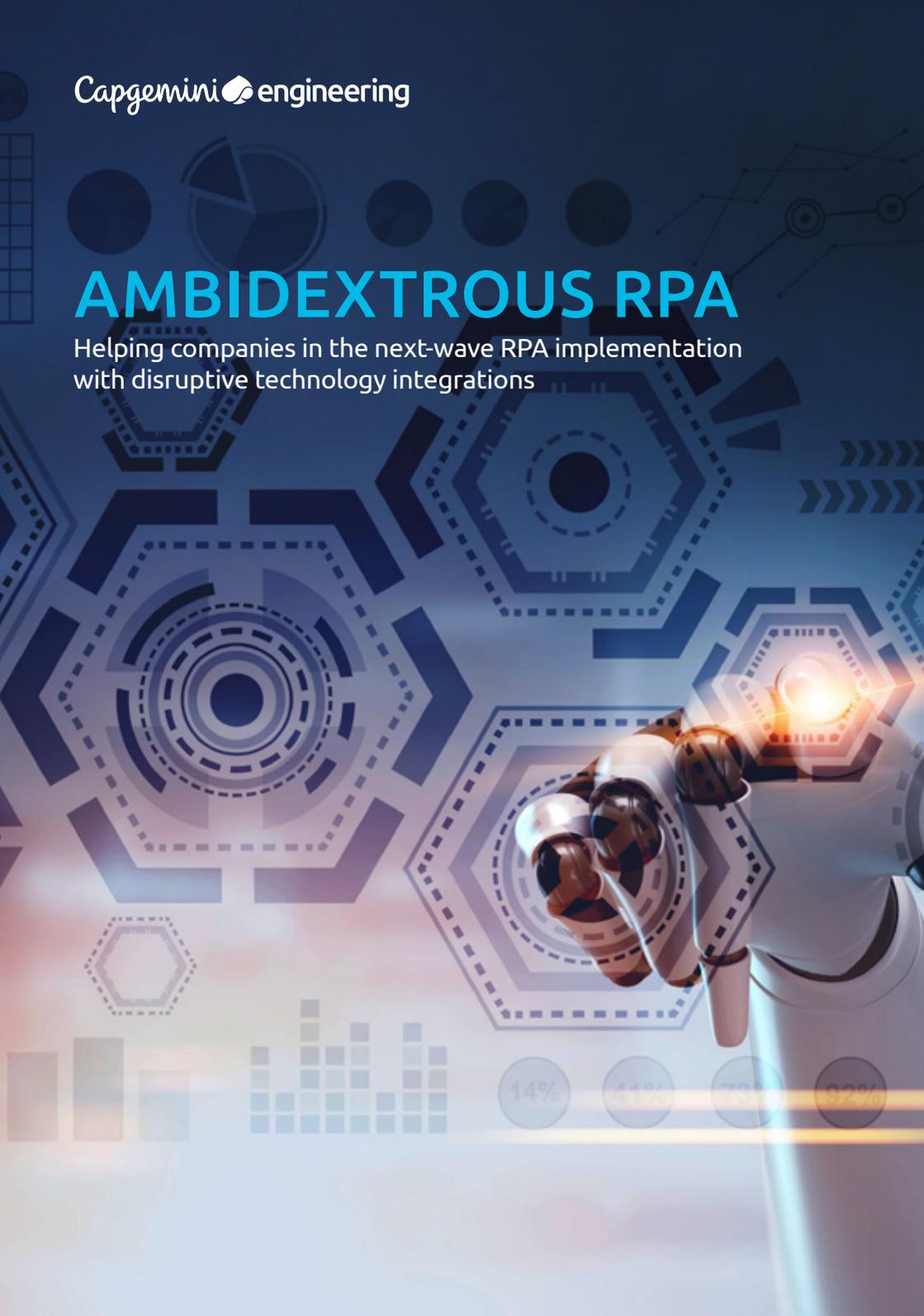


# AMBIDEXTROUS RPA

Helping companies in the next-wave RPA implementation with disruptive technology integrations



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# Introduction

Initially, when Robotic Process Automation (RPA) as a concept knocked industry doors, it was only treated as a band-aid solution. It was expected to eliminate repetitive, rule based, mundane activities to increase business efficiency and productivity. In that stage, RPA mainly focused on workflow automation and screen scraping activities. Industries were accepting it as a mix of success and disappointment.

The disappointment was due to the many requirements such as a high degree of programming, significant IT involvement to resolve, consumption of unstructured data, minor changes to the operating environment causing the bot to fail, limited input data sources compatibility, etc.

But with the growing industry needs, RPA has evolved to be able to sense, assimilate, learn, understand patterns, become platform independent, visualize images, analyze unstructured data, integrate multi-data input, and do API or code integration with ease.

This gave rise to advanced RPA, an intuitive RPA with a robust technology base catering to a wide range of processes and automation scenarios.

Early adopters of RPA were the insurance, banking, BPO, telecom, and technology sectors, due to the nature of work, which is repetitive and rule based. However, the advanced RPA has opened doors for other industry segments as well, such as manufacturing, life sciences, supply chain, etc., and have added more use cases to early adopters.

This has allowed companies to keep pace with changing economic scenarios and margin pressures.

Recent surveys have shown that RPA is the top priority for business leaders today and is being adopted rapidly.



# Challenges with existing RPA

## Unstructured data processing

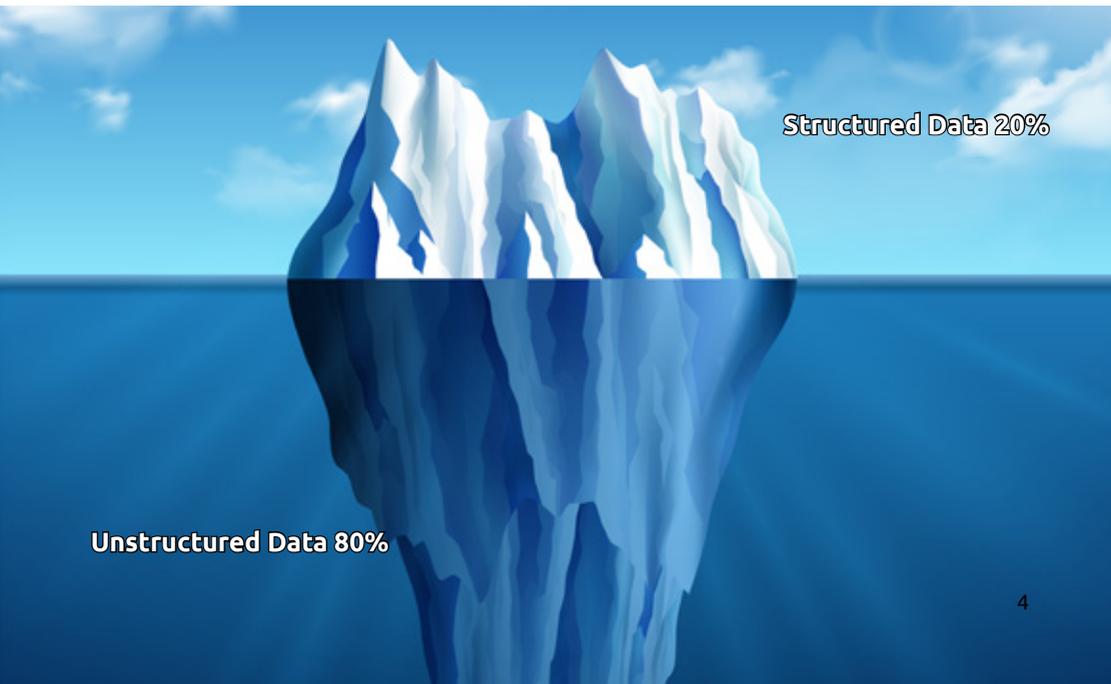
RPA enabling business processes has gained the attention of many industries and has been leveraged to deal with manual, deterministic, repetitive activities, and structured data. But the huge opportunity area for RPA is still unexplored.

The iceberg analogy helps us understand the data universe and business needs to get intelligent automation solutions.

Structured data (spreadsheets, CSV, databases, etc.) is accessible for automation and can only be utilized directly and fed to the automation system.

To utilize unstructured data through traditional RPA systems, knowledge workers should churn and fine tune the data into the predefined format as per the requirement.

Since the major workforce is refining and providing the right information to the business process or the automation systems, the actual ROI and benefits of automation are often not achieved.



## Resolving complex business problems

A few of the complex business problems that the traditional RPA was not able to handle were legacy system digitalization, judgmental activities, self-healing process, multilingual implementation, enterprise data processing analysis, and remote system automation. Since RPA was only operational in a few areas within the business process, the benefits of automation were never fully leveraged, causing a huge business loss.

## Solution stability, scalability

Any change in the existing environment of traditional RPA could halt the working and may require a code revisit, causing continuous overhead for the technical staff. However, there were constant thoughts around RPA becoming platform and environment independent. Another expectation was the scalability of the RPA solution to accommodate and manage peak workload with autoscaling.

## Analytical capability

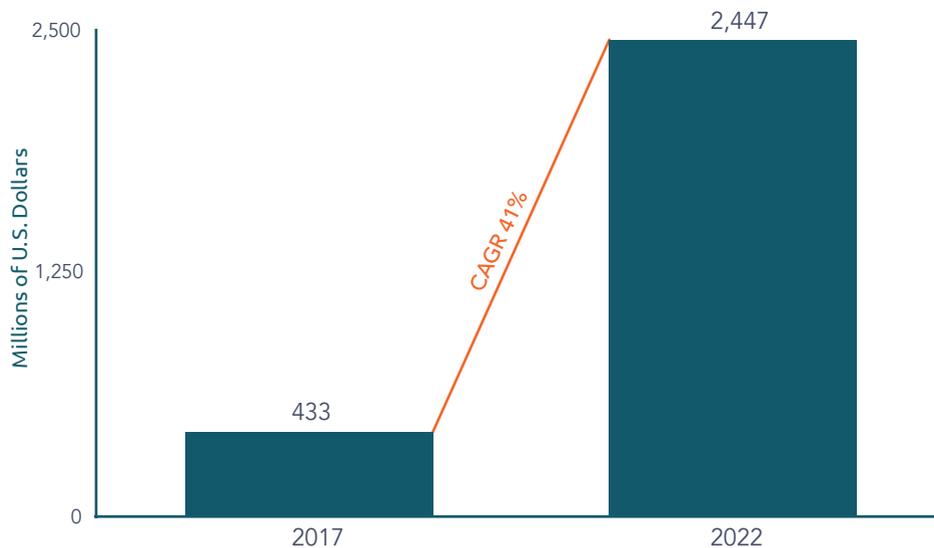
Once woven into a specific pattern within the RPA, the data provides insights for the business process. In traditional RPA, this thought was missing. The expectation was to gather data from multiple running bots, analyze and create necessary charts and dashboards required to validate multiple business aspects, and help predict and take necessary business decisions.



# Future of robotic process automation market

The RPA market is growing at a lightning pace. Gartner predicts that by 2020, end-user spending on RPA software will reach \$1 billion, growing at a compound annual growth rate (CAGR) of 41% from 2015 through 2020. This indicates that there is a lot of focus to increase automation use cases and industry coverage.

Robotic process automation spending, 2017-2022



Source: Gartner (October 2018)

Some industries, such as banking and telecom, have benefited and progressed tremendously with RPA. However, many other industries such as retail, healthcare, manufacturing, and travel are still trying to get a competitive advantage due to the limitations in RPA.

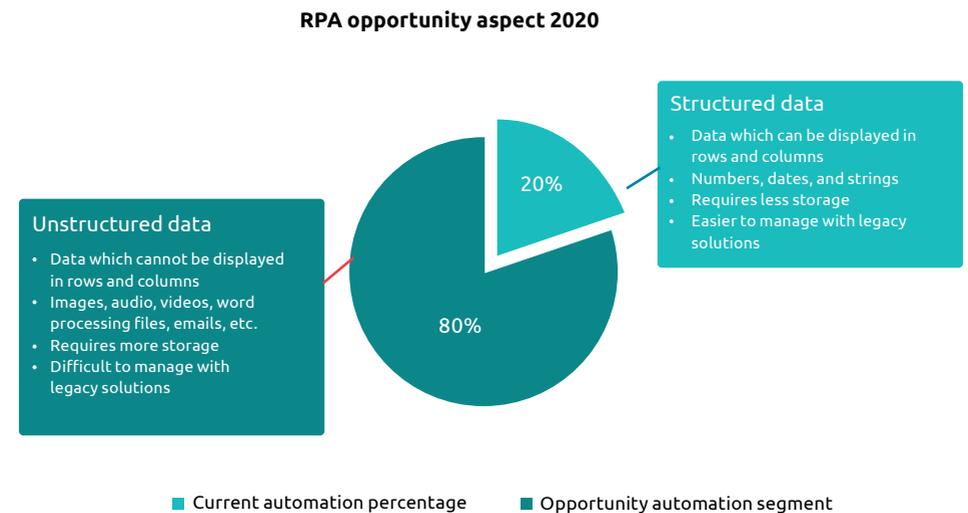
The below chart shows how the current RPA is only happening on structured data, which is only 20% of the whole pool, and there are a whole lot of opportunities yet to be explored.

To address the other 80% of the opportunity area, there is a need to advance and enable RPA with technology integrators and intelligence enablers to structure the unstructured data (contracts, pictures, video, voice, etc.) automatically with ease.

Many Capgemini Engineering clients are investing or have already invested to be a part of the RPA disruption.

Some of the important forecasts done by Gartner are showcasing the future of the RPA market as exponentially evolving to benefit industries with enhanced integration of next-gen technologies.

- By 2022, increased automation and AI functionality from established enterprise software product suites, major ERP and contact center vendors, and new AI tools will reduce spending on RPA by 25%
- By 2022, more than 20% of RPA deployments will be cloud-based – RPAaaS – bought on a pay-per-use basis
- In 2019, average RPA prices will decrease by 10% to 15%, with annual 5% to 10% decreases expected in 2020 and 2021

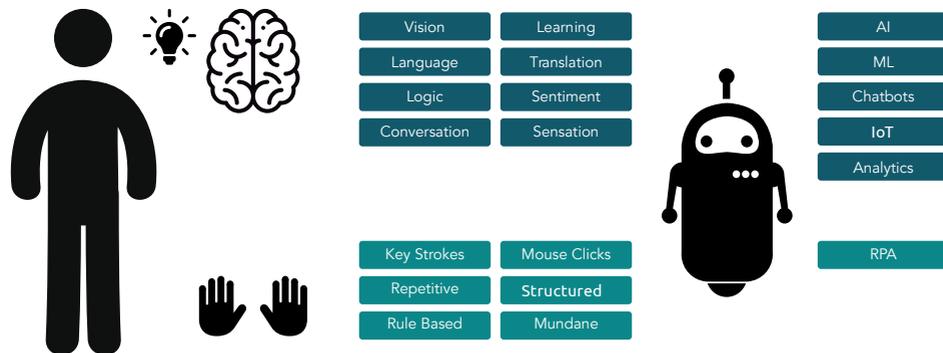


# Capgemini Engineering point of view

In our world today, the gap between man and machine is less prominent. Human traits are readdressed with intelligent and smarter robot capabilities.

Human effort and time that is getting spent on repetitive or rule based activities could be better utilized if they could be freed and efficiently leveraged on more productive tasks. This thought evolved through various transformation stages to become RPA.

The most complicated part of the human body is the brain. It carries out various activities simultaneously, such as constant learning, language interpretation, language translation, logical thinking, sentiment analysis, and much more.



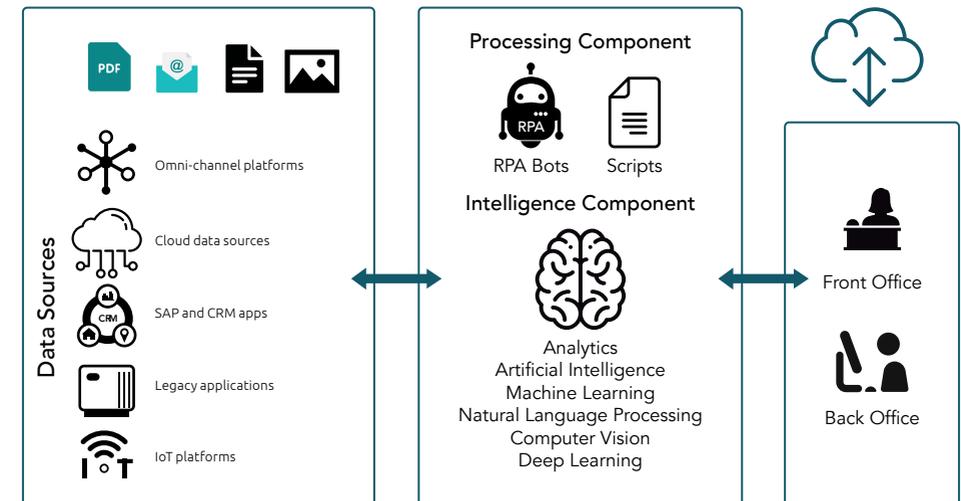
In a few decades now, technology has evolved to cater to many such brain related attributes:

- Learning ability of human beings – Machine Learning
- Vision and segregation skills – Computer Vision
- Language and translation skills – Natural Language Processing
- Sentiment correlation – Sentiment Analytics

Initially, RPA was only able to gather data from limited structured sources, but now it has the capability or is getting accustomed to extract data from pictures, cloud data sources, NOSQL DB, JSON, and unstructured invoices.

Processes that use RPA and Basic Scripting are now backed by advanced AI/ML technologies to solve complex tasks mentioned above. The operating platforms, such as desktops or virtual machines in the traditional RPA, have now progressed to a cloud environment that provides scalability, resilience, and reliability with ease.

With the evolution of robots in RPA, where they can successfully perform repetitive and rule based tasks with ease, industries have started looking forward to more intelligent and cognitive solutions from them.



# Advanced RPA integrated technologies and limitations

Let's understand the technologies of the advanced RPA ecosystem and how industries can benefit out of this revolution.

## Computer vision

Computer vision is the recognition of objects in images and user interfaces, converting semi-structured pictures and images into structured data.

- It is used almost everywhere in the technology ecosystem such as image and video classification, content filtering, security, face detection, etc.
- This enhances RPA view to look through a wide range of graphics and types of documents, which is currently limited

## Benefits from computer vision integration

- Automation challenges while automating VDI environments are solved
- UI automation methods including SAP, Flash, Silverlight, and PDFs are more effective
- Automation where images are in scope
- Recognition of different type formats of invoices and purchase orders is now possible

- Automation can now adapt to environmental changes and are smarter
- Effective automation of mainframe, Java, and thick and thin clients is possible

## Natural language processing

Natural language processing is the ability of modern computers to intelligently identify and extract unstructured data and transform it into structured data for processing, using a combination of statistical, linguistic, and machine learning techniques.

## Benefits from NLP Integration

- RPA implementation where information extraction and semantic analysis is involved, e.g., RPA implementation where customer feedback is in free text or chats
- Keyword Searching and Matching Automations become feasible, e.g., recruitment automation by extracting the requirement related information directly from the job description

- RPA involving information extraction and semantic analysis, e.g., effective ticket management automation through the interpretation of incident escalation from free text
- Spelling check and information extraction automation, e.g., interpretation of mails to raise a work order

## Chatbot

A chatbot is a conversational agent which mimics humans using artificial intelligence to conduct conversations via text.

Chatbots can be of two types:

- Rule based where chatbots provide predefined responses from a database, based on the keywords used for the search
- Smart machine based chatbots that inherit their capabilities from AI and Cognitive Computing and adapt their behavior based on customer interactions

## Benefits from chatbot integration

- Connecting Front Office and Back Office by resolving customer issues faster and with more accuracy, e.g., deployment trigger and discovering network device status based on user inputs
- Enhanced customer service management, e.g., replying with a resolution with chat history after generating ticket number or barcode and concluding the interaction

## Cloud computing

Cloud computing is network-based computing. Without getting caught up in code, storage, infrastructure, etc., the user can develop, manage, and run applications using cloud computing.

## Benefits from cloud computing integration

- RPA implementation where the robot's ecosystem is elastic in nature and requires workload management and on-demand scaling, e.g., businesses that require frequent onboarding and offboarding of bots
- RPA use cases that require artificial intelligence, machine learning, and integrations with some of the world's leading enterprise software, e.g., unstructured data processing where cloud generated APIs can be utilized to access standard models

## Analytics

Analytics is a discovery of meaningful patterns in data using advanced algorithms. It reveals what's meaningful and predicts what's next.

## Benefits from analytics integration

- Analyzing enormous data flowing through RPA bots to make understandable patterns to get meaningful predictions on any business process, e.g., in P2P RPA analytics, integration can predict multiple aspects related to the supplied request, invoicing, etc. For cash analytics, integration can predict multiple aspects related to order fulfillment, shipping, and transportation, etc.

**Technology integration limitations:**

There can be various aspects related to technology transformation.

RPA is becoming ambidextrous with disruptive technologies integration and more use cases are discovered touching upon almost all industry segments.

There is a business need to access the business cases and let experts analyze your process to see if the said use case is compatible with Advanced RPA.

There can be various aspects related to technology transformation.



Computer Vision	Natural Language Processing (NLP)	Chatbots	Analytics
<ul style="list-style-type: none"> <li>• Blurry images</li> <li>• Artistic font styles</li> <li>• Shadow and glare</li> <li>• Strikethrough text</li> <li>• Cursive text</li> </ul>	<ul style="list-style-type: none"> <li>• Short sentences text</li> <li>• Training data not readily available</li> <li>• Research or product specific data</li> <li>• Casual sentences</li> </ul>	<ul style="list-style-type: none"> <li>• Human assistance is still often preferred</li> <li>• Exhaustive data is required to build a truly intelligent chatbot</li> <li>• Use of casual language and way of texting</li> </ul>	<ul style="list-style-type: none"> <li>• Inconsistent data collection</li> <li>• Data correlation</li> </ul>

# Conclusion and way forward

RPA with AI, computer vision, and OCR's integrations have opened up a whole new world of automation possibilities; a wide range of companies and industries can benefit from the combination.

Next level disruption has begun!

Long-term success in RPA can only be assured when the long-term goals of the organization are in line with the technology and business.

Please brainstorm on the below questionnaire and approach us for further assistance.

**Strategic questions**

- What strategy does the organization have in mind for adopting automation?
- What type of governance model is the organization looking for?
- What type of business case or scenario is the organization targeting to automate?
- What is the investment commitment the organization has for the automation initiatives?

**Operational questions**

- Is the current infrastructure compatible with available automation platforms?
- Which RPA platform is offering security as per organizational policies or standards?

- Are the software platforms in the current organization supported by automation platforms?

Capgemini Engineering is working on RPA implementations with multiple telecommunications, energy, industrial, aviation, and life science customers and has delivered automation across the globe.

Our approach to RPA is to do lean assessment topped up with a domain, quality expertise, and design thinking. Our intelligent services and frameworks have transformed the conventional operational process of an enterprise into predictive and self-healing.

Capgemini Engineering can help you with RPA business consultation, tool and technology selection, automation roadmap, future-proofed solutions, quick bot development, and maintenance and support.

Be a part of a transformation journey with Capgemini Engineering.

# Author

Jalaj Pateria works as an Automation Solution Architect with Capgemini Engineering's Product Services and Support (PSS) team, which addresses every aspect of the product life cycle including integration and roll-out, customization and configuration, technical support, and managed services in areas impacting new technology integration. RPA is a specialized capability from the PSS service line to transform operations and support.

## About Capgemini Engineering

Capgemini Engineering combines, under one brand, a unique set of strengths from across the Capgemini Group: the world leading engineering and R&D services of Altran – acquired by Capgemini in 2020 – and Capgemini's digital manufacturing expertise. With broad industry knowledge and cutting-edge technologies in digital and software, Capgemini Engineering supports the convergence of the physical and digital worlds. Combined with the capabilities of the rest of the Group, it helps clients to accelerate their journey towards Intelligent Industry. Capgemini Engineering has more than 52,000 engineer and scientist team members in over 30 countries across sectors including aeronautics, automotive, railways, communications, energy, life sciences, semiconductors, software & internet, space & defence, and consumer products.

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