a matter of scale.

Another important element of introducing robotic process automation is educating and empowering staff with the necessary technological skill sets. The ideal professional in the control-centric function will not only understand the intricacies of a process but will also have a firm grasp of

[7] Castellanos, S., 2019, "Unleash the bots: firms report positive returns with RPA," Wall Street Journal, March 6, https://on.wsj.com/2NTichQ
[8] CGMA, 2019, "Future of automation," The Institute of Charted Global Management Accountants, June

technology and coding skills. Since the current workforce skill set comes up short, due to the generational and digital gaps, senior managers may opt to rely on the adaptive, flexible consultancy-based stuffing model.

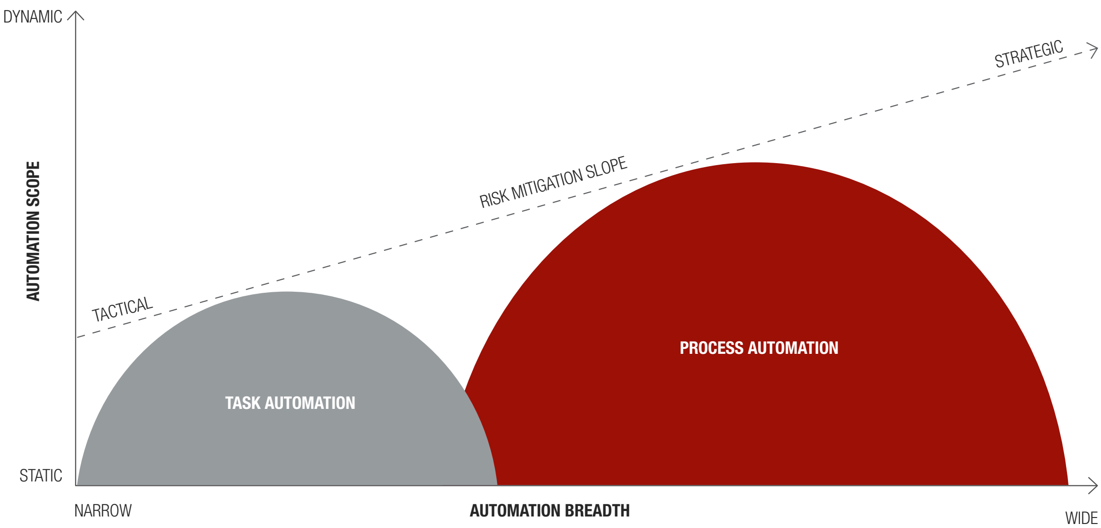
## 4. ROBOTIC PROCESS AUTOMATION – A TOOL FOR INTERNAL CONTROLS FUNCTIONS

Traditional control evaluation processes, subject to the structured test steps and an audit programs, have always been a somewhat handmade process. However, with the introduction and use of automation bots, it is possible to transform the control evaluation into an assembly line process.[10] Furthermore, automation enforces consistent performance, thus ensuring that no steps of the control testing program are omitted. To determine what type of control testing is readily adoptable for robotic process automation, an assessment of each testing step and a review of testing inputs (i.e., control documentation to be tested) and outputs (i.e., types of expected variance) is required. This is because substantiative testing (based on predictable volume of transactions, known supporting documentation, and other standardized systemic outputs) is more readily adoptable for robotic process automation than observational testing, which is reliant on human performance and, therefore, not suitable for automation.

In short, processes where inputs from applications are processed using rules and outputs and entered into other applications – and for which testing steps require human performer to access multiple databases, search through voluminous data records, run pre-determined queries, review defined (i.e., where information record tested is always expected to be found in a particular location) documentation, or log into various applications – are optimal candidates for developing automation bots. It is important to note that robotic process automation implementation will need to be carried through in a structured manner, since tasks will need to be broken into sub-steps (in effect, smaller sub-modules) that can be then relied on by the bot.

It should be stressed that reliance on bots to execute elements of control testing does not lessen the responsibility of the human to understand and validate the completeness and accuracy of the data being gathered by the bots.[11] Consequently, traditional control test procedures focused on

**Figure 2:** Spectrum of RPA impact[9]




[9] The risk mitigation enabled by automation can be expressed as a factor of automation activities, which can be categorized by task and process. Task automation is defined by narrow breath and static scope, i.e., limited number of automated stand-alone tasks. Process automation is defined by a dynamic scope and wide breadth, i.e., the automation of a sequence of steps and associated tasks embedded in the end-to-end process. The risk mitigation slope demonstrates how risk is increasingly mitigated moving from individual task automation, which only results in tactical risk mitigation, to process automation, which is more dynamic and results in greater risk mitigating capabilities.

[10] Harris, S. B., 2017, "Technology and the audit of today and tomorrow," speech at the PCAOB/AAA Annual Meeting, April 20, Washington D.C.

[11] Lin, P., and T. Hazelbacker, 2019, "Meeting challenges of artificial intelligence: what CPAs need to know," The CPA Journal, July, https://bit.ly/2OffLWC

assertions of completeness, accuracy, and existence still have to be performed. While the subject of AI and machine learning is beyond the scope of this paper, robotic process automation is a building block on the path to AI and intelligent machine learning that expands on RPA by learning from prior decisions to automatically adjust the algorithm. Advances in intelligent process automation, when it comes to comprehension, intelligence, and precision, will result in advanced versions of RPA. They will be able to analyze prior decisions and actions of the human control tester, learn over time, and then attain capability to actually perform tests of controls rather than simply pulling in the data for human operator's consideration and analysis.[12]

There are four phases in the control evaluation process: **planning, fieldwork, analytical procedures, and reporting**. These activities are common with control-centric functions and, depending on circumstances and capabilities, are prime focus areas for automation.

**Planning:** in a standard planning phase, a lot of the time-consuming preparatory activities, such as documenting control testing plans or setting up control testing templates, take place. The Institute of Internal Auditors estimates that a typical planning phase consumes almost to 20 to 25 percent of the allotted hourly budget. Steps involved include pulling risk taxonomies, entering process descriptions, attaching supporting memos, documenting process trees, and setting up multiple testing templates that comply with a defined structure and layout. Developing bots that can quickly perform set-up activities will free up time and expedite overall completion timeline.

**Fieldwork:** the essence of the risk management and control evaluation does not change with introduction of the automation bots but use of the bots provide for a new approach to gathering and evaluating evidence. One of the more time-consuming aspects of any control testing is review of the documentary evidence. A lot of time is spent obtaining supporting evidence from various databases, downloading electronic copies of the original sources documentation, or simply waiting for business to do so manually. Simply opening electronic attachment may involve such manual steps as accessing the database, typing the client code, entering the document reference number, going to the attachments, choosing the correct file path, entering a file name, and copying into a predefined folder structure. Developing bots that can quickly access documentation and aggregate it for review and assessment will make the overall process of control testing more efficient by saving time otherwise spent on highly manual tasks or wasted on waiting for business to furnish the requested documentation. A type of test often performed as part of fieldwork is reconciliation. Activities, such as querying for trial balance and extracting account and sub-account balances, can easily be automated.

**Analytics:** control testing activities focused on reconciliation and data validation require access to, and assessment of, extended datasets. Data extraction is an involved and technology dependent process that may involve pre-defined database queries. Bots created to aid data generation and data extraction support overall data analysis, can reduce erroneous sampling, and eliminate false sampling errors, while increasing efficiency and turnaround times for results generation. It should be stressed that data analysis with the use of RPA requires consistency across various data fields accessed by the bots.[13] Since data comes from different sources, different databases, and different documents, data fields with required content maybe named differently. Consequently, successful implementation of bots requires standardized data libraries, unified data domains, and is dependent upon an organizational-wide data strategy. If such unifying data strategy does not exist, the bots will not be able to extract the data in a meaningful manner. A type of test often performed with data is analytical procedures. Activities such as extracting values and comparing values across balances and systems, as well as generating variance alerts, can all be easily automated.

**Reporting:** control evaluation findings report writing is often said to be all about perspiration and never inspiration. A lot of the tasks involved with the compilation of the report are repetitive in nature and consist of including details from other control evaluation documents, such as testing program, announcement memo, findings details, etc. Bots can automate these repetitive tasks, such as report creation based on the testing program, socializing the report, and sending out inquiries and reminders.

## 5. ROBOTIC PROCESS AUTOMATION – A JOURNEY OF PARTNERSHIP

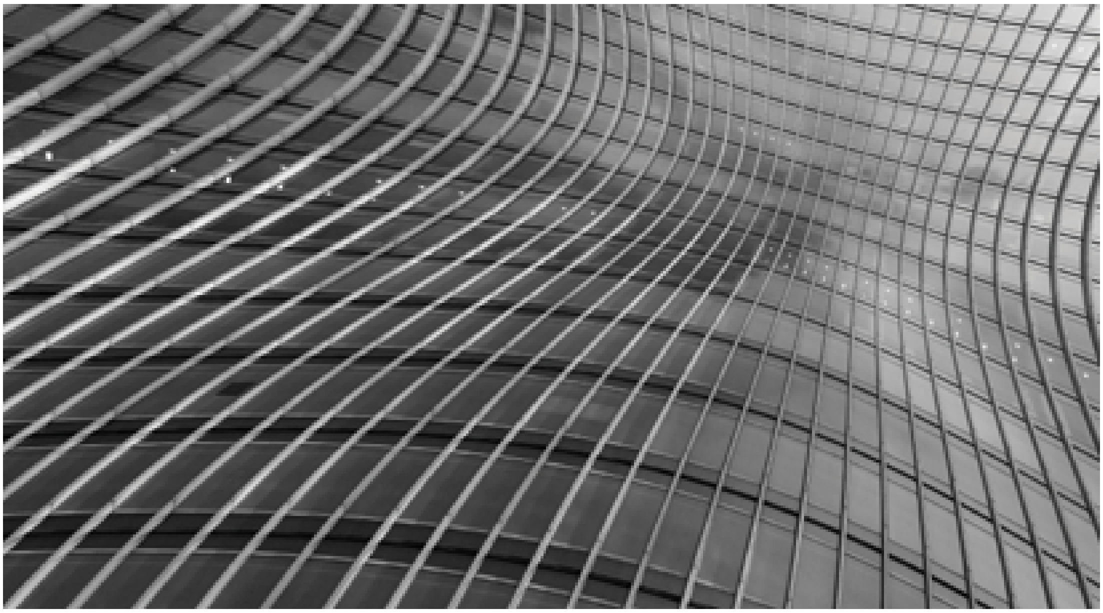
As outlined in the preceding sections, robotic process automation can bring significant immediate benefits to process operational efficiency and effectiveness across organization's control-centric functions. Furthermore, as an element of digital

[12] Joshi, N., 2019, "Robotic process automation just got 'intelligent' thanks to machine learning," Forbes, January 29, https://bit.ly/2PsHYtN
[13] Vasarhelyi, M. A., and A. M. Rozario, 2018, "How robotic process automation is transforming auditing," The CPA Journal, July, https://bit.ly/3kEPnBv

transformation, RPA is only a first step on the way to a more advanced machine learning and AI enablement. Whether RPA is implemented as a proof-of-concept exercise, as a tactical tool to facilitate one-off component of control testing, or as a driving force for strategic innovation implementation, the success of the transformative roll out will depend on the following elements that are common to all entities and functions:

**Strategy:** there is no "one size fits all" approach to robotic process automation implementation, as the needs vary based on the entity size, process complexity, control testing priorities, book of work, etc. We recommend that once the proof-of-concept is established, further development of the automation strategy at the lines of business level is aligned with the overall automation strategy and the strategic objectives of the firm. One of the key components of operational resilience is understanding of the important business services. Hence, development of a unified automation strategy makes it possible to get a clear understanding of the strategic objectives and to determine the value-added components of each line of business that are critical to operational resilience.

**Governance:** while a decentralized approach, using "out of the box" software packages, can produce faster adoption and more immediate benefits, any systemic implementation of RPA will depend on the organizational verticals, such as IT, risk, and compliance, having an integrated approach to oversight and development. Our recommendation is that RPA is implemented using the structured, disciplined approach recommended by COSO's Internal Controls principles[14] in order to avoid clashing priorities, haphazard build out, and failure to deliver. Furthermore, we recommend that entities establish centers of excellence that will play a central steering role in the RPA roll out. A key component of operational resilience is performance of self-assessments to ensure that recovery plans are sound and updated as needed. As a result, self-assessments of the automation plans, and whether stated objectives and efficiency gains promised by the robotic process automation are delivered, are a cornerstone of the overall governance.



[14] https://bit.ly/3c04xNM

**Implementation:** one of the most important questions that entities and functions have to address is whether to implement RPA as an in-house native development or partner up with recognized market leaders. Successful implementation of the robotic process automation will depend on identifying the right processes for automation and will be accompanied by collateral in support of structured and disciplined build out. These include documented process rationalization and redesign to identify automation pathways, business requirement documents that will capture the desired future state of an automated process, identification of the right tools suitable for roll out across multiple users, reliance on configurable or customizable programming, and use of agile versus waterfall approach, among others. Since business continuity addresses design, development, implementation, and maintenance of strategies, the decision regarding which implementation path to pursue has to be addressed early on as part of the operational resilience planning.

Invariably, successful implementation depends on selecting the right framework and the right partners to help with the digital transformation given the potential organizational-wide impact of RPA implementation.

## 6. CONCLUSION

Operational resilience has become a key agenda item for implementation driven by the regulatory focus and recurring disruptions faced by the organizations. RPA has proven capabilities to create bots that can perform human operator time- and labor-intensive process tasks. Within the context of operational resilience, robotic process automation allows business operations to recover and resume normal functioning faster even if the workspace is distributed. Given that bots can replicate actions of a number of human operators, they can be relied upon to execute process steps even if the human workforce is displaced or unavailable. Implementation of RPA is not without its challenges and has to be implemented systemically to attain its true potential, whether implemented in-house or with the participation of partners. Control-centric functions, while not traditionally first adopters of the new technology, cannot be left behind and can implement robotic process automation at every point in the control evaluation lifecycle.

# ABOUT CAPCO

Capco is a global technology and management consultancy dedicated to the financial services industry. Our professionals combine innovative thinking with unrivalled industry knowledge to offer our clients consulting expertise, complex technology and package integration, transformation delivery, and managed services, to move their organizations forward.

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