PROCESS AUTOMATION

UNBUZZED

A PLAYBOOK BY BOTS & PEOPLE

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1. Edition

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Introduction

A process is a sequence of activities and tasks linked to specific rules with the aim of making a measurable contribution to achieving the company's goal.

Since a process is part of business, it is often referred to as a business process. Each process has a beginning and an end, one or more triggers, and leads to a specific result. Processes can be simple or complex, depending on the number of steps they have and the number of systems involved.

What is Business Process Automation?

In recent years, technological development has produced various tools that can automate different types of processes, providing solutions for organizations' inefficient and time-consuming workflows.

Business Process Automation (BPA) is defined by Gartner as "*the automation of complex business processes and functions that go beyond traditional data manipulation and record-keeping activities, usually through the use of advanced technologies. It focuses on 'run the business' as opposed to 'count the business' and often addresses event-driven, mission-critical core processes.*"

How Is BPA Different from Business Process Management?

Business Process Management (BPM) focuses on the whole business in order to coordinate and improve all processes. It uses methods and software-supported techniques that analyze business processes, model them, make them more flexible, more transparent and, above all, more efficient.

Generally speaking, BPM is all about optimizing business processes while reducing the workload of employees. In contrast, BPA focuses on improving specific business processes.

What Can BPA Be Used For?

Business process automation is the automation of processes through technology to increase productivity

and reduce costs. BPA can be used to enable automation of repetitive tasks, collect and manage data, connect and integrate data sources and services, and create apps. BPA does this by collecting data from both structured and disaggregated information as well as unstructured data from social media and customer behavior patterns.

History of Automation

Automation may seem like a buzzword that has been used for a couple of years, but it's actually much older than that. We have to look at the bigger picture and ask — when did automation start?

Since the dawn of humankind, we have had this innate need to do things faster and with less effort. For thousands of years, we've been developing tools

that made safer, more consistent, faster, and better. These tools have been further improved, remodeled, or entirely reimagined throughout history.

More than 2,000 years ago, the ancient Chinese made trip-hammers powered by waterwheels. Ancient Greeks also experimented with steam-powered motors. All in all, many ancient civilizations showed that the concept of automation has been evolving side-by-side with our society.

We made significant steps forward in the 19th century and the industrial age when inventors displayed various machines that automated business tasks. For instance, Joseph-Marie Jacquard, the French inventor, came up with the concept of the programmable machine. His legacy was continued

and popularized by Alan Turing, the legendary British mathematician and computer scientist. Besides deciphering the German Enigma code to reveal Hitler's plans, Turing also developed the first computer.

The Birth of Process Optimization and Management

Like many other technologies and techniques, process automation had predecessors — process optimization and management. They are still an integral part when automating processes, as automation wouldn't be possible without them. In fact, to make a good automated process, it's necessary to have a solid process to start with. If automation is applied to a

flawed process, it's just a bandage to cover the wounds short term. It's not a cure.

The early application of process optimization and management was seen in card manufacturing in the first half of the 20th century. The first and perhaps most famous example is that of an assembly line in Ford factories that paved the way for mass production. This was also a sort of standardization that enabled scaling production. Toyota later upgraded this model, naming it the Toyota Production System, the predecessor to Lean and Six Sigma.

Nowadays, some of these production processes that started with Ford are pretty much standard. It's impossible to imagine big stores sticking to one-off production. Imagine buying jeans only to wait for

hours for the workers to take your measures, and preferences, obtain the necessary fabric, and produce jeans tailored for you.

We can make a parallel between the production line and the customer journey. In digital marketing, online customers have a journey from learning about your brand for the first time to buying your product and service. They usually need to take steps to become a buyer, known as a customer journey. Process automation made it possible to streamline the journey and make it easy and convenient for customers to learn more about your brand and eventually buy it.

In a way, process automation is one of the components of the industrialization period of IT.

The Early Days of Process Automation

Process automation as such started to take off in the 1990s when the first automation solutions were developed. The major impact of early 90s software was the replacement of paper-based processes with electronic ones. Making processes digital instead of physical allowed businesses to harness computers' power and improve their operations.

In the late 90s, further progress was made when automation software was enriched with additional features, including modeling tools, business rules, and more. They made it possible to analyze, model, and describe business processes and were another

significant step on the path of process automation development.

The Rise of Robotic Process Automation

Some of the first companies to start offering RPA were Blue Prism, Ui Path, and Automation Anywhere. Most of these companies marketed their services around 2003, meaning RPA has been around for almost two decades. The first use of RPA was reducing costs in Business Process Outsourcing but later moved to other areas, including IT Outsourcing, Shared Services, and other business spheres.

Process Mining

Introduced by Wil van der Aalst, who also gave it a name, process mining focuses on discovering,

monitoring, and improving processes. Think of it as an X-ray for processes in an organization.

Even though it was created in the early 2000s, process mining was popularized by Celonis, a company established in 2011 by Alex Rinke, Martin Klenk, and Bastian Nominacher. They started working on it while at the Technical University of Munich.

After Celonis bought Integromat (now Make), the IpaaS champion, it started combining process mining with IPaaS to discover new possibilities.

Cloud and IPaaS

IpaaS was the next big thing in automation after process mining. It stands for Integration Platform as a

Service. It has been around since 2011 and was a response to many companies adopting cloud infrastructure and applications.

Essentially, IPaaS is a set of cloud-based services that help businesses integrate applications easily into their infrastructure. This facilitates sharing data and process automation further.

Low Code and No Code

Low Code Development Platforms have been emerging since 2011, and the term “low code” boomed after the Forrester Group publication in 2016. Essentially, the amount of code necessary to create a business process and set it into motion has been reduced significantly. In other words, businesses

nowadays don't need tech geniuses to automate processes, as some of them can be created without writing a single line of code (no code).

Intelligent Process Automation

Joining process automation with artificial intelligence was inevitable for improving automation in general. Even though AI has been actively researched since 1956, starting with a college campus at Dartmouth College, it has been heavily used in the last couple of years.

The first instance of intelligent process automation appeared around 2015, with the introduction of Cognitive RPA, which improved optical character recognition (OCR), natural language processing

(NLP), and machine learning. This meant we were able to have a better handle of semi-structured and unstructured data, increasing the overall scope of robotic process automation. In fact, the RPA we know today is closely tied to intelligent process automation.

Hyperautomation

Hyperautomation was one of the top tech trends in 2019, according to Gartner. It's safe to say that Hyperautomation isn't a piece of technology itself. Instead, it describes an approach relying on the use of various different technologies, which aims to automate as many business processes as possible. It includes using artificial intelligence and machine learning, in addition to RPA, IPaaS, BPM, low-code/no-code tools, and more. All with the goal of automating processes.

Automation as a Service

During the early 2000's, companies relied on using different tools for automation for different purposes. However, some companies decided to offer the all-in-one package which would include all services related to automation, including setting up infrastructure, analyzing processes, and automating them when possible. This is referred to as Automation as a Service (AaaS) and it usually comes with monthly subscription.

Reasons for Process Automation

Process automation is a technology (or rather a set of technologies) used for automating business processes. Essentially, the goal of process automation is three-fold:

1. Reduce the work required to achieve the goal
2. Centralize information
3. Automate processes

Process automation helps reduce bottlenecks, discover errors in the process, improve communication between departments, and, ultimately, achieve the goal faster.

Benefits of Business Process Automation

Process automation comes with plenty of benefits:

- ✓ **Reduced costs**

  Businesses can reduce up to 59% of costs by letting process automation do the heavy lifting.

- ✓ **Improved productivity**

  You can reach your business goals faster and create better outcomes after automating processes that can be automated.

- ✓ **Better staff utilization**

  Your staff can focus on more meaningful work instead of wasting hours — or even days — doing something that can be easily automated.

- ✓ **Error reduction**

  To err is human, meaning we all make mistakes here and there, which can sometimes negatively affect your business. The good news is that this cannot happen once you automate the process and let computers do their job.

- ✓ **Management transparency**

  Managers often get lost in everyday operations that they forget the big picture.

Once all business processes are clearly defined and optimized, it becomes easier to understand the business and get ideas for further improvements.

- ✓ **Reduced compliance concerns**

  Once you create an automated business process, you'll cover all steps and ensure you're meeting all internal and external standards.

An Example of Process Automation

Nowadays, process automation can be applied to a wide variety of business processes. Still, we decided to give you an example of a simple process that every business has to deal with — invoice approval.

Invoice approval is the process of approving invoices before processing payments. It can sometimes have several steps.

1. **Receiving the invoice**

   The first step is simply getting an invoice from a vendor or supplier.

2. **Verifying the invoice**

   After you get the invoice, the dedicated staff member will have to check it and verify, usually by matching the invoice number with the purchase order. This is a step that can be completely automated.

3. **Addressing irregularities**

   If there's something irregular with the invoice

(such as missing information or price discrepancies, the invoice has to be sent to the relevant party that will address these irregularities. Process automation can help automate this step completely, check the entire invoice, and send it to whom it may concern.

4. **Approving the invoice**

   Once everything is sorted out, the invoice needs to be approved by the relevant personnel. Process automation can also jump in and automate sending the invoice for approval.

5. **Releasing the payment**

   The vendor is paid by the person in charge for

the payments once the invoice is approved.

6. **Bookkeeping**

   There's a permanent record added to your organization's books once the payment is made.

Process automation can completely automatize the process, and involved parties only have to do the final step — approve the invoice (or address the irregularities, if there are any).

Invoice approval is one of the simpler processes, and there are several workers involved in a six-step procedure, meaning it can become quite tedious. Some processes are much more complex and include dozens of workers.

The Fear of Process Automation

Automation isn't just learning the necessary tools and obtaining the knowledge to use them to automate processes. An individual or an organization can have a state-of-the-art automation toolbox but lack an ingredient that makes all the difference — the automation mindset.

In other words, people need to learn how to think in a certain way to truly understand how to apply automation in the best possible way.

But adopting such a mindset isn't something that happens overnight. First, an organization starting an automation initiative must deal with various

obstacles, with the most prominent one being the fear of automation.

How to Cure Fear of Process Automation?

Whenever there's a new technology around the corner, there's fear. People aren't always welcoming new ideas with arms open wide, simply because new ideas are so disruptive that people start fearing them. Automation isn't new, but the way we use it in business has recently evolved.

It's only natural for people to fear it. The main reason for the fear to arise is losing jobs to automation. Technically speaking, automation can replace humans in doing the boring and repetitive steps in processes, but many don't understand that it's just a

tool used to help workers focus on more meaningful work. In reality, people just adapt to the new way of doing their jobs that requires human input while only controlling the automated processes when necessary.

But, if an organization wants to start an automation initiative, it's completely understandable that some employees may feel threatened by this.

How does one help them alleviate fear?

The answer is: by telling them how things really are and reassuring them there's nothing to fear — only things to look forward to. Many workers might already use automation without even realizing it.

Still, you have to invest additional effort in making this change towards automation painless and fear-

free. This can be done by relying on change management.

Change Management Saves the Day

Change management is considered essential for starting and completing your automation initiative, which also includes educating the employees to remove fear and train them to adopt the automation mindset.

Change management is used whenever an organization needs to shift from one state to another and is often conducted by professionals. This shift usually refers to changing the culture within an organization. In this case, the management is

required to shift an organization from a non-automation to an automation culture.

If executed properly, change management will be the main power behind people accepting automation and adopting an adequate mindset. However, one should consider that different people react differently to change, which is why an adequate response and a detailed change plan are required. Some of the critical questions that change managers need to ask are:

1. What is changing? Is the automation initiative changing the entire culture of an organization or not? Are roles changing? Should the mindset shift?

2. What is the impact of change? Why does the change need to take place now? What's the change story you're aiming to convey?
3. What measures do you implement through change? What do you implement now?
4. How can you measure the success of your change management? Are you really implementing the change, or are you just implementing automation?

Once the fear of automation is out of the way and you're ready to build an automation mindset, one thing that can help you with motivation is understanding why companies use automation in the first place.

Let's take a look:

- ✓ **Efficiency pressure**

  The most obvious reason organizations rely on information is to cut costs and generate higher income. It doesn't get simpler than that.

- ✓ **Customer satisfaction**

  If your customers are happy with how your product or service works when powered by automation, that's good for your business.

- ✓ **Quality of processes**

  By introducing automation, we can reduce errors and streamline business processes.

- ✓ **Employee satisfaction**

  By having your employees focus on more meaningful work, they will be more motivated to work.

The Importance of an Automation Mindset

As mentioned earlier, one of the change management goals is to implement the automation mindset. Overcoming fear and learning automation is just part of the big picture. Mindset will help us understand our approach and learn how to use automation in the best possible way. More importantly, it will help us take automation into account in our day-to-day work and consider it for problem-solving.

The automation mindset consists of four different aspects:

- **Growth mindset**
- **Agile mindset**
- **Collaborative and agile mindset**
- **Continuous improvement mindset**

This will be discussed in more detail in Part 3: Automation Mindset: Key to Success.

Part 1: Managing Processes

Business Process Management (BPM) is a complex set of disciplines dealing with processes that are part of a business. Even though we covered business process automation, that's just part of BPM, which also includes discovering, modeling, analyzing, measuring, and optimizing processes with the ultimate goal of improving how a business operates, cut costs, and more.

To explain what BMP really is, it's best to start small, and the smallest unit of BPM is a process. So, what exactly is a process, how is it determined, and what are its elements? Also, what methods are used to determine a process, and how is a process represented? Read on to find out.

What is a Process?

Dictionaries describe the term *process* as a set of steps or actions one needs to take to achieve a particular goal. This is quite an accurate description, but we're looking for a description of a business process.

Luckily, the definition doesn't differ that much. A business process can be described as a series of steps that need to be taken to complete a specific business goal, such as developing a product or executing a service. Every business process consists of structured activities that need to be done to achieve a specific objective.

We have already used Ford's moving assembly line on several occasions, but it perfectly represents a business process. Each worker only focuses on one part of the process until the entire car is put together.
Of course, some processes aren't that complex, as not every business process is created with the goal to develop a product from start to finish.

In fact, business processes can be divided into three big groups:

- **Operational processes**

  These are directly related to developing and maintaining your product or service.

- **Supporting processes**

  These are indirectly directed but still pertain to

your product or service.

- **Management processes**

  These have nothing to do with what you do but are essential for making your business work well. A good example would be an employee onboarding process.

Process Storytelling

Modeling a process is one of the essential practices in business process management. Its goal is to be able to deduct steps required for the process to work and serve its purpose. There are several ways to model a process, but one method stands out as the most successful — the process storytelling method. Storytelling is as old as humankind. Our brains are

hardwired to remember certain elements of a story that make it unique, such as characters, their purposes, problems and challenges, and more. We want to assume a similar approach for process modeling — we intend to build a story around it.

Stories have been used to convey context and essential information in a simple and meaningful way, which is why such an approach is perfect for business processes.

Here's an example of what a process story looks like:

1. **People**

   Who are the characters? Who is the protagonist of the story (process)?

2. **Process name**

   What's the best title for your story that will briefly convey its essence?

3. **Process purpose**

   Why are we doing what we're doing? What's the goal? What's the purpose?

4. **Pain points**

   What are the possible challenges for your story? What would the characters encounter as the possible issue?

By answering each of the questions, you'll be able to provide adequate context for the process and convey additional meaning in a simple and engaging way.

You'll still have to provide enough information to your business that doesn't have to focus on the story that much.

1. **Department**

   What department should work on the process?

2. **Connected systems**

   Are there any systems that are required in the process?

3. **Improvement potential**

   How can the process improve your business?

The last step is to go through the process lifecycle, which we'll explain in a while.

The Elements of a Process

Now that we know the definition of a business process, it's necessary to describe some of its characteristics that will help you understand how processes connect and improve businesses. It's essential to adopt a holistic approach to processes, meaning to view them in their current state and include their future changes, and the following six attributes can help you with that.

Frequency and Effort

First of all, it's important to determine how often the process at hand will be executed. Some processes are executed several times a day, and others are daily, weekly, monthly, or annual processes.

Also, it's essential to know how much effort you'll need for the process. Will it take just one or two employees or an entire department?

Process Flow

Next, you need to determine the flow of your process by pointing out the essential steps that are part of it. Of course, you'll have to provide the names of participants and the tasks they ought to perform, as well as the systems that will be included in the process. It's also important to determine the data flow in the process.

This is necessary because sometimes you may have two identical processes in terms of steps, but the actors and systems will be completely different.

Rules and Exceptions

Sometimes, you won't have complete freedom to model and develop a process. Your business might have some internal rules you'll have to stick to. On top of that, there might be certain legal constraints that you'll have to take into account before modeling a process, so it's wise to take them into account as well. Also, every business process is the ideal view of the process.

However, when put into practice, there are often exceptions that you'll have to integrate into your model to improve efficiency and be aware of the possible challenges. Exceptions are very important if you decide to automate the process, as automation might not be possible without addressing them.

Infrastructure

Most of your processes will be digital, meaning you'll have to rely on certain infrastructure to run them. In fact, you'll have to take into account all the systems that will be connected to your business process and incorporate them adequately, depending on whether they are internal, external, cloud-based, SaaS, or more. Pinning down infrastructure is also relevant to be able to apply automation properly and cut down on unnecessary work that bots can conduct.

Data Security

You want to keep the security levels at maximum regardless of the process, so it's important to address the issue of data security as different processes require different approaches.

Stability

Finally, it's useful to have a general overview of the stability of the process. To determine that, you can decide whether the process or some of its elements would require changing in the next period.

It's important to detect the variables that could change over time and affect stability and try to mitigate them.

Lean Six Sigma and the DMAIC Cycle

Several approaches to process improvement are used around the globe, but Lean Six Sigma remains the most powerful and consistently productive one.

Lean Six Sigma is a method used in business process management that aims to improve the performance of businesses by systematically removing waste and reducing variation. It's a combination of lean manufacturing/enterprise and Six Sigma.

Six Sigma was developed by Motorola in the US in 1975 as a competitor to the Japanese lean methodology (also known as kaizen). However, Lean Six Sigma was developed much later, during the 2000s. It became a stand-alone approach, even though many ideas were based on lean, which was developed as part of the Toyota Production System in the 50s.

Lean Six Sigma is a perfect management approach for data-driven process improvement and is one of

the essential elements of the automation mindset since it's focused on continuous improvement.

The popular approach focuses on DMAIC phases which are taken from Six Sigma. Instead of making big changes monthly or annually, DMAIC focuses on making small daily changes, improving the process iteratively.

DMAIC is actually an acronym standing for: Define, Measure, Analyze, Improve, and Control.

Define

The first step is to clearly define the problem/challenge, goal, resources, scope, and timeline. It needs to be well-defined and precise, and

without the use of technology, defining the challenge often depends on the decision holder.

Measure

To be able to follow the process and continuously upgrade it, it's vital to identify key performance indicators (KPIs) and make the process as quantifiable as possible. Ask yourself: what do you want to pay close attention to? Once you know the answer, find a way to measure it.

To proceed with the other three steps and eventually automate the process, it's imperative to get the correct information from the key process stakeholders at the right time. This complex communication issue takes a lot of time in traditional processes. However,

thanks to technologies such as process mining, it's much easier to control and measure quantifiable data daily, making the entire method even leaner.

Analyze

Once you have enough data from the KPIs you defined, it's time to analyze them and address possible challenges or ongoing problems. The numbers will often tell you the root cause.

Improve

At this step, you'll have to identify, test, and implement the solution to the problem discovered during the analysis. This could be as easy as changing the parameters of the process when the process itself is automated.

Control

Once the changes are made, it's important to see how they operate in practice by controlling them and measuring their impact on KPIs. Control is also essential for ensuring that the implemented solution is sustainable.

BPMN 2.0: The Way of the Process

A business process model needs to be represented somehow, and that's where Business Process Model and Notation come in — it's a graphical representation of the process in a business process model.

BPMN was created by the Business Process Management Initiative (BPMI) and maintained by the

Object Management Group (OMG). The graphical representation was updated in 2011, and version 2.0 was named Business Proces Model and Notation since semantics was introduced in the 2.0 version. BPMN is a specification maintained by BPM, but it's also ratified as an ISO standard, number 19510.

Essentially, BPMN is made for everyone involved in implementing the process, giving them the necessary details for the implementation process. Since all stakeholders in a process come from different backgrounds, many of them non-technical, everyone needs to learn the standardized common language used in BPMN. In a way, BPMN makes it possible for different departments to communicate about the project, which now has a higher level of transparency thanks to BPMN.

The graphical representation bridges the gap between planning and implementing the project in your business. In addition to that, it helps all stakeholders have a better overview and understanding of the process. Consequently, everyone can analyze the process efficiently, gain insights, and optimize it to make it more effective.

The Three Pillars of Process Automation

A bad process will be a flawed automated process. As already mentioned in the history part, automation is just a part of process management. To get the most from the automated process, you first need to make the process as optimized as possible. People working on a process often cannot provide an answer to why they're doing something the way they do. Even if they

can, they are often surprised with the answer, learning that there might be room for further improvement. In other words, they start questioning whether there's another way to approach the process to make it better. Many process owners and other employees only start to question their process after opening up to the possibility of automating the process.

All in all, it's necessary to get the most out of the process before automating it, and that's why the three pillars of process automation exist. They are the three actions below:

- ✓ **Improve**

  The first step is to improve the process if there's room for improvement. It includes

educating your workers about business process management and regularly working on every step of the process to examine it and upgrade it if possible. It's helpful to ask the following questions: Why is something done the way it's done? Can you improve it further?

- ✓ **Eliminate**

  Processes evolve with technology, and some steps that made perfect steps a decade ago are nowadays obsolete and can be completely eliminated from the process. Alternatively, they can be moved to another place or incorporated in a way that makes more sense.

- ✓ **Automate**

  The final step is then to automate the process.

> Of course, modern automation tools allow us to automate only specific steps and have them cooperate with workers working on the process.

To sum up, Business Process Management focuses on more than just automation. A good BPM initiative needs to model and optimize every process before applying automation technologies to it. Once a process starts operating, we need to analyze it carefully and collect relevant process analytics.

Part 2: Finding Potentials

Process analytics enables companies to reconstruct and evaluate business processes based on digital traces in IT systems. With the help of specific techniques, it is possible to discover processes and review event logs to evaluate conformance with defined processes. This provides the necessary insights to manage, control and improve business processes. The use of process analytics is, therefore, essential for the digital transformation of the business world. Companies gain insights into their complex business processes and thus have the opportunity to take active measures and make decisions as part of transformation and automation projects. For many entrepreneurs, however, this important automation foundation remains a closed book.

Start Small: Task Mining

Task mining is an approach to deriving useful information from low-level event data available in UI logs. These UI logs describe the individual steps that a user performs (e.g., when using a workstation) based on keystrokes, mouse clicks, and data inputs. Additional mining functions interpret the data by applying NLP (Natural Language Processing) and OCR (Optical Character Recognition) to correlate data in different ways.

It's important to make a difference between process mining and task mining. Process mining targets end-to-end business processes or parts of them, where different resources work together to achieve the process result. Task mining focuses on a single task

that consists of various actions or steps, such as a mouse click, a keystroke, a data entry, or a desktop operation like copy and paste.

How Does Task Mining Work?

Task mining simply monitors user actions, which helps businesses enhance their automation. Essentially, users who have task mining tools installed on their devices will have their actions recorded and stored. However, that's just one part of task mining. Here's a more comprehensive overview.

1. **Capture user activities**

   Clicks, scrolls, copy/pastes, and more. This is the essential operation of task mining: to

record what humans do when performing a task.

2. **Context recognition**

   When engaging in task mining, it's sometimes necessary to understand the context and get the big picture. This is possible thanks to a branch of AI called Optical Character Recognition (OCR). It scans numbers and letters on the screen during the recorded session and analyzes them to understand the context.

3. **Activity grouping**

   Another branch of AI, called Using Natural Language Processing (NLP), is also part of task mining tools. It scans the language also for the

sake of understanding context. It further helps task mining tools group certain activities together, all to understand the task at hand better.

4. **Linking with business data**

   Once user activities are collected and grouped together, they need to be matched with certain business tasks. Once the two are matched, performance metrics can be assessed.

5. **Performance evaluation**

   Once businesses complete and assess the metrics from task mining, they can compare them with relevant KPIs. This could provide an

answer to how well specific tasks are being performed.

The Advantages of Task Mining

These are the main benefits of task mining:

- ✓ **Better tracking of individual KPIs**

  Task mining can come in handy when measuring KPIs, especially when it comes to small tasks that are often overlooked.

- ✓ **Better process improvement**

  Once user interaction data is analyzed, it's possible to make much better and data-informed improvements on a process while remaining compliant.

- ✓ **RPA opportunities**

  Task mining can help you spot whether there's a possibility to introduce robotic process automation in some processes. Simply put, process mining can easily spot repetitive but error-prone tasks that can be performed by robots.

Think Big: Process Mining

Process mining is a process management technique. It aims to discover, monitor and improve process flows by extracting readily available knowledge from information systems event logs. Process mining provides companies with complete visibility into how they really operate. With these insights, companies

can then identify opportunities for process optimization.

Process mining includes:

- ✓ automated process discovery (extraction of process models from an event log)
- ✓ conformance checking (monitoring of deviations by comparing model and log)
- ✓ organization mining
- ✓ automated construction of simulation models
- ✓ model repair
- ✓ case prediction
- ✓ history-based recommendations

Process mining technology could also be compared to magnetic resonance imaging (MRI) technology, which collects information from the body's cells to create an

image — only in a business environment. Doctors then use this MRI image to diagnose health conditions. Process mining works on a similar principle: it collects data from the smallest part of process activities and assembles the pieces into a picture that companies can use to diagnose the state of their workflows.

Process mining is changing the way companies operate and manage their business processes. In their quest for process quality, process mining enables companies to truly know their process, evaluate it against the ideal process model, and optimize it as needed. Process mining platforms combine technologies from Data A, Data Mining, Process Analytics and Business Intelligence (BI) into a holistic approach to generate insights into processes that

companies can use to continuously optimize the value chain.

How Does Process Mining Work?

It's all about event logs. When humans and software robots work with IT systems, their activities are recorded by those systems. Process Mining reads this data and converts it into an event log, then creates visualizations of the end-to-end process, along with insightful analytics.

An event log should contain each step performed during the process (the activity), the time at which the event occurred (the timestamp), and for which instance of the process (the case ID).

Using the event log, algorithms generate a process model that shows the process as it really, since the process model is often perceived differently by employees. So, algorithms generate:

- ✓ The timing of each step and all variations in the process flow
- ✓ Process deviations and exceptions (bottlenecks)
- ✓ Workarounds and inefficient workflows

Other data science methods can be applied to further enhance this model. The result is then used for process discovery, conformance testing, and process improvement.

The visualization capabilities built into advanced process mining tools help companies focus on what should be optimized, how to do it, and what the return on their efforts will be. Companies are able to immediately understand the impact of proposed process changes or automation - including the cost saved and effort required. They can easily build and prioritize their automation pipeline or process optimization efforts.

Advanced process mining solutions continuously monitor and measure results, so companies immediately know if they are on track or off base. They also get a complete audit trail for compliance purposes.

Two Sides of the Same Medal

For understandable reasons, task mining and process mining are often discussed against each other. Process mining, in particular, is resource-intensive in the first step. Companies want to prioritize the measures that promise a short-term benefit. But: process mining and task mining deal with the same issue - only from two different perspectives.

Whereas task mining starts from the individual user and his actions and develops the individual process steps from there, process mining captures the process from the result. For RPA and comprehensive end-to-end automation, process mining is necessary to understand the steps within the IT system. Task

mining can help identify user-level deviations and incorporate them into future process design.

Both methods pursue the overall goal of developing a comprehensive understanding of business processes. Only the use of both methods leads to a comprehensive picture of the processes running in the company. For companies, it is therefore worthwhile in the medium term to anchor both task mining and process mining in the company.

What are the Advantages of Process Analytics?

In the past, process mapping had to be done by teams that met for several days to work it out on a whiteboard or spreadsheet. It was a lot of hard work.

Thankfully, process mapping done by humans is a thing of the past. Nowadays, powerful process mining algorithms and advanced data transformation do the job of discovering and optimizing processes quickly, comprehensively, and without much effort as the entire procedure is data-driven. That's because the accumulation of data ensures that process analysis cannot be based on gut feelings. Companies need fact-based numbers and evidence to back up their strategies.

Save Time and Free up Work Capacity

Traditionally, managing and optimizing business processes is a very labor-intensive area that requires a lot of time from experts in the organizations. There's a growing demand for efficiency, and the ability to clearly present results requires modern technologies.

Classic BPM approaches are often overwhelmed here because the data they use to support their assumptions has already changed by the time their situation analysis is complete, which renders the analysis useless. When optimizing processes, the most time-consuming part is data collection. Process mining gives companies a head start by automating the data collection part. The basis for understanding the operational situation in an organization is to understand what is actually happening, not what is assumed to be happening. That's what you find out with process mining.

Finding Process Bottlenecks

Process bottlenecks are difficult to uncover through BPM and process mapping workshops. People have a gut feeling about what might be wrong or inefficient,

but they lack fact-based evidence. They need data to back up their assumptions, and that's where process mining comes to the rescue.

Replacing Opinions with Facts

One of the main goals of process mining is to see the big picture of business operations and still be able to track down the root causes of deviations, bottlenecks or process variations.

Process analytics can be used:

- To scale optimization efforts across multiple business operations and locations and support process control through the use of data

- To capture processes anywhere in the enterprise — on a large scale and with little human effort
- To identify bottlenecks, deviations and inefficient processes that should be reconsidered or automated
- To continuously monitor and measure improvements
- To simplify compliance with complete audit trails
- To provide a full context and end-to-end perspective needed to improve processes
- To identify the most valuable and effective processes for the use of automation.

Important KPIs at a Glance

Process mining uses advanced algorithms to bring visibility into current business processes, helping companies streamline and improve them. It quickly uncovers valuable insights that can improve productivity and ultimately illuminates opportunities in core business processes that will have the greatest impact on customers and management.

Thus, process mining can be used to examine three main types of key performance indicators (KPIs):

- **Time KPIs:** How long does it take to complete a certain process?
- **Cost KPIs:** How much does it cost to complete a particular process?

- **Quality KPIs:** Does the result of the process meet the defined criteria?

Process mining has a key advantage over traditional as-is analysis:

It can access real-time event data. Moreover, it also looks at historical data and is able to closely examine a range of event logs to gain a deep understanding of what is happening, a stark contrast to the slow and manual heavy lifting of data infrastructure previously used to perform the same calculations.

Rather than relying on traditional data infrastructure to analyze transactions, process mining can surface what is happening.

To do this, it leverages the vast amount of event data from all of their systems to:

- ✓ Discover the actual behavior of people, organizations, and machines and compare it to existing models
- ✓ Correlate millions of events to show how reality differs from perceptions, opinions, and beliefs
- ✓ Provide a foundation for continuous improvement and building more effective business operations
- ✓ Understand the current state of systems and business processes while providing a faster, more granular way to identify deviations and misalignments — and then course-correct

For example, let's look at the processing of requests in an HR department: 80% of these requests are processed quickly and smoothly, but in 20%, the process is disrupted. We know that something is wrong with 20% of the requests through the KPIs, but we do not recognize the cause. Process mining allows us to understand exactly where the flow is being disrupted. So we can find out that in 20% of the requests, expertise had to be obtained, which delayed the flow.

For example, imagine a KPI like a thermometer: we get a value, but we don't know how it was determined in detail. On the other hand, process mining creates an X-ray image that can be used to work out the exact mechanism behind temperature measurement. Process mining enables objective "data-driven

analytics," with which processes in companies can be controlled, optimized and ultimately automated.

Transparent Processes guaranteed

Sometimes things just don't work at all, and the basic problem remains a mystery - we certainly all know this feeling all too well. But help is at hand: instead of spending hours searching every nook and cranny of the process landscape, process mining can be used for such cases.

At this point, actual work processes are compared with theory, which should lead to better transparency and insight into the processes. But why is this necessary at all? Well, unfortunately, reality rarely corresponds to the optimal conception.

Let's take the classic beach vacation as an example. Influenced mainly by the promo pictures, we imagine empty and beautiful beaches. In reality, they are utterly overcrowded upon arrival or have razor-sharp stones under the rather dark brown sea surface. It is the same with corporate processes as in this example. When an employee describes their process, it often appears uncomplicated and clear. However, if you look at this process in detail, you will notice that the actual process is much more complex.

Part 3: The Ropes of Process Automation

Automation isn't just about using the right tools. In addition to tools, there are various strategies and technologies that play an essential part. Moreover, automation is about understanding what it is, how it works, and what's its purpose, but, ultimately, it's about having the right mindset to accept and implement automation.

So, where does one start when entering the magical world of automation? The answer its: you need to start with the basics covering every aspect of automation, including tools, technologies, strategies, and the mindset.

Automation Mindset: Key to Success

We've already covered what automation mindset is and how it can help us eliminate fear of automation. In the following section, we'll discuss what actually automation mindset consists of and what to take into account when acquiring it.

Growth Mindset

A person with a growth mindset is a person willing to grow and adapt. Some would claim that growth is an attribute of a healthy and happy mind. In the context of automation, a growth mindset is required so people can adopt automation faster and feel free when using it to provide creative solutions. Moreover, a growth mindset means being ready to take a deep dive while looking for answers and always focusing on the

“why” to provide a better evaluation of a problem and potential solutions to it.

Automation is a fast-growing field, and not being ready to grow with it and adapt can lead to trotting behind.

Agile Mindset

Staying flexible and being ready to provide continuous improvement is a valuable perk that can be achieved with an agile mindset. Users and customers should always be included in the feedback loop, maximizing customer inclusion to improve your product and service.

In the case of an automation initiative, there will be

plenty of input from both internal and external stakeholders. A person with an agile mindset should be able to adapt to such a dynamic and get the most out of every input to make the initiative as successful as possible.

Collaborative Agile Mindset

The agile mindset described above mainly takes the customer into account. However, automation will not be used for customers only but for employees as well. We always need to strive toward making automation work for employees, not against them. Automation also needs to motivate employees further by assisting them with monotonous work.

A collaborative agile mindset is all about thinking about how automation can help your co-workers.

Continuous Improvement Mindset

This mindset is relevant because we live in a day and age where everything is in constant flux. Technologies evolve all the time, shaping and changing the world around us. On top of that, customer needs are constantly changing. We need to assume a data-driven approach with a clear structure and clearly-defined KPIs to ensure continuous improvement and stay up to date with the ever-changing environment.

This also applies to automation processes which need to be refined every once in a while by using tools such as process mining. They need to be updated and

improved to stay one step ahead of the changing technologies and customer needs.

In short, an automation mindset requires you to apply the right improvement mindset to eliminate, simplify, and unify processes. However, that's not possible without the right approach to automation (the right technology) and the human-centered approach, meaning to keep your customers and employees happy with your automation initiative.

The Hype is Real: Robotic Process Automation

Repetitive, monotonous and dull tasks eat up a lot of time in everyday life and are usually rather annoying and boring. But that doesn't have to be the case

because precisely such tasks can be automated. Robotic process automation (RPA) helps to avoid having to press the copy-paste buttons prayerfully every day or laboriously enter information into a system by hand.

Robotic Process Automation (RPA) is Not a T800

Robotic Process Automation is not about physical robots replacing humans in a company. RPA refers to the automation of business processes by digital software robots, so-called RPA bots. RPA is particularly comfortable with repetitive, rule-based work tasks that rely on digital data. These tasks include queries, calculations, creating and updating data sets, filling out forms, creating reports, cutting

and pasting, and other high-volume, transactional tasks that require moving data within and between applications.

RPA aims to improve efficiency, increase productivity and save money by supporting — or replacing altogether — the routine and error-prone digital processing tasks still performed by humans in many organizations. Done right, RPA not only saves companies time and money, but also frees up employees to focus on higher-value activities.

A software robot can be used around the clock, 365 days a year, takes no vacation and is never sick. While a human being works 220 days a year and a 40-hour week for 1,760 hours, a bot can theoretically work 8,760 hours — and at a higher speed. According

to management consultants Deloitte, 60 to 80 percent of resources can be saved in individual processes. For standardized back-office tasks, the average is usually 25 to 40 percent.

How Does a Software Robot Work?

A software robot operates at the interface and user interface level by mimicking the keystrokes and mouse clicks of human workers and completing the task in a manner similar to how employees log in to programs and apps, enter things, perform calculations, and log out. To do this, integration scripts are being developed to retrieve information from systems and transfer it to other systems. The scripts are designed to replicate the actions of a person interacting with these systems or documents,

for which there are typically no effective APIs. An RPA tool works by mapping a process that the software robot can follow through computer paths and various data stores, allowing RPA to operate in place of a human.

For example, a software robot recognizes when someone repeatedly enters the same things and can fill out the forms itself. Robot-controlled process automation is thus used for surface automation. The goal: as little human interaction as possible.

Unlike a human worker, however, the bot does not need a physical screen to complete the task but performs the process steps of the task in a virtual environment.

How Do Companies Benefit from an RPA Bot?

The use of RPA brings companies numerous advantages:

First, there is no need to waste the human brain on requirements that can be executed much better, faster and cheaper by software robots and thus are often completed with higher quality. Employees do not have to deal with simple and monotonous tasks but can pursue the challenges that really drive the business forward. For example, there is more time to take care of customers or to drive innovation. This allows employees to make higher-value contributions to areas such as customer satisfaction, innovation and scalability. When set up correctly, bots perform

the process the same way and don't get tired, reducing errors and inconsistency.

Second, Robotic Process Automation improves process time and accuracy by eliminating human errors and the need to correct them. This way, software robots contribute toward a better customer experience, higher NPS (Net Promoter Score) and lower customer churn.

Third, it offers companies a way to automate parts of critical business processes without having to replace the costly legacy systems that support them because RPA works at the user interface level. Instead, RPA is quick and easy to implement and flexible to customize. Moreover, it can be easily integrated with

legacy systems without complex and costly (interface) programming.

Fourth, RPA increases operational flexibility, improves the ability to audit processes, and provides insights that can be used to identify, analyze, and proactively improve existing problems in processes. In addition, software robots lower human interaction with sensitive data, reducing the potential for fraud - so it's a win-win situation.

RPA Use Case: Automate Personnel Management

Many processes can be automated, especially in HR — from simple payrolls and reports to talent acquisition and recruitment, employee onboarding,

an overview of the number of workers needed, and further data management. HR departments can benefit from digital support and focus on other challenges, such as conducting hiring interviews or resolving conflicts.

Specifically, RPA bots can take over resume screening, for example, and compare the information with the requirements from the job ad. The best candidates then receive an invitation to an interview, while others receive a rejection notice.

Furthermore, offers, for example, for freelancers, can be filled out according to fixed templates. If a new employee has to be trained, it is necessary to integrate new information into the system, such as mail addresses, access rights or passwords. Process

automation helps here and automatically creates new user accounts. Travel and expense reports can also be automated, saving a lot of paperwork. The employee database thus remains much clearer and error-free. To ensure the productivity of the company, the presence of employees can be tracked.

In short, if a company wants to grow quickly, process automation can save a lot of time, provided the right strategy is in place.

Typical Tasks of a RPA Bot

Almost all recurring activities can be automated by one or more software robots:

Launching and using various applications

- Open emails and attachments

- Log in
- Move files and folders

Integration with enterprise tools

- Establishing a connection to system APIs
- Reading and writing in databases

Data processing

- Scraping data from the web, including social media
- Follow logical rules like "if/then" rules
- Perform calculations
- Extract information from documents
- Entering information into forms
- Extract and reformat data into reports or dashboards
- Merge from multiple sources
- Copy and paste data

Attended or Unattended — That Is the Question?

Attended (partially automated) and unattended (fully automated) RPA bots are two modes that can operate with or without human intervention. RPA bots can operate in both attended and unattended modes. Usually focused on front-office activities, attended bots are created in a situation where it is not possible to automate the entire end-to-end process.

In such cases, the RPA bot is triggered by system-level events and works in conjunction with human workers. Unattended bots work independently without human intervention. They are designed to take over the time-consuming manual processes and execute them in the background without requiring

any input or intervention from a human worker. An unattended software bot can execute repetitive, rule-based requests - often back-office activities - that follow a predefined pattern or series of steps, the same way every time.

As a digital worker, an unattended bot is typically triggered remotely to run behind the scenes. Unattended bots can be triggered automatically by an event or launched at a specific time to run in a batch mode model around the clock, for example, batch operations. Unattended bots can extract unattended customer data from a spreadsheet and automatically enter it into the required application. Predominantly, unattended bots are used in the back office, where large amounts of data are collected, sorted, analyzed and disbursed.

When it's impossible to fully automate a process from start to finish, humans and software bots can combine their strengths to get the job done more efficiently. In other words, attended bots are created for processes that require human input.

Typically, the attended bot is triggered manually and operates locally on the employee's computer, executing the routine, rules-based components of the process while the employee focuses on work that requires expertise, human judgment, empathy, creativity and/or strategic thinking.

Often, attended bots are used in more complex, longer-running or front-office processes where they act as virtual assistants. For example, an attended bot might work with a call center agent to transfer

customer data from one system to another while the agent continues to speak with the customer. This increases efficiency and creates a better customer experience.

Whether an attended or unattended bot is the right choice depends on the time perspective and certain contextual characteristics. As a rule of thumb: attended bots for short-term efficiency and unattended bots for longer-term strategies. A more nuanced decision regarding an optimal automation solution can only be made by carefully examining the contextual specifics.

Which Business Processes Are Worthwhile for RPA?

RPA is not suitable for every business process. Automating a mission-critical, long-running and complex business process is typically a task for IT using API-based automation. In fact, in its July 2019 Magic Quadrant on RPA, Gartner noted that the word task in the RPA acronym would be more accurate than process.

Processes best suited for RPA have high transaction throughput of structured digitized data with relatively fixed processing paths and/or user interfaces that do not change frequently and are rule-based. RPA tools work best when they have direct access.

Here are some characteristics that make a process suitable for RPA:

- It is high volume and repetitive.
- It relies on structured digital data.
- It has clear business rules and little or no exception rates.
- It is prone to errors when human labor is used.
- It is time-critical or highly seasonal.

Business processes and their associated systems should be stable before using RPA. RPA is well suited for simple processes that run at high volumes.

In general, almost all digital business processes can be automated. Bots can take over repetitive processes. RPA can start with simple requirements,

such as filling out a template but can end up taking on significant, more complex challenges in accounting, bookkeeping, human resource management or logistics. For example, an RPA bot can automatically record employee time, monitor inventory levels and merchandise shipments, or generate billing statements. It can also be helpful for customers if, for example, signatures are checked automatically, or approvals are created independently. Back-office processes in business systems thus become much more efficient.

The Power of the Cloud: Integrated Platform as a Service

Thousands of organizations deploy countless applications and perform a variety of business

processes every day to facilitate the rapid and smooth growth of their organizations. These business processes scale across all business units and initiate a flow of data.

However, most of these business processes are still performed manually, making them very time-consuming and error-prone. Process Automation aims to address this very situation by automating, streamlining and transforming current business processes from different areas into more coherent and effective processes through software and application integration.

For the implementation of such a project, an integration platform as a service is the best solution — because it is also scalable.

Interface Between Data and Applications

Integration Platform as a Service (iPaaS) is an intelligent platform consisting of cloud services for the automation of business processes and an excellent tool for various integration scenarios, such as data integration, system integration and hybrid integration. iPaaS enables seamless integration of thousands of business applications and the free flow of data across all channels — so that data management also benefits. It is used by companies that want to automate applications and workflows in their cloud.

IPaaS does this by creating an interface through which data and apps can be connected, enabling entire processes to be mapped and modeled. In

addition, they allow data migration, complex integrations creation and automation of complex sequences of workflows. Rather than spending employee resources on mundane, time-consuming processes, cloud integration services enable these tasks to be efficiently integrated and automated to deliver better customer experiences and improve employee productivity.

Ready-to-use Software Components

Typically, iPaaS providers provide the server and data infrastructure, as well as middleware and other utilities and tools to build, test, deploy and manage software applications in the cloud. Most iPaaS offerings include maps and transformations to speed the development of integration workflows and pre-

built connectors and business rules to define interactions. Platform Services provide ready-to-use and extensible software components to deliver integration and workflow automation in a fast, scalable and maintainable manner.

Workflow automation and iPaaS go Hand in Hand

Workflow automation is an essential part of iPaaS cloud services. Point-to-point integrations are great for moving data directly from one application to another. However, in real-world scenarios, organizations want more control over when, how and under what conditions their applications share data. It's also common to have not just two but multiple applications integrated into a unified workflow.

Workflow automation makes it possible to orchestrate the flow of data between any number of apps and use logic and transformations to configure how the information flows.

The iPaaS platform usually offers services that are almost always used via a visual drag-and-drop workflow builder interface that gives users complete control over the design of their workflows. This allows even non-technical staff to create automation without writing a single line of code.

Reduced Process Complexity

iPaaS is known for offering proven solutions that efficiently automate business processes for both cloud and on-premises applications. By using an

iPaaS, a business can automate much of its operations and focus more on developing strategies for growth. An iPaaS solution helps businesses scale by giving decision-makers more time to bring innovation and better approaches into play.

In addition, an iPaaS solution reduces process complexity, data errors and overhead costs by automating key business areas. This means that the integration platform fully understands each application and seamlessly connects them to initiate processes that otherwise would not have been possible.

High Added Value and Competitive Advantages Guaranteed

Many companies use iPaaS to gain a competitive edge over their rivals: Digitization enables them to offer better digital services to their customers and improve overall customer satisfaction and retention.

Hosted in the Cloud

Companies don't have to buy hardware or software. They don't have to buy licenses to use all the features on an iPaaS platform. Finally, they don't have to pay for upgrades and new features, all because iPaaS is a cloud service, and the provider is ultimately obligated to keep everything functional and up to date. All iPaaS customers and users have the right to use all the platform's features. Another significant

advantage is that the offering is constantly evolving. After all, the various providers cannot afford to fall behind in the rapidly growing market.

Managed Service

Integration capabilities are still scarce, so having an iPaaS provider that implements integration solutions on an integration platform is a big advantage. The solution can be developed and deployed much faster, and companies only need to deploy one IT person to help with specifications and end-to-end testing.

Fast Deployment

The faster the solution is deployed, the faster enterprises can see the value iPaaS brings. Short development and deployment cycles are especially important when companies need to connect to a large

ecosystem - the project should not take years to implement.

Scalability

Because integration requirements can evolve quickly, the platform must be able to meet users' changing needs. Sometimes new connections need to be added to existing solutions. With iPaaS, this can be done quickly.

Data Enrichment and Validation

It is not enough for the information to be available to all parties, but the data must also be correct. To avoid manual processes in validating and enriching the data, iPaaS can automate them and reduce processing times.

iPaaS vs. ESB

Enterprise Service Bus (ESB) is widely used for creating, deploying and managing integrations. The basic idea of ESB and iPaaS is the same. Both are designed to enable the connection of systems and applications and facilitate the exchange of information.

But with iPaaS, companies don't have to buy software or hardware because integration platforms are based on public or private clouds.

Therefore, they don't have to pay for upgrades and maintenance. ESB was designed for on-premise integrations and supported legacy messaging standards.

By comparison, an iPaaS service can provide a variety of integration solutions, whether the environment is

on-premise or in the cloud, regardless of the data standards and formats the systems use. While ESB is a great tool for connecting internal systems and applications, iPaaS provides horizontal solutions for B2B integrations.

Scope and Flexibility for Different Application Scenarios

As end-to-end integration requirements increase, iPaaS is the answer for many of today's emerging use cases. The biggest advantage of iPaaS is the tremendous scope for flexibility and customization, which opens up a wide range of use cases for enterprises. Below, we've chronicled four interesting use cases.

Automatic API Generation

APIs (Application Programming Interfaces) are the "back-end pipes" that connect business applications. For example, they connect the CRM application to the accounting program, data storage, and other applications. They also connect the company's own applications with those of its partners, suppliers and customers.

Coding an API by hand in the traditional way is a tedious and time-consuming process that sometimes takes days and weeks and requires a lot of money.
Modern iPaaS services drastically simplify the API creation process. They offer an interface for no-code API creation along with a large library of pre-built connectors. This allows even non-technical users to

create, configure and publish APIs - simply by dragging and dropping.

Cloud-to-cloud and Hybrid Cloud Integration

For large enterprises with complex legacy infrastructures looking to adopt new cloud strategies, iPaaS complements an existing enterprise service bus (ESB) technology. This enables app connections, making it possible for on-premises and firewall-protected platforms to connect more efficiently with cloud-based solutions.

For simpler cloud-based infrastructures that don't have to deal with legacy messaging protocols or on-premise systems, iPaaS can serve as the backbone of the overall cloud-based architecture.

B2B Data Connections

Companies need to make connections between their own business applications and connect their systems to those of their partners, customers, suppliers, and service providers. The faster they can make these connections, the faster they can onboard new partners, stay competitive, and grow their business.

Traditional B2B integration tools, such as Value Added Networks (VANs), are expensive and require time, labor and specialized expertise to set up. In addition, the growing risk of supply chain breaches makes the security of third-party B2B data connections a priority.

As a horizontally flexible integration solution, iPaaS supports fluid, seamless, fast and secure integrations between the enterprise, the supply chain and the

partner. This reduces the time, effort and cost of onboarding new partners. In many cases, the task is reduced to a point-and-click task that anyone can complete in minutes.

IoT Integration

Building an IoT network presents significant challenges that surprise most integration managers due to the large amounts of data and the number of devices and APIs that an IoT network requires. With iPaaS technology, these challenges can be a thing of the past.

For example, to improve maintenance intervals for trucks, IoT sensors are placed on each truck to provide real-time data on the condition of parts such as brakes, engines, transmissions, and so on.

From an integration perspective, this IoT network requires the following:

- ✓ A network of IoT sensors connected to various truck parts.
- ✓ An API that receives and aggregates real-time performance data from IoT endpoints.
- ✓ A cloud-based IoT app platform integrated with the "IoT Sensor Data API".
- ✓ An API that integrates the 'cloud-based IoT app platform' with the existing on-premise ERP system.

Whether an enterprise is integrating with thousands of IoT endpoints in a fleet of trucks or millions of IoT devices, iPaaS provides the speed and horizontal scalability that an IoT network needs. In addition,

iPaaS' automatic API generation capabilities help quickly create the various APIs for that network.

With the increasing use of the cloud, iPaaS has become an integral tool. iPaaS and other cloud apps have enabled enterprises to take advantage of new use cases to create more agility and achieve one of the key pillars of digital transformation. And the iPaaS scene continues to evolve inexorably, with new exciting features hitting the market every day. Data and application integration will continue to be among the most important requirements for many modern B2B companies.

Automation for Everyone: No Code/Low Code

When companies need new programs, they usually have two options. They can have the application tailored by a developer or buy the application off the shelf. The first alternative involves high costs and a long waiting period, and the second is cheaper and faster to implement but often doesn't fit as well.

For some time now, however, there has been a third option: so-called Low Code (LC)/No Code (NC) tools. With these tools, companies can use point-and-click or pull-down menu interfaces to develop applications themselves that precisely fit their requirements and automate processes more easily and quickly.

What is Low Code and No Code?

Low code and no code platforms are intended to rapidly design, build and launch applications without worrying about the intricacies of underlying operating systems or scalability requirements.

To solve business problems faster than is possible with traditional software development, LC/NC tools leverage visual programming interfaces, pre-built building blocks, and artificial intelligence (AI) tools. All of that helps them to integrate even semi-structured and unstructured data sources. Integrated templates for various automated workflow scenarios support application developers in creating even complex process logic.

LC/NC tools allow the user to visually define user interfaces, workflows and data models of the apps, and if necessary, through handwritten code (LC). This is complemented by connectors to various back-ends or services and an Application Lifecycle Manager, an automated tool for building, debugging, deploying and managing the application in test, staging and production.

Low Code

Low code programming eliminates up to 90% of the coding process, saving developers from repetitive code sections or manual coding and allowing them to focus more on the architecture of the solution and the strategic aspect of the application. With minimal coding effort, visual blocks of existing code can be

dragged and dropped into an application build workflow. Pre-built integrations and security features allow developers to build reliable applications without relying on security or integration specialists. Low code is an intuitive, visual approach to software development that can also be used to automate tasks, end-to-end processes and complex workflows. Since complex or specific automation projects in particular always require coding at some point, LC automation tools also provide the ability to do this, which in turn requires some programming skills.

No Code

No Code software is suitable for use by so-called "citizen developers". These are employees without any programming knowledge who want to develop an

application for a specific use case or quickly digitize and automate tasks and processes. NC solutions enable users to drag and drop application development through an intuitive interface by arranging pre-built, pre-coded building blocks according to application requirements. User-friendly visual elements simplify and streamline the design process.

All the elements users need to build an app are already built into the tool. Using NC platforms also allows citizen developers to quickly respond to changing business needs, as the feature set and high level of integrations of NC tools enable users to automate any process according to their business needs - but with less option for customization and scalability compared to low-code RPA tools.

What Separates Low Code from No Code?

Both LC and NC platforms were developed with the same goal: to increase software development speed. This has led to LC and NC often being used interchangeably. But there is a slight difference between the two categories.

LC solutions are typically aimed at users with strong development experience or developers who need to build apps quickly, using visual development environments and automated links to back-end systems, databases, web services or APIs. LC is also well-suited for developing standalone mobile and web apps and portals that use multiple data sources and

require integration with other systems. In fact, LC can be used for almost anything except for sophisticated, mission-critical systems that need to integrate with multiple back ends and external data sources.

No Code solutions take this abstraction a step further by introducing visual drag-and-drop interfaces that require no coding at all. No Code platforms allow the end-user to dictate the automation process design through simple drag-and-drop manipulation.

Although Low Code platforms use a similar deployment model, the ultimate difference with NC is that LC tools also provide the developer with the option of hard coding.

LC/NC in the Automation Context

The commitment of hyper-scale vendors such as Microsoft with its Power Platform or Google with AppSheet shows the importance of low code/no code as a key center of business innovation for the future.

Workflow technology and iPaaS solutions are becoming increasingly popular due to their ability to create, orchestrate and automate end-to-end business processes and personalized customer engagement workflows in an LC/NC manner.

While workflow automation and iPaaS solutions focus on improving the interoperability of existing apps, the second category of LC/NC innovations focuses on helping employees create their own custom apps.

App builders increase the speed of application operationalization. Robotic Process Automation (RPA) based on low-code/no-code platforms provides the ability to automate everyday tasks that increase productivity without disrupting underlying business processes.

Intelligent Process Automation (IPA) takes the core premise of robotic process automation and adds a dash of Artificial Intelligence. LC/NC automation platforms for IPA are no longer subject to the constraints of RPA and can work with both semi-structured and structured data. What is certain is that low code/no code automation platforms will successively open up more and more automation technologies and thus make the practical application

of artificial intelligence accessible to an even larger circle of employees.

LC/NC Management Challenge

LC/NC software development does not only offer productivity benefits. In addition to these opportunities, companies also face a number of challenges that are difficult to overcome without appropriate governance rules and an LC/NC strategy.

The first question companies must ask themselves is: who is allowed to develop and publish applications in the company? How must the whole process be structured so that software is not developed that is counterproductive and no shadow IT is created.

Many of the applications developed by citizen developers have functional deficiencies and do not scale well. NC tools, in particular, sometimes tempt the citizen developer to make mistakes that a developer would not make. From a technical perspective, this can lead to vulnerabilities or inefficiencies that later escalate into real difficulties, such as slow or ineffective apps or coding full of unnecessary or irrelevant filler.

Systems and apps implemented without oversight are also not part of the IT department's backup and restore strategy. An incident can result in the loss of critical data. Citizen developer developments can also lead to inefficiencies if a solution to improve a single process negatively impacts related processes. Furthermore, if the citizen developer leaves the

company, there is a risk that no one will know how to change or support the system developed by that person. This also raises the question, who owns the application built by a citizen developer?

Governance Guidelines Are Essential

Organizations are advised to retain some control over system development, including selecting LC/NC tools, by implementing governance guidelines that provide some IT oversight. This can be realized, for example, through a hybrid development model in which citizen developers and IT organizations work together.

After the citizen developer has developed 80% of the model, they hand the application off to the IT organization, which does the fine-tuning. Or, the citizen developer develops the application using a

graphical interface tool, and a developer implements it in a scalable language. In both cases, it is ensured that the application is recorded and works correctly.

Low Code and No Code Are the Future

LC/NC platforms will fundamentally change the business world. There will be a paradigm shift for which companies will need a strategy. Because LC/NC will open up completely new perspectives. Companies will suddenly become software producers, able to build and implement their own digital business models. Since this will not work without the participation of employees, citizen developers must develop an understanding of software structures so that their self-built applications do not have a counterproductive effect on the business. Appropriate

corporate governance forms the guard rails for the citizen developers.

All of that wouldn't be possible without technologies that paved the way for LC/NC, and one of them is artificial intelligence.

The Future is Now: Artificial Intelligence

As soon as you open your mobile browser and use a search engine, you'll notice that the applied AI processes millions of websites and finds the best results for your search since Google relies heavily on AI technologies. Even when you decide to watch something on Netflix, the AI will suggest titles based

on your preferences and previous shows and movies you've seen.

AI is generally defined as the simulation of human intelligence by machines. Like humans, AI can process the information fed to it, derive patterns and act accordingly. The technology is often used in combination with automation.

Before we explain how AI and automation combine, let's take a quick look at how it became one of the biggest buzzwords in the technology industry.

AI and Automation

Before discussing how artificial intelligence can be used in automation, it is important to make a brief

distinction between the two terms, as they are often used as synonyms, which is incorrect:

- Artificial intelligence is a technology programmed to look for patterns in available data, learn from them, and adapt based on the newly discovered information.
- Automation is a "piece" of software that follows pre-programmed rules. It is used to automate monotonous and repetitive operations

But there is a good reason why AI and automation are sometimes mixed. They are often combined in different industries to maximize the scope of automation and make it intelligent. Let's take a look

at some of the technologies that combine automation and AI.

Hyperautomation

Hyperautomation is expected to become one of the leading technologies of the future. Strictly speaking, it is not even a technology, but rather a business initiative that aims to automate as many business and IT processes as possible. Instead of a single tool that enables hyperautomation, companies are using a toolbox to achieve their goals, which includes individual software components around the following tools:

- Robotic Process Automation (RPA)

- Intelligent Business Process Management Systems (iBPMS)
- Integration Platform as a Service (iPaaS)
- Artificial Intelligence (AI)

In short, hyperautomation takes automation to a new level by combining AI, ML, and RPA. This will be discussed in more detail later.

Intelligent Process Automation (IPA)

Intelligent process automation (IPA) is sometimes used as a synonym for hyperautomation, but there is a slight difference. As described above, hyperautomation is not a single tool, but a set of tools and IPA is a part of that — a tool that combines technologies such as AI, ML and RPA and focuses on a specific set of tasks. Simply put, IPA picks up where

RPA seems unable to automate, which typically involves automating more complex tasks, reducing human error, and providing more detailed and reliable results.

One popular service that offers IPA is SAP Intelligent Robotic Process Automation, which helps companies develop intelligent bodies with a low-code design tool. In addition, many other companies such as IBM, TCS, Tech Mahinda, Cognizant, Wipro and others offer various IPA-related solutions.

IPA is combined with several other technologies, such as natural language processing and optical character recognition, and is used in many industries.

Natural Language Processing

An important thing that makes humans unique is the ability to convey meaning through language. Therefore, the main goal of many linguists and computer scientists is to train AI to recognize and use human language. The interaction between machine and human language has been extensively researched in the context of natural language processing (NLP).

If you use services like Google Translate, you've already experienced NLP at work. It has become an integral part of our everyday lives and helps us overcome language barriers.

NLP, in combination with automation, is used in many industries. For example, in the banking sector:

Banks often process thousands of documents every day. Every transaction, every loan application, every account statement, every interaction with the customer - all of this contains a lot of text that someone would have to read, study and derive actionable insights from. This is where NLP combined with automation can do the heavy lifting.

In addition to document processing and analysis, banks (and many other industries) can use NLP and automation for customer service chatbots to help customers and clients with their banking needs.

Optical Character Recognition

Optical Character Recognition (OCR) is a tool that recognizes handwritten, typed, or printed text and converts it into machine-readable text. It can convert the text into the machine-encoded text to become editable and easier to process/analyze.

OCR is best explained with a practical example: When you travel to another country, one of the border officials puts your passport into a machine that automatically recognizes your passport number and extracts the relevant information to perform a quick check and enter it into a database.

Imagine if border agents had to manually type and enter all the information from the passports of

thousands of travelers crossing the country's borders every day. It's definitely an unpleasant sight, but thanks to AI, OCR, and various additional technologies such as pattern recognition and computer vision, this has been automated to some degree. Apart from passports, many other documents are scanned with OCR software (and hardware) in various industries. Another popular example is automatic license plate recognition (ANPR), which reads license plates and facilitates general traffic control, parking, and more.

The Future of AI & Automation

It's no secret that AI and automation are good buddies, working diligently in many areas of our lives, especially technology and process automation.

According to an analysis by McKinsey, which looked at more than 2,000 jobs in 800 occupations, some occupations proved more amenable to automation than others, including various jobs in highly structured and predictable environments. As a result, some occupations will be completely replaced by the combination of AI and automation. Currently, only 5% of all occupations can be fully automated, while others can be supplemented to some degree.

Does this mean that automation and AI will ultimately replace some human-performed tasks? Will anyone be laid off because of this?

It doesn't have to be that way because these technologies will also create many jobs, many of which will revolve around AI maintenance,

development and testing. When you introduce AI and automation into your business, you're paving the way for economic growth because whenever the world changes dramatically, so does the need for jobs.

It’s All About the Opportunities That AI Brings

In summary, it's important to train your employees in AI and automation as soon as possible, especially if you want to integrate these technologies into your business processes. This way, you can protect employees, help them learn about new technologies, and even create new jobs in the future.

The Peak of Automation: Hyperautomation

In a world where digital technologies are the drivers of commercially successful commerce and digital-first approaches dominate the agenda of forward-thinking leaders, the call for digital operational excellence is growing louder. This is because more and more tasks and processes must be automated, and automation must also be successfully orchestrated across a wide range of functional areas. Many companies, professionals and experts see Hyperautomation as both the key to digital operational excellence and a sure ticket to the digital future. Everyone is talking about the magic unicorn, but where does hyperautomation actually come from and what is behind it?

We've already mentioned Hyperautomation several times throughout this guide, and we're about to take a deep dive and explain what it consists of.

Hyperautomation is More than Just a Technology

The ultimate tool for hyperautomation does not exist. Hyperautomation is more of a strategic business initiative than an all-encompassing technology. Hyperautomation can be more accurately described as continuous automation that leverages various AI technologies in combination with Robotic Process Automation (RPA) to deliver superior business results and ongoing digital transformation at the same time.

Moving from automating simple, well-defined tasks to more complex and exception-driven processes

requires combining and integrating complementary technologies such as process mining, business analytics, ingestion engines (OCR, computer vision), and machine learning with the RPA toolbox. This will help create a comprehensive approach to increasing and transforming the efficiency as well as the effectiveness of automation. In this way, companies overcome the limitations of approaches based on a single automation tool.

The Ingredients

Anyone considering hyperautomation as a "digital strategy" for their company should understand how digital technologies fit into existing workflows and their role in new processes. Robotic Process

Automation (RPA) plays a special role as a basic technology in many approaches.

Robotic Process Automation (RPA)

RPA is the automation of business processes by "digital software robots", so-called RPA bots. The bots perform repetitive tasks and business tasks such as querying, calculations, creating and updating records, filling out forms, creating reports, cutting and pasting, and other high-volume, transactional tasks that require moving data within and between applications. In other words, RPA makes sense wherever interfaces do not exist, or codes need to be generated individually. An RPA Business Analyst or Automation Agent is recommended for effective implementation through proper process analysis and assessment of Robotic Process Automation.

Intelligent Business Process Management Systems

Another tool from the hyperautomation toolbox is Intelligent Business Process Management Systems (iBPMS). With iBPMS, a business process management tool (BPM tool) is enhanced with AI techniques as well as features such as cloud computing, data mining, real-time analytics, real-time decision management, logic building blocks, and system networking to optimize operational responsiveness and efficiency in the enterprise. iBPMS tools not only optimize business processes but also simplify the management of those very processes when it comes to end-to-end process automation. The low-code interface of most intelligent business process management tools also facilitates collaboration between IT and business.

Intelligent Platform as a Service (iPaaS)

Among the tools that are repeatedly used in hyperautomation projects is Intelligent Platform as a Service (iPaaS). The intelligent platform for automating business processes is an excellent digital tool for various integration scenarios such as data integration, system integration, and hybrid integration. It's also used for managing the integration flow within the cloud and between the cloud and business.

Low Code Application Platform

When it comes to automation and process efficiency, low-code application platforms (LCAPs) have become an indispensable part of the equation. They accelerate the speed at which apps and services can

be developed and processes automated, as user-friendly building blocks instead of complicated programming languages facilitate software development. Gartner sees low code development platforms as a driver of hyperautomation and forecasts growth of 54 percent for this technology by 2024, even though they only make up a small part of the market at the moment.

Artificial Intelligence

Artificial intelligence (AI) and machine learning (ML), along with artificial neural networks, deep learning, natural language processing (NLP), machine vision, and optical character recognition (OCR), are the fundamental catalysts for advanced process automation and automated decision making. AI and machine learning are technologies that learn from

behaviors and events, enabling them to perform specific tasks without explicit programming using data. In the context of hyperautomation, AI and machine learning can compensate for decreasing automation speed due to increasing process complexity by recognizing patterns in data more efficiently and quickly than humans, thereby allowing companies to mine deeper into their data in real-time. For the field of decision making, Decision Automation has emerged as a forward-looking strategy to automate decision processes using AI, Data, Logics and Business Rules. They make it possible to navigate appropriate decision-making processes to make a clear and precise decision without human intervention.

Different Approaches to Automation

It is no wonder that the approach the automation suppliers take to hyperautomation is as diverse as possible:

For example, UiPath, a leading RPA provider, approaches the topic of hyperautomation from the automation side. UiPath's vision is to leverage the transformative power of automation to harness the potential of employees for value-added activities. To that end, UiPath has developed an end-to-end hyper-automation platform, combining its RPA solution with a comprehensive set of AI capabilities. "The integrated capabilities cover every stage of the automation lifecycle and provide deployment options that allow companies and organizations to deploy the

software robots they develop both on-premise and via the UiPath Automation Cloud."

Unlike UiPath, Celonis, a leader in process mining, approaches hyperautomation from the analytics side. For Celonis, automation is not the only solution for optimizing functions and business processes in the enterprise. Celonis has identified the root cause problem for achieving better business results in the processes themselves. To achieve the desired results, the first step is to analyze and improve the underlying processes. There is no single technology for process optimization — rather, it requires a holistic strategy for process improvement.

Hyperautomation: The Sum of Different Parts of Automation

As it turns out, the magic unicorn called hyperautomation does not yet exist per se. But all the ingredients are there and only need to be properly combined to realize true hyperautomation. By combining different automation aspects and approaches, companies can go beyond the limits of individual business processes and automate almost any tedious and scalable task. This requires careful planning and integration of technologies that meet the needs of the business.

The success of hyperautomation ultimately depends on all of the above aspects working together seamlessly.

Part 4: Ready, Set, Automate!

Automation takes preparation. The last thing you want to is for your automation project to fail or end up with an unfinished automation initiative.

As a result, we decided to cover everything you need to know when starting a project, including what types of roles you are expected to assign. Read on.

Automation Projects: Things You Should Do

We came up with a set of practical tips and tricks that can help you avoid the pitfalls when starting to work on your automation project.

Understand the Different Aspects of an Automation Project

We recognized five separate aspects of automation initiatives: organization, governance, people & culture, technology, and process. When looking at an automation project, it is essential to see it with a holistic view and address the different aspects equally.

Asking the Right Question Matters

Every successful automation project succeeds because someone knows which questions to ask. These questions will empower you to communicate what you intend to do clearly.

It all starts with the why, what, and how:

- **Why** do we do something? Why do we aim for automation?
- **What** do we have to do to implement it?
- **How** are we going to do it?

Proof-of-Concept: Yes or No?

There are two ways to approach the automation initiative. One is to build it by starting with process selection and identification right away, and the other is to build PoC first. By building PoC, you can learn a few things along the way that could be beneficial for your initiative.

Here's a quick overview of the two different perspectives:

- Demand Funnel -> Identify -> Define/Design (PPD) -> Develop (SDD) -> Go Live
- Identify -> Define/Design (PPD) -> Develop (SDD) -> Go Live -> Demand Funnel

Good PoC Can Result in Larger Initiatives

Invite motivated MAs who are interested in the project and conduct a small proof-of-concept to convince management to end up engaging in a larger initiative.

Start Small and Scale Fast

There's no single rule as to what approach to automation projects is correct. However, everything in automation can be measured, and it's no secret that one approach turned out to be more successful than others. It can simply be described as: start small and scale fast. By starting small, you'll be able to

gradually expand the scope of your automation project, which will also affect the speed with which you can scale.

Start with a Single Technology

Instead of using several technologies at once, it's always better to start with a single one and understand its scope. Focus on building new use cases around it. After completing one technology, you can explore others, one at a time, and come up with use cases for each.

Organize Process Discovery Workshops

Process discovery workshops help us discover new processes and analyze the existing ones. Holding frequent workshops can help us make continuous improvements of processes. In many cases, such

workshops need to be held with the IT department included, especially if working on more significant processes, such as P2P or O2C. Planning and implementing changes should be conducted together with IT.

Formalization Must Be Built-In

Formalization is the act of making something formal by defining rules and procedures clearly. These should be clearly stated between individual steps inside the project and especially between the interfaces of business and development, and it's always a good idea to have built-in checklists for the handover.

Formalization also means having the entire process represented visually so that we can see if there aren't

any bottlenecks or irregularities that would hamper the possible scaling of the process.

Automation Projects: Things You Should Not Do

Let's look at some of the things you should not do or do differently to avoid failing in your automation initiative.

Don't Automate for the Sake of Automation

Don't waste time automating an entire process just to say that you use automation, as you may end up wasting many resources and time only to understand that the automation doesn't really contribute anything to your workflow. It's best to start with a

proof of concept first and decide whether there's a point in automating a process or not.

Don't Focus on One Technology Only and Fail to See All Possibilities

By using one technology or one approach in your automating initiative, you might miss out on some of the opportunities offered by other technologies. Even if you succeed with the technology you're using, you still might be able to improve your automated process if you decide to take alternative solutions and possibilities into account.

Don't Develop Demand by Reaching Out to Departments

Once your organization starts an automation initiative, you might have an urge to reach out to

various departments and offer automation. However, that's not scalable in the long run because you may not be able to devote enough time and energy to each apartment. Above all, some might not even need automation to start with.

Don't Avoid Educating and Training Employees on Automation

If you're familiar with the concept of automation and everything else that comes with it, you might be one of the few in your organization. Many of your co-workers might not even know what it means, let alone understand its potential, and that's why education matters.

We understand the urge to skip education and training — it costs, and it lasts. Moreover, you might

not think that your employees require education or training. In reality, most of them will get in touch with automation at one point, and it's essential to train them to approach it properly.

Don't Hesitate to Ask for External Help

In case you're starting an in-house automation initiative, you might run up into some obstacles that will require automation professionals. Therefore, you might want to consider hiring an automation consultant or automation agency to ensure that you're going the right way and avoiding all pitfalls.

Must Have Roles for Your Project

Automation often includes many people working on it, and there are many names for roles in automation

projects. Big players in the industry, such as Celonis or UiPath, usually assign all of those roles to people working on their initiatives.

However, for us, the following three roles play an essential part:

- Automation Strategist
- Automation Agent
- Automation Leader

Automation Strategist

An Automation Strategist is responsible for all automation projects that are part of the business department. It is common for an Automation Strategist to be part of a functional department, and the person with the title must be familiar with all the

business processes that are taking place in the department.

Suppose there's a need for change management in relation to automation. In that case, an Automation Strategist is usually the one responsible for orchestrating it for the department where the change needs to take place.

Automation Agent

An Automation Agent is usually part of one of the special departments, and they usually work hand-in-hand with an Automation Strategist. In a sense, they can be perceived as a junior Automation Strategist, as they still need to have some knowledge about automation in general.

In many cases, their job is to prepare the needed documentation for process automation and deliver it to the Automation Strategist. Moreover, they will also have the opportunity to participate in the automation initiative by sharing ideas and solutions with others.

Automation Leader

The role of an Automation Leader is often mixed with an Automation Sponsor. However, in reality, the latter is more of a support role, and the former is responsible for the entire automation project. Ideally, they should be able to see the big picture and oversee the various details pertaining to the project, such as time, cost, investments, and more.

The Importance of a Demand Funnel

Once your organization decides to start with automation, there might be situations where the Center of Excellence won't be able to meet the demand for automation. Therefore, the CoE needs the automation demand funnel, which will provide a constant supply of processes that can be automated. It's safe to say that the automation demand funnel is one of the essential things to establish before proceeding with the automation initiative in general. Please be aware that an automation demand funnel can also act in a different direction and be too fully loaded. It means that your colleagues who handed in cases may get a late or non-existing response, get demotivated, and slow down the automation initiative.

Having this in mind, let's explore tips for getting the most from your automation demand funnel.

Take One Step at a Time

Automation can become a burden once you want to do it all at once. It's important not to rush when starting with an automation project and avoid creating unnecessary frustration among employees. By automating all at once, you'll just create more issues, and there's a risk that the processes won't be adequately automated. As we already said in the first part, make yourself scale-ready and then try to scale, not the other way around. Start with some processes and spread awareness for your automation demand funnel one step at a time.

Focus on Discovering Processes and Building a Team Before Scaling

Once again, starting with automation takes time, and it's essential to do so in stages. You need to devote some time to discovering the processes in your organization and assembling a team that will work on your automation initiative.

Asking Questions: Quality over Quantity

Coming up with an automation demand funnel will require collaborating with other employees and learning relevant information from them. Sometimes, you'll have many questions that may be confusing to employees, so it's vital to come up with fewer but high-quality questions that will benefit you the most. Too many questions could result in fewer requests for automation.

Once you come up with the initial set of questions and have them answered, try to come up with initial feedback that provides essential information, such as what the automation potential is.

Walk a Mile in Staff's Shoes

An automation initiative requires the so-called customer-centric approach, which means you need to understand the current mindset of the people in the department seeking automation before coming up with a questionnaire. For starters, as an automation specialist, you should be aware that the departments probably don't have a clue how automation works or what RPA is. The simpler the questions, the more likely you'll be able to understand the ongoing processes as described by department members and make a preliminary analysis.

Organize a Discovery Workshop/Process Walkthrough

After the initial set of questions is answered, it's always good to organize another appointment to discuss core questions and validate them before proceeding with a discovery workshop. To get the most out of the workshop, don't make them too long, as they are likely to take place during the working hours when all stakeholders are busy with their primary tasks and have little to no interest in automation.

This is also the time when the main goals and core KPIs need to be covered and taken into account regarding automation.

Three Ways to Implement Process Automation

Once you get to the point where everything is ready for the implementation of automation, you need to understand the different methods used for that. They mainly depend on how complex automation is, what the IT infrastructure looks like, and whether you'll need a certain software stack or not.

1. **Automating within a single system**

   In this case, we need to automate a process of a single software (such as Excel) or CRM (such as Hubspot Workflows). Simply put, there's no need to include different systems to make the process automated, as it's usually a sub-process within that system. This is often

considered the most effortless approach. For instance, you can automate Excel with VBA and create macros to perform tasks within the program.

2. **Automating two or more systems with APIs**

   If your automation process includes two or more systems, the most logical approach is to check whether they have available APIs. Next, see how much time and resources it would take to implement those APIs and get them to collaborate. The good news is that many cloud apps and systems have open and easily-accessible APIs. In this case, we need to consider using iPaaS and connecting pre-built APIs quickly and efficiently.

3. **Automating two or more systems with no APIs**

   If there's no way for two systems to work in any way through APIs, then it's time to consider using robotic process automation (RPA). RPA can mitigate the challenges of transferring data between two or more systems, even if none of them have APIs. It's possible to automate complex data and action flows, in addition to sub-processes within a single system.

If you have a highly complex process that uses many systems, do not just settle for using one of the three steps or not, but integrate them all if needed. Depending on the subprocesses of your big process, it can be possible to automate in one source system,

use this output as an input for API automation and again use a Robot as a non-existing API to connect the third system. The selection of the technology should always depend on the process.

Governance and IT-Security

The term governance may mean different things for different organizations. Its primary meaning is control. Organized control is perhaps an even better description.

In the traditional sense, it's a set of rules and guidelines that make an organization function. Sometimes, when we say governance, we refer to IT governance, used in particular contexts. IT governance decides who may use certain software

and how. It deals with authorizations and permissions as a way to improve security.

But what about governance in the context of automation?

Governance in Automation

Governance plays an essential role in your automation journey, and the sooner you set up working and effective governance processes, the easier your journey will be further on.

So, why is governance important, and what does it have to do with automation? Well, with a great governance process, it will be much easier to assess opportunities for implementing automation. Governance's other responsibility is prioritizing

automation activities, which is often beneficial in complex automation projects.

Let's take robotic process automation as an example. Governance should provide important guidelines and templates for robot deployment. In the best case, there should also be guidelines for their design, development, and assessment.

You could even say that governance is also linked to change management because issues and risks are discussed and considered when setting up the governance process. Moreover, relevant templates and frameworks for change management are set up at that point.

Perhaps the most critical goal of governance is ensuring easy communication and smooth collaboration between units.

Finally, you might be wondering what the role of the IT department is in this case? Well, setting governance into motion requires using the right technologies that will be incorporated into the project and used for managing dependencies. It's safe to say that governance requires both business and IT experts to engage.

There's another important role that IT plays in automation as a whole: establishing security protocols. Even though robots are designed to provide error-free and fast automated processes, they also paved the way for certain cyber threats. These

include compromised security, difficulties in establishing ownership of BOT transactions, unauthorized use of robot login credentials, and more.

Change Management: Prepare to Automate

We already covered the importance of change management in an organization and how beneficial it is for the success of an automation initiative.

But how does one actually introduce change management for automation?

As it turns out, there are defined steps that should help you implement change:

- **Identify a suitable process**

  Finding a good process for introducing automation is essential to quickly win over those who know nothing about automation, have prejudice, or are scared of losing their jobs. Creating the “wow” effect in the beginning by identifying a process that can be automated quickly and successfully is essential right from the start.

- **Educate and create awareness**

  Everyone included in your organization, and especially stakeholders in processes, need to receive proper education on automation and its purpose of assisting workers in their jobs.

- **Engage in co-creation**

  Including process owners and other people who work on the process in your automation initiative is essential when automating as they know their processes the best and can assist you with bottlenecks and other obstacles. By educating them on automation, you can also include them in the sheer automation initiative.

- **Get support from various stakeholders**

  In many organizations, skeptic stakeholders might not want to assist you with your automation initiative. They might even work against it, so it's vital to get their support right from the start.

- **Share the status regularly**

  By being transparent and making regular updates on your initiative, you'll gain long-term trust from all your colleagues.

- **Create a success story**

  A success story is a great way to showcase the benefits of automation. Every such story should aim to describe automation for what it really is: a tool that brings good and doesn't do any harm to anyone. It's important to give all employees the actual value of automation, which benefits everyone in the organization and is not only used by the upper management to make a profit.

- **Share your knowledge**

  Every process is unique, which means every automation initiative is unique too. Therefore, it's important to share all your knowledge and educate everyone on everything related to automation and its application within your organization.

Automation Initiative Requires Preparation

Before you start with your automation initiative and everything surrounding it, including the automation demand funnel, governance, and more, it's very important to check the cost, and the time it would take to complete the project. On top of that, defining

clear automation goals is vital for making the first step towards it and prioritizing processes.

The thing about automation initiative is that it's still not present in many organization. However, automation is definitely going to become a norm in the future, and we're going to explore exactly that in the last section of our automation playbook.

Part 5: The Future of Process Automation

From the invention of the wheel to Hyperautomation — we've come a long way. Does that mean we've reached the end of the journey? Is this the pinnacle of automation?

Absolutely not. In fact, the more we automate and research automation opportunities, the more exciting the journey becomes.

Trends and Technologies of Tomorrow

The world of automation is still full of wonders. We need to travel a long road that leads to humans

achieving their maximum potential by letting them focus on creative and innovative tasks while automating all tedious and repetitive tasks.

Let's explore how automation will change and evolve in the future and what we could expect from it. Read on.

The Complete Absence of Technology Fragmentation

Many businesses, huge ones, are using an array of applications that are built with entirely different technologies. Sometimes, we need these to work in unison, and technologies such as IPaaS, RPA, and AI can help us connect them and automate processes. Still, we haven't managed to solve this issue

altogether, and human intervention is required from time to time.

The good news is that we're moving toward eradicating technology fragmentation. Soon, we'll be able to connect any two or more apps and automate the business process that involves them, no matter how complex they are.

The Virtual Assembly Line to Further Facilitate Digital Work

What does your digital work look like now? Even though your essential job takes up most of the time, you'll still spend some time filling out reports, setting up apps required for your job, and preparing anything else you need before actually working.

Sometimes, all these side tasks are boring, and you might find them unnecessary.

However, automation technologies can already help us eliminate most of these tasks and let robots take care of them. Virtual assembly line means having all tasks prepared for you so that you can just turn on your device and have all tasks prepared for you. That way, you can focus on the essential part of your work and give your maximum without spending unnecessary energy on irrelevant tasks.

Virtual assembly lines are already a reality, but they will be further refined soon.

Low Code and No Code Will Become a Standard

There are already plenty of low code services across industries that tech people commonly use to speed up the app-building process. In automation, low code platforms enable automating processes using drag-and-drop interfaces and only inserting code for more complex operations. These services will become even more popular in the future.

In fact, many apps in automation aim to achieve no code. Although they already exist, they are only available for simpler automation operations. Automating complex processes still requires having a coder in your team. But no code apps are bound to become even more popular in the future, leading to

the rise of “citizen developers,” non-technical workers who will be able to make apps and utilize complex automation strategies. Gartner Inc’s June 2021 Press Release states that non-tech people will create 80% of tech products and services.

This will effectively put automation in the hands of people who know an organization’s processes the best — the business department. With no code tools, they will be able to make quick adjustments with minimum to no help from the IT sector.

Does no code mean the demand for software developers will increase in the future? Of course not. On the contrary, the IT team will be able to concentrate on more relevant and complex issues rather than writing thousands of monotonous lines of

code. More importantly, the IT department won't have to waste its time helping out business departments and can focus on what's relevant.

Greener and More Sustainable Businesses

Sustainability has been one of the most important keywords of the decade, as governments worldwide increase their requirements for businesses to battle bad impacts on the environment. We've reached that age as humanity where we need to pay attention to the world around us more than ever.

Because of that, the Environmental Social Governance (ESG) performance of a business will become one of the key factors that investors will take

into account in the future when deciding whether to invest. Companies must disclose their activities related to the environment and are expected to go a step further than just being compliant with guidelines. They need to show that they are working on greener initiatives and have detailed sustainability strategies.

But what does it have to do with automation? Well, many processes that consume a lot of energy and are not eco-friendly can be cut down thanks to automation, leading to greener and more sustainable business operations. For instance, we still need to print a paper for some uses, but by digitizing all paper documents and using automation to process them, we can help with deforestation.

Even More Rapid Development of Automation Technologies, with the Main Focus on AI

Automation is being explored and developed by some of the brightest minds in the world, and we can only expect it to get better in the future, along with all related technologies. For example, artificial intelligence is one of the fields which is being researched a lot, and more intelligent AI could contribute to automation even more. This also applies to other separate areas, including IPaaS, RPA, and more.

At the moment, AI produces around 1% of all data nowadays, and, according to Gartner, this figure will reach 10% by 2025, meaning AI will become even

more powerful in years to come. Moreover, AI engineering will become more prominent, a practice connecting human needs with AI systems to create real-world solutions. AI engineers will continue developing tools, systems, and processes that will make AI applications in the real-world even better.

Another massive AI-related shift expected to happen is AI reaching end devices. Currently, AI is mainly on the cloud and in the backend, doing all the computing. However, it is expected to become available via sensors, computing chips, processors, and more. That way, data won't have to travel all the way to the cloud to be collected, stored, and analysed — it's all performed locally. This will reduce overall latency and make data processing even

faster. Such an approach, dubbed AI Edge, will definitely find its way into automation.

Fully-Automated Companies

A fully-automated company is an organization where all processes that can be automated are automated and require minimal to no human intervention. We already have fully-automated companies, but they still feature a lot of repetitive work that needs to be conducted by humans.

Therefore, it's safe to say that a fully-automated company actually only exists in theory but is likely to become a reality in the near future. In such a company, humans will play an even more critical role, as they will have a chance to focus on more creative tasks rather than waste time doing boring work.

Final Thoughts

Automation isn't rocket science, but we would lie if we told you that it's as easy as ABC. However complex it may seem, it's getting better and easier to understand with each passing day, as some of the brightest minds are working on making automation smarter, faster, and available to anyone — even people who aren't technical personnel.

Still, anyone who decides to start automating processes in their organization needs to understand automation as a whole.

Automation isn't a technology nor a set of technologies — it's a philosophy. It requires thinking in a certain way and having such a mindset to

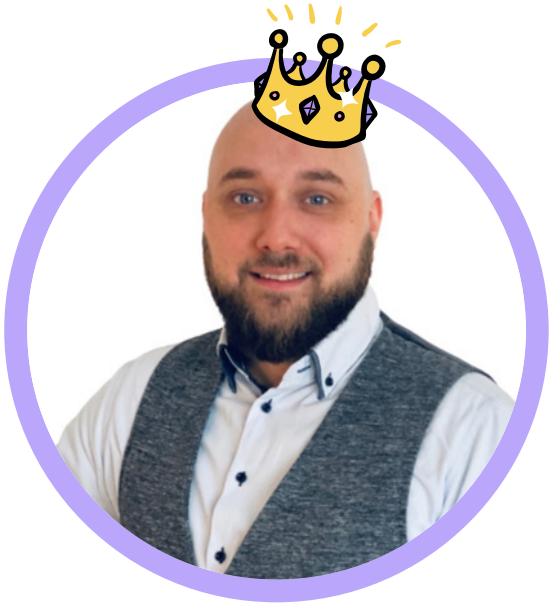
understand what and how it can be automated within an organization. Only after you acquire the mindset can you start dealing with the specifics, such as tools and technologies.

Hopefully, our playbook has helped you understand the basics and ignited a spark for automation that will result in reading more about the popular topic or even starting the practical aspect of it. If that's the case — good luck on your automation journey!

WANT YOUR OWN SUCCESS STORY?

If you want to start automation projects with your team, we are here for you. Together we look at where your company stands and what needs to be done to increase effectiveness and internal expertise.

Book a meeting with Chris and get a non-binding consultation. We look forward to meeting you!



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This playbook is designed to serve as a foundation and guiding star for you to drive Process Automation in your organization. Each chapter represents a seed of knowledge that can grow into a forest. Start planting today.

"Don't judge each day by the harvest you reap, but by the seeds that you plant."

Robert Louis Stevenson