

# **Beyond RPA: How to Build Toward End-to-End Process Automation**

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## Overview

Robotic Process Automation has come of age and **Forrester Research** predicts RPA market revenue is on target to reach \$2.9 billion in 2021.<sup>1</sup>

It's not hard to see why this market is maturing fast, with RPA promising an easy and quick fix to automate many of the manual, repetitive tasks that require manual data input or an exchange of data with an inflexible legacy system. RPA bots can be deployed quickly and deliver an immediate productivity boost, not to mention significant cost savings.

However, today's RPA market is vast. You can find everything from vendors promoting low-code solutions to code-heavy approaches, all marketed under the RPA banner. So it's becoming imperative to differentiate "Robotic Process Automation" (RPA) from "Process Automation" (sometimes also referred to as "workflow automation"), which perform very different functions, because when it comes to automating business processes end-to-end, you are looking at a set of different problems that require a diverse set of tools.

This is what [Gartner addresses](#) with the concept of "Hyperautomation," its #1 IT Trend for 2020:

***"As no single tool can replace humans, hyperautomation today involves a combination of tools, including robotic process automation (RPA), intelligent business management software (iBPMS) and AI, with a goal of increasingly AI-driven decision making."***

In the wider automation picture, RPA plays an important role to automate parts of a business process. Other parts may still be completed by humans, (micro-)services, IoT devices, or AI/ML components etc. Thus RPA products and end-to-end process automation products like Camunda are complementary. You can combine them by letting Camunda orchestrate RPA bots together with other parts of a business process.

In this whitepaper, we'll explore the best applications of RPA, as part of a wider digital transformation journey toward end-to-end process automation.

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<sup>1</sup> [The RPA Market Has Reached a Defining Moment](#), August 2020, Forrester Research

## RPA and Business Processes

To first understand where RPA can be most effective, we need to understand business processes -- the algorithms that determine how an organization runs. Successful businesses grow from proven, effective processes.

Most organizations run hundreds or even thousands of different applications, either bought off the shelf or built themselves, that are involved in executing business processes. Because of this, most business processes are not executed in just one system from start to finish ("end-to-end"), but instead span different systems or services. This is often inevitable and sometimes even desired, for example in microservices architectures.

As a consequence, a core business process typically consists of many different parts that are executed in isolation. This leads to a lack of visibility, integration and control of the complete (end-to-end) process, eventually impairing the digital operational excellence of an organization.

## RPA and the Automation Toolbox

RPA excels as a tactical solution to automate one of those parts of a process, typically individual tasks that traditionally have been paper or manual-input based. From retyping results from an old green-screen system into a web interface, or getting information from a scanned document into your CRM system, RPA provides a solution for automating these truly painful activities.

***"RPA, therefore, is a useful short-term solution to selectively automate the work of individual components in legacy systems, and help automate processes without significant time investment or too much heavy lifting from IT."***

## Benefits

### What does RPA deliver?

RPA has numerous and swift benefits. [The State of Process Automation Report 2020](#), which surveyed 400 IT decision makers in North America and Europe to benchmark enterprise adoption and determine the biggest trends, challenges and opportunities for improvement, found that 65% of respondents using RPA said it helped deliver automation fast.

From cost savings and rising customer satisfaction, RPA is a useful short-term solution to selectively automate the work of individual components in legacy systems, and help automate processes without a significant time investment.

**65%**

Report RPA delivers automation quickly



### Cost savings

Global companies have proven that RPA really does equate to significant cost savings. Over the past five years, [Deutsche Telekom](#) has scaled up RPA automation in different lines of business to become one of the one of the biggest RPA users in Europe. By 2019, it had automated more than 450 processes, managed by 3,000 unattended bots, achieving savings of more than EUR 93 million per year.

Vice President Service IT Marco Einacker said, “RPA is a good thing and it has positive effects on our organisation, bottom line and on customers and employee satisfaction.”



### Fast automation

[Speaking at CamundaCon LIVE 2020.1](#), Nokia, Deutsche Telekom and NatWest Group agreed that RPA has improved data quality, especially when compared to manual data entry completed by employees. Equally, introducing RPA frees employees from manual data entry, allowing them to concentrate on more valuable activities, like customer engagement and process optimization.



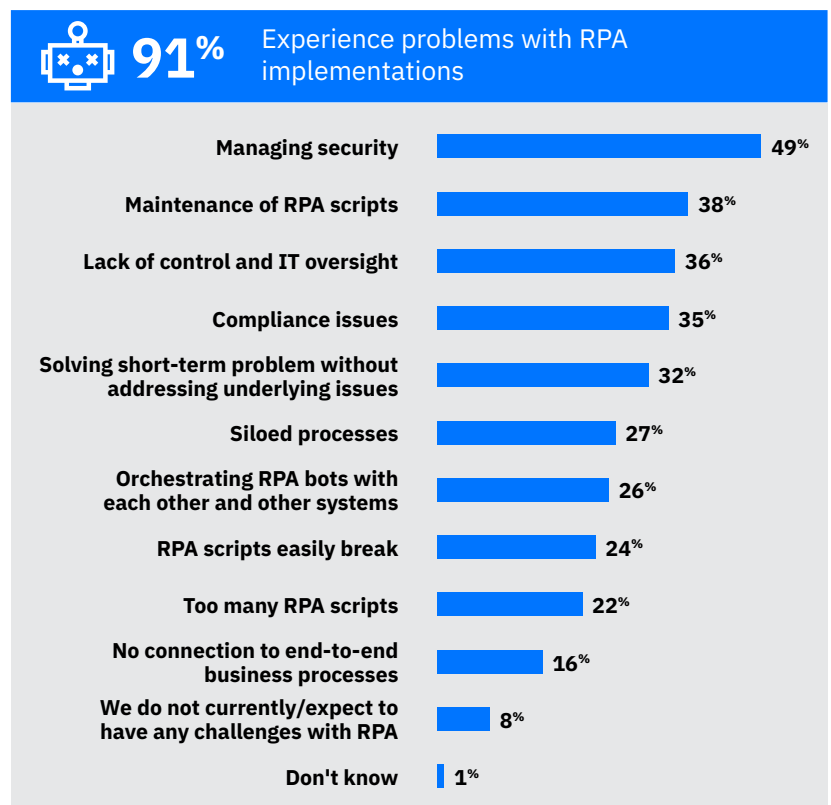
### Automating existing UI

The sweet spot, where [RPA really comes into its own](#), is the automated control of existing user interfaces (UI), where applications don't offer an API. And this is important, because a lot of enterprises are struggling with legacy technology.

In fact, Deutsche Telekom's digital transformation journey began in 2015 as the business sought to tackle pain points in manual customer service processes. However, with underlying legacy IT systems which didn't provide APIs, RPA was one of the few technologies that could be implemented quickly and without too much heavy lifting.

## Pitfalls

The benefits of RPA are without doubt numerous and the technology is proven to be a very useful part of the digital transformation tool kit. However, RPA does not solve the underlying issues with legacy tech stacks. The State of Process Automation Report revealed 91% of respondents were confronted with challenges including managing security, maintenance, lack of control and compliance with their RPA implementations.



### Managing a highly maintenance-intensive technology

Thanks to RPA's brittle nature, if your front end changes, your bot likely doesn't work anymore. Marco Einacker, VP IT Services at Deutsche Telekom, offers one example of this brittleness: "Bots work like human workers, so their passwords have to change every 90 days. That one factor leads to breakages, and lots of maintenance issues with the bots."

Deutsche Telekom also experienced issues at scale, ending up with seven different RPA platforms and seven different libraries to maintain. With such complexity, a single change in the main CRM system led to change requests on four different RPA platforms.

"Over the years we automated more and more complex processes so code became harder to maintain. We feared the risk of technical debt as we had no backend automation," Einacker said.



## Losing control of long-running processes

The ability to automate and orchestrate [long-running processes](#) end-to-end is essential for business continuity and customer experience alike. But to do this, you need state handling and persistence — the ability to wait, either for users to complete a task, a timer to expire, or perhaps an external event to occur.

RPA tools are not able to handle such orchestration end-to-end because they are designed to be synchronous. As a result, you would always have to divide your end-to-end processes into individual pieces, triggered by intermediary actions. This makes it hard to see the overall flow and easily lose track of important processes.

Equally, you can't afford to lose state if things go wrong. In order to manage a long-running process, you require certain features, such as the ability to repair and retry a failed instance, like timeouts and escalations when your processes get stuck. You also need to consider version migration, especially if old versions of that process are still running. RPA tools often don't provide such features.

If you're relying on an RPA tool alone, you'll struggle to handle long-running processes end-to-end. Instead you'll require a process automation platform that can persist state and provide mechanisms to track time and trigger time-related events. This is easily managed by Camunda, which supports standard [BPMN 2.0 timer events](#), allowing you to react on dates, durations and cycles, and gives you freedom to handle these situations in the right way for your business. Camunda is also able to migrate state across versions.



## Overlooking external events

In most processes, it is imperative to be able to react to something happening outside of the process. For example, a customer may cancel an order while it is being processed by the warehouse and the process needs to react to this by making sure the order is not shipped.

In order to implement this, you need the ability to listen for and notify processes of events that are happening outside. Because RPA technologies are not designed to interact with external events, you run the risk of missing vital updates to your processes.

A process automation platform such as Camunda supports this through message events, for example to start or interrupt processes, which specifically wait for external events to happen to trigger actions. Camunda goes further by providing a Message-API via Java and REST, which can be used to integrate with other messaging systems like Kafka or RabbitMQ, giving you a unified event architecture.



## Lack of orchestration

RPA tasks are part of a larger business process. Take a loan approval process as an example - it is not only about getting that loan application form into some computer system, it is about managing, automating and improving the entire loan application and approval process for a business. This includes many different steps including, potentially, RPA bots, along with back-end systems, human review, credit checks with external systems and much more. Without a common way of orchestrating all these activities, the business will not only not be able to automate the process, it will also lack any type of insight into bottlenecks, inefficiencies or operational problems, and will not be able to improve their processes over time.

This is where the difference in a process automation platform becomes very apparent. While RPA tools may have ways for bots to interact with each other, they lack the technology-agnostic process orchestration capabilities required for robust and scalable end-to-end process automation that includes all types of other systems and technologies. This leads to:

- **Siloed Workflows**  
Decision logic and process knowledge implemented within bots is buried in limiting complex workflows, meaning bots are hard to maintain or change, and cannot be reused.
- **Isolated Automation**  
Bots are not connected to the full business process, often not integrated with each other. Even workarounds, like bots starting other bots, can quickly lead to an integration and management mess.
- **Isolated Monitoring**  
When the only measurements you can take are local, based on single RPA bots, it's hard to detect the current status of your process. This lack of end-to-end visibility, with no understanding of the overall process performance, makes process improvement and monitoring exceptionally difficult.



### Vendor lock in

Business agility means being vendor agnostic in the complex and evolving journey toward hyperautomation. Being bound to a single RPA vendor can result in a long-term headache, and because RPA tools typically lack the process layer essential for cross-tool integration, it's easy to get locked-in.

Aside from the cost of vendor lock-in, operational management, features and solutions are limited to the capability of the vendor, with little control over release timelines or observability.



### Technical debt

The proliferation of RPA bots within organizations can quickly introduce complexity and technical debt that pose daunting challenges to organizations. While providing value in the short term, they are a band-aid solution requiring a high level of maintenance. RPA bots grow to be fragile and inflexible over time, costing companies billions and requiring expensive rework.

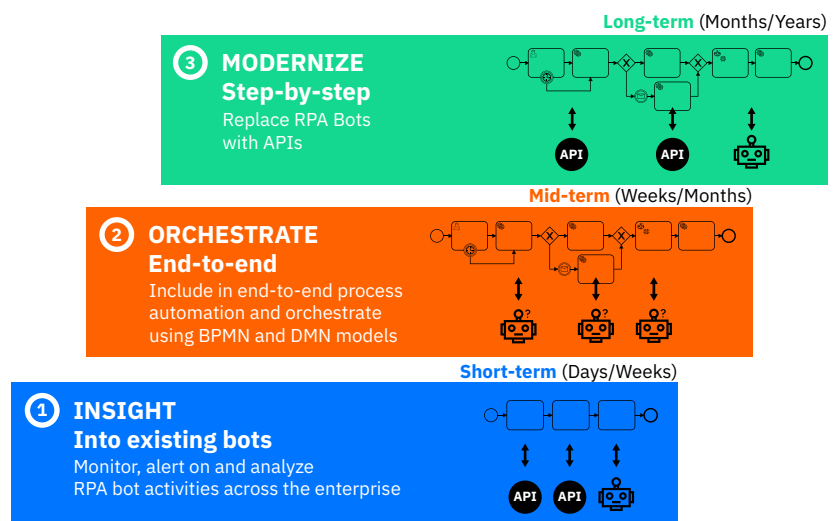


## RPA and End-to-End Process Automation

Understanding the ways that organizations risk accumulating technical debt with RPA is critical to establishing a strategy for long-term success. RPA is essentially reading and automating the same user interface that a user would use. It makes for a brittle and maintenance-intensive technology. Any changes to the environment, from a Windows update to a routine password change, could break the bot behind the process.

Ultimately, an over-reliance on RPA bots may stop organizations short on their path toward becoming a digital enterprise because they automate siloed tasks and not the full business process. Most organizations run hundreds of different applications that contribute toward their core business processes, but with RPA, a core step in the process may operate in isolation. This leads to a lack of visibility and loss of control of the end-to-end process.

In the longer term, companies need to overcome RPA-based automation. The following 3-step framework provides a practical approach to get started:



1) As a first step, start to centrally monitor your bots, which will provide the visibility across all your activities and allow you to detect breaks and analyze effectiveness. By starting this way, you avoid any disruption for existing bots or processes and if you are implementing this with a process automation platform that can orchestrate bots, you are building the right foundation for the future at the same time.

2) Next, utilize the process automation platform to orchestrate the full business process including all RPA bots; this is critical to getting on a path of RPA modernization as the role of each RPA bot is now defined and managed as part of the actual, end-to-end process.

3) Finally, you can now take advantage of the process orchestration infrastructure you have created in the prior step, to develop a long-term strategy to gradually retire selected RPA bots and replace them with (micro-)services that are accessible via API - all without changing the underlying process.

That's what's happening at Deutsche Telekom; far from resting on a nine-figure ROI for its RPA investment, the organization is working to integrate existing RPA bots into its end-to-end business processes, eventually replacing them completely with more robust APIs.

RPA can be a very useful part of your digital transformation tool kit. But bear in mind that it does not solve the underlying issues with your tech stack. RPA is a tactical solution to automate individual tasks. It is by design not suitable to automate core business processes. Instead, it can be a very useful stepping stone as part of your strategic journey toward a modern IT infrastructure. Moving towards orchestrating your RPA bots as an integral part of your end-to-end business process will be a critical step to get to a more effective, robust and scalable automation infrastructure.

## Case Study: How to Integrate RPA with Your Digital Transformation

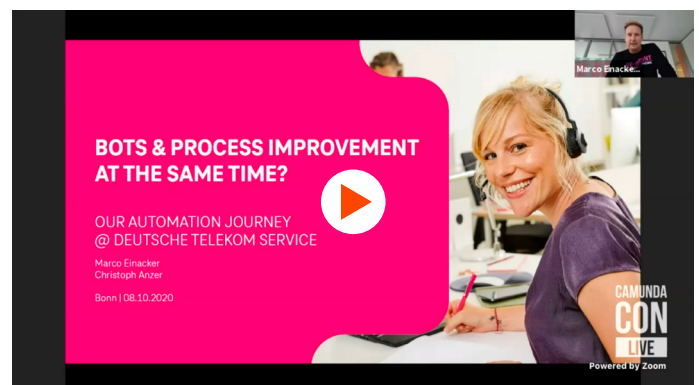
Deutsche Telekom, one of the world's leading integrated telecommunications companies, manages one of Europe's largest Robotic Process Automation (RPA) implementations, automating more than 450 processes managed by 3000 unattended bots.

Despite achieving savings of more than EUR 93 million last year through RPA, Deutsche Telekom's Service division, which takes care of 100 million customer requests each year, has embarked on a mission-critical journey to gradually transition from frontend to backend automation, replacing bots with APIs.

Over the years it had automated more and more complex processes, making code harder to maintain. With no backend automation, technical debt burdens were increasingly a risk.

Limitations were growing fast on the business-side. As business knowledge and RPA code were strongly linked, developers had become the business process experts simply because they had built the processes in code. This meant business stakeholders didn't understand how RPA processes worked.

Problems also began to arise as Deutsche Telekom looked to implement end-to-end processes and found it was impossible, because RPA technology couldn't be easily combined with different tasks, such as manual tasks, or RPA technologies from different vendors.



If you're interested in a deeper dive into Deutsche Telekom Service's journey, you can [watch Marco Einacker's CamundaCon LIVE presentation on-demand.](#)

## Automation Reinvented

In 2018, Deutsche Telekom Service embarked on a new strategy: Automation Reinvented, with the goal of separating processes from the technical layer and moving to backend automation.

It implemented a new centralized governance, allowing for collective decisions on whether future solutions should be bot-driven, or become a core IT solution.

To separate the process and technical layer, Deutsche Telekom Service built a new platform – OREO, leveraging Camunda as the workflow engine which handles all business processes in BPMN and DMN, and orchestrates RPA and user tasks across end-to-end processes.

Camunda provides a common language for business experts and developers in the form of BPMN. Using this globally recognized graphical language reduces complexity before developers start programming, meaning they write less code and save significant development time. And by slicing up each automated step, developers can decide if an RPA bot or a human task is the best solution for various steps in the process.

Having achieved the separation of the RPA and technical layer, the next step in Deutsche Telekom's journey is to get rid of bots entirely and build APIs — moving from frontend to backend automation.

## About Camunda

Camunda is an open source software company innovating process automation with a developer-friendly approach that is standards-based, highly scalable and collaborative for business and IT.

A community of thousands of users across companies such as Allianz, ING and Vodafone design, automate and improve mission-critical business processes end-to-end with Camunda.

Our workflow and decision automation tools enable them to build software applications more flexibly, collaboratively and efficiently, gaining the business agility, visibility and scale needed to drive digital transformation.

Learn more at **[www.camunda.com](http://www.camunda.com)**