Everest Group® RESEARCH

RPA Futures

Accelerated and Intelligent Automation

Sarah Burnett, Vice president
Amardeep Modi, Senior Analyst

UiPath

Introduction

RPA is the new labor arbitrage model as robots take over repetitive and rules-based transactional processes, freeing people to do other work.

The drive for automation comes with its own challenges, these include a shortage of skills, projects that can take longer than expected, and scaling up issues.

The quest for efficiency has seen enterprises take different approaches to service delivery. From methodologies, such as six sigma, to streamlining processes, to labor arbitrage and outsourcing, leading organizations have religiously implemented all of them. They have also tapped into technology to channel their inner digital capabilities to integrate and automate processes. The rise of Robotic Process Automation (RPA) has lowered the cost and effort barriers to increasing digital capabilities. RPA is also disrupting the labor arbitrage model as robots take over repetitive and rules-based transactional processes, freeing people to do other work.

The drive for automation comes with its own challenges, these include a shortage of skills, projects that can take longer than expected, and scaling up issues.
This study looks into these challenges and how the RPA industry can address them.
More specifically:

- The current trend toward more intelligent robots is set to continue with the addition of Artificial Intelligence (AI) features to RPA platforms
- A move toward industry- and function-specific solutions has already started, as enterprises seek to speed up and increase the scale of automation

The Service Delivery Automation (SDA) spectrum

Service Delivery Automation (SDA) is Everest Group's term for a new generation of technologies that automate both business and IT processes. SDA technologies include RPA and tools with intelligence built into them.

The typical RPA software takes advantage of the user interface to integrate the automation or robot code with the underlying business system. These emulate a person using a computer to execute transactions and other logic-driven components of the business or IT processes. RPA is ideal for repetitive and rules-based activities that manipulate and transact structured data, e.g., copy data from one form on one system and paste to another. Being highly rules-based, the outcome of these are predictable / deterministic.

The typical intelligent or AI-based automation software taps into machine- or deep-learning algorithms to learn processes that normally require some human decision- making, often by following the actions of a human. It then extends its knowledge through self-learning and experience. This is a key differentiator from RPA robots, that must be programmed explicitly to perform a task. AI-based process automation solutions use different types of algorithms or techniques to work, e.g., statistical analysis, pattern recognition, Natural Language Processing (NLP), and sentiment analysis. They can process unstructured as well as structured data and are often used to handle content-centric processes, such as finding key information in vast repositories of documents or simply processing incoming invoices or customer requirements

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Key business problems in the traditional workforce model

Depending on how AI automations are governed, their ability to learn and handle exceptions and different types of process scenarios means that they can be non-deterministic. That means the outcome of a process could depend on how AI handles it.

Exhibit 1 summarizes the fundamental differences between RPA and AI-based automation.

EXHIBIT 1

Differences between RPA and AI-based automation

Source: Everest Group (2017)

Robotic Process Automation	Artificial Intelligence
Mimics a user's activities – non-invasive	Mimics human thought process through vision, language, and pattern detection
Can process structured and some semi-structured data	Can process structured, semi-structured, and unstructured data
Rules-based automation	Can "learn" or change its behavior over time without being explicitly programmed, based on data collected
Highly deterministic	Probabilistic but can have safeguards to make it deterministic
Agent-assist or digital labor models	Point solutions – not broad-based capability (Narrow AI)

RPA helps overcome limitations of the landscape of existing systems, whereas AI works with those limitations to convert them into relevant output

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The current state of RPA

Adoption patterns

Adoption is growing fast. Everest Group research shows that the market for RPA is growing at circa 80% CAGR. Enterprises with annual revenues of above US$1 billion are driving demand, seeking efficiency savings of upward of 25%. They account for 70% of the global RPA market.

The processes that are being automated most frequently include industry-specific activities, such as loan application processing in banking, claims processing in insurance, contact center processes in the front-office, and finance and accounting in the back- office.

Exhibit 2 provides a breakdown of RPA adoption by process type.

Success stories

There have been many good use cases of RPA and how it has enabled enterprises to handle recurring process issues and streamlining them.

Case study 1

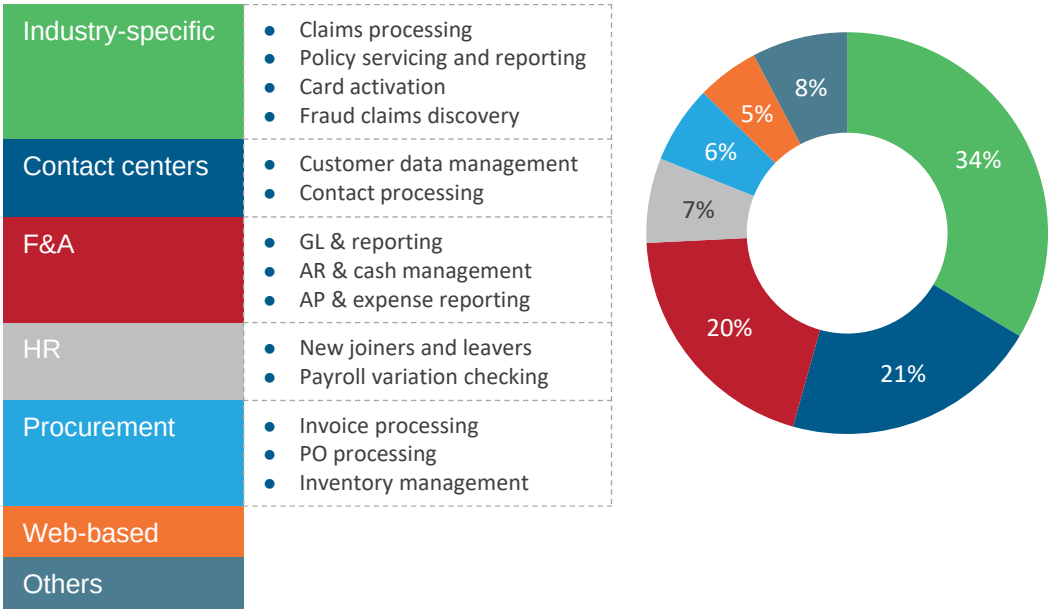
A good example of this is a TV company that turned to RPA to process orders from one of its major commercial business customers. This involved processing a data file, the size of which varied leading to challenges in staffing the project. There were several problems with the order handling process as well:

EXHIBIT 2

RPA adoption by business process/function[1]

Source: Everest Group (2017)

Percentage of use cases of RPA technology vendors



1 As of H1 2016

Source: Everest Group (2017)

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- This was an intermittent requirement; the broadcaster often had to hire temps to help with the data processing
- The format of the data in the files had to be checked, validated, and if needed, reformatted
- The hiring of temporary staff was expensive leading to recruitment and training costs
- Despite the training given to temps, there were frequent data quality issues and errors in the manually processed data

The broadcaster deployed an RPA solution consisting of three robots that, based on rules, checked the data quality and formatting and handled the data cleansing, transformation, and transfer to the ERP system.

Challenges included a shortage of skills. The broadcaster wanted to deploy the RPA solution internally but it could not find any experienced developers. Having checked out services from several System Integrators (SIs) , it chose to get professional services from the RPA vendor itself.

Other challenges were of an operational nature and came to light when the robots were deployed and set to run 24x7. Firstly, there was a problem with the increased speed and the volume of data entry into the broadcaster's ERP system. This led to a known problem with a database occurring more frequently than before and leading to system crashes. As a result, the robots were programmed to slow themselves down to reduce the load on the ERP system. Secondly, at certain times of day the robots clashed with a system backup procedure that took up most of the computing resources. This led to the robots crashing. The runtime schedule was adjusted to avoid this problem.

Benefits included significantly improved data quality. The data entry errors were eradicated. Based on pre-defined rules, the robots checked the data for quality and validity and made complex decisions about what corrections or transformations are needed, e.g., to date formats. According to the project leader, the robots made better data validation decisions than the temps did. This is unsurprising, given that the robots had data rules embedded in their code.

Based on the improved processing and lowering of costs, the investment in RPA was on course to achieve a return within eight months.

Case study 2

Another example is of an insurance company that invested in RPA to reduce manual processing of many rules-based processes. The company had identified significant opportunities for automation. These were across departments and functions covering a wide range of processes. It started with six robots, five for the back-office and one for the front-office. More than a dozen other robots were to be deployed as well.

Change management was by far the biggest challenge it faced when automating these processes. There were misconceptions among the stakeholders as to what the technology could and could not do. In particular, expectations about how quickly robots could be deployed were very high, but the actual deployment times proved longer than anticipated

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Furthermore, every business unit wanted a pilot project before RPA was implemented in their function. This increased the time that it took to roll out RPA across the organization. The project went ahead with RPA robots deployed to automate several processes including parts of HR recruiting, claims processing, account balance reconciliation, and legal and compliance screening.

While it was too early to quantify the benefits, the insurer reported faster processing times and better process governance and compliance. It is planning to invest more in its automation capability including AI to handle more complex requirements.

Challenges

It is more a case of knowing how to code using visual BASIC and less like learning JavaScript.

The above case studies highlight some of the benefits as well as the most common challenges that organizations face when deploying RPA. These include:

- Scarcity of automation skills
- The time that it takes to build and deploy robots
- Scaling up automations
- The drivers for AI-based automation in addition to RPA

In the rest of this paper, we examine how technology vendors and service providers can help users address these challenges.

Skills

The success of RPA has led to a shortage of skills globally. RPA users tell us that they work with SIs to supplement their woefully limited automation skills. The SIs too struggle to find adequate resources due to high demand for RPA skills. Everest Group believes that this will become less of a problem over time, given that many RPA technology vendors are investing in major training programs for users. Initiatives include making training available on open source platforms, investing in academies, and joining forces with universities to add RPA to technology training courses.

The key requirement is logical thinking and numeracy, given that robots can be coded using drag-and-drop interfaces. It is more a case of knowing how to code using visual BASIC and less like learning JavaScript. Even those with some basic programming skills can learn to add this to their portfolio of coding skills easily.

Given the nature of RPA coding requirements and vendors' skills initiatives, we expect the shortage to become non-specific to RPA. It will be the same as the wider and on-going technology skills crisis in Europe and North America that cuts across all segments of technology. We believe that organizations will turn to offshore and nearshore locations to find and supplement their RPA skills. Everest Group report "Talent Model and Location Hotspots for Service Delivery Automation (SDA) Center of Excellence (CoE)" looks at global hotspots for RPA talent.

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Accelerating automation deployments and scaling up

Many processes that involve the use of industry standard software, such as Enterprise Resource Planning (ERP) or Human Resources (HR) or procurement solutions, have standard parts to their processes that are common among many enterprises. These common standard processes provide opportunities for RPA vendors and their partners to help speed up automation.

There already are horizontal capabilities such as methods and modules in some RPA technologies to connect to and automate some aspects of processes within well-known enterprise software such as Oracle, SAP, Microsoft Office products such as Outlook and Excel spreadsheets, PDF documents, interfaces to mainframes, and Citrix. It is the depth and breadth of these types of offerings that we expect RPA vendors to enhance.

Furthermore, we expect to see more industry- or function-specific support in RPA technologies. We are starting to see these emerge in the market. The verticalization or function-specific flavors of RPA could come in as pre-defined models, control- or process-flows that combine a few standard process steps, e.g., processing HR forms for a new joiner, or processing a claim in the insurance sector.

Automation of these types of processes will require other developments too, e.g., orchestration, and therefore we expect more effort to go into strengthening workflow and orchestration features as well.

These enhancements require function or industry knowledge, which is currently not the forté of many RPA technology vendors. We expect the development will come by vendors working with partners or new OEM-type agreements with specialist companies. Some system integrators are already developing these kinds of reusable software components on top of RPA platforms. Some user community-based developments are also underway.

Combining RPA and AI

Many early adopters of SDA technology deployed either RPA or AI as discrete solutions to automate specific processes. With user maturity, there is a growing trend for more joined-up deployments. After all, processes often involve handling both structured and unstructured data. Take order processing. The part that usually gets automated is that of entering data from a purchase order into a database. Other parts of the process, e.g., reading emails that customers send to place orders, is typically not automated. This is because it requires an intelligent robot to read and understand the content of the email as well. It is processing unstructured content that is outside the realm of RPA. Therefore, to automate more of the order handling process, RPA needs to work with an AI-enabled automation solution. Many organizations are waking up to this and are starting to deploy AI to complement their RPA.

Exhibit 3, overleaf, highlights the evolution of RPA and its progress toward integration with AI.

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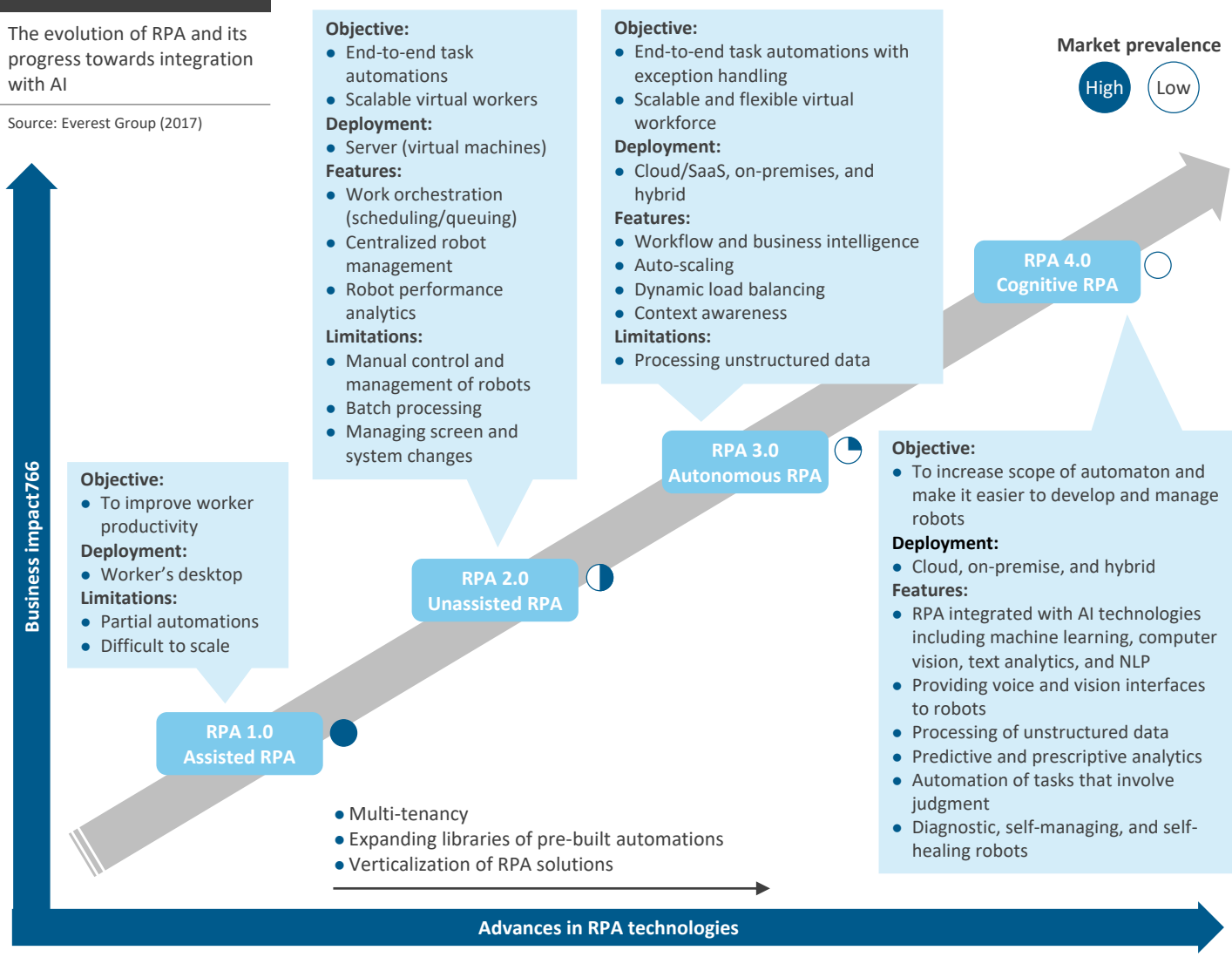
EXHIBIT 3

The evolution of RPA and its progress towards integration with AI

Source: Everest Group (2017)



As highlighted in Exhibit 3, AI can complement and augment RPA in different ways. **Recent developments in the technology landscape point to the following:**

- Expand the scope of automation: It can help expand the scope of automation, e.g., enable organizations to automate processes that handle structured and unstructured data, therefore automate more of each process and a wider variety of processes
- Enhance RPA functionality: It can make RPA function better, e.g., through the use of computer vision to identify screen objects, or make robots self-healing so that they can fix problems as they occur instead of stopping when they encounter an exception
- Improve RPA usability: In the more distant future, we could see users interacting with robots not just through a command line interface, but through voice and gesture interactions as well. This would significantly increase the usability of robots, leading to scenarios where an operator can speak to the robot about to ask for its status and have it report back using voice synthesis

Source: Everest Group (2017)

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Why organizations must change in the face of a growing digital workforce

We have already seen organizations deploy RPA with robots running according to schedules and on a server in the datacenter. This is the start of the digital workforce. The digital workforce is set to expand as RPA becomes easier to use, to automate more complex processes, and is further boosted by AI, so that it can do more and better. The digital workforce is on track to become more intelligent by degrees.

To remain competitive, organizations need to get ready and develop capabilities to make the most of advances in RPA and intelligent automation technologies. The race is on for efficiency, capacity, and consequently, more competitive pricing of products and services.

Organizations need to review and update their enterprise IT and HR policies, e.g., to allow robots access to machine and software licenses. Organizations will have to take a good hard look at their security policies as well, and make them fit for the age of automation, e.g., what robots have access to, should they be run on virtual machines or behind locked screens, and who has access to the robots and their scheduling.

Organizations might also find themselves with new recruitment requirements as new opportunities emerge, made possible through increased capacity and better customer experience, that lead to more demand and revenue growth.

There is a staffing angle to consider as well, given that the workforce might be against robotization and see automation as a threat. Therefore, it is important for HR departments, first to learn about automation and then to train the workforce about the pros and cons of the technology and how it will change their work environment. Most importantly, to highlight the positive aspects of RPA and not just the potential threat to jobs.

Key topics to consider include:

- Understand what can and cannot be automated
- How RPA can boost staff productivity and relieve personnel from mundane and repetitive low skilled work
- Understanding AI technologies, how they work, and learn what to do – this could be by watching the workers – something that HR needs to handle sensitively to get the workforce ready for
- Up-skilling for more knowledge-based work and new roles created as a result of RPA and AI adoption, e.g., AI trainers
- Assess new employment models such as crowdsourcing skills from on-demand skills markets
- Loss of work due to robotization and help with moving on to other jobs

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Conclusion

As the RPA market continues its meteoric rise, more opportunities emerge to further enhance the technology. These include extending pre-built libraries of modules and methods with automations for the standard parts of business functions, e.g., invoice processing and industry-specific requirements such as Know Your Customer (KYC).
AI, in the context of business process automation, is also becoming more widely available. Early adopters of RPA are already adding AI to their deployments to expand the scope and scale of automation in their enterprises. Apart from this, AI can improve the functionality and features of RPA to make it better at what it does, e.g., computer vision for object recognition, and easier to use, e.g., via voice interfaces.

These developments, together with initiatives to increase skills in this field, are set to make a positive mark on the market.

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About Everest Group

Everest Group is a consulting and research firm focused on strategic IT, business services, and sourcing. We are trusted advisors to senior executives of leading enterprises, providers, and investors. Our firm helps clients improve operational and financial performance through a hands-on process that supports them in making well-informed decisions that deliver high-impact results and achieve sustained value. Our insight and guidance empower clients to improve organizational efficiency, effectiveness, agility, and responsiveness. What sets Everest Group apart is the integration of deep sourcing knowledge, problem-solving skills and original research. Details and in-depth content are available at www.everestgrp.com.

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For more information about Everest Group, please contact:

+1-214-451-3000
info@everestgrp.com

For more information about this topic please contact the author(s):

Sarah Burnett, Vice President
sarah.burnett@everestgrp.com

Amardeep Modi, Senior Analyst
amardeep.modi@everestgrp.com

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