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A Comprehensive Guide to Process Mining
How to Make Better Decisions Faster

THE BEST RUN **SAP**

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Introduction

In 2020, businesses had to change fast just to survive. There were challenges, whether you were a primarily physical business pivoting to digital or a digital service facing unprecedented growth. The sudden shift to remote work threw into stark relief gaps in business continuity plans. People had to muddle through creating digital versions of processes that might not have been well documented, and new processes were developed on the fly.

Reflecting on what worked, what didn't, and how your business can learn the right lessons and move forward is crucial. However, the opportunity to do so exists only if you have the right information about how your business functions in practice.

To wrap your head around how each process is being performed right now, you need process mining. It uncovers the little variations, challenges, and work-arounds that can't be uncovered by other means, so you can see what is actually happening and how it impacts your business. With these insights, you can make informed decisions about what to keep, what to change, and which processes should take priority.

In this paper, we'll help you understand what process mining is, the value it offers, and why now is a good time to implement it. We've included examples and a guide that you can use to get stakeholders on board and launch your process mining initiative.
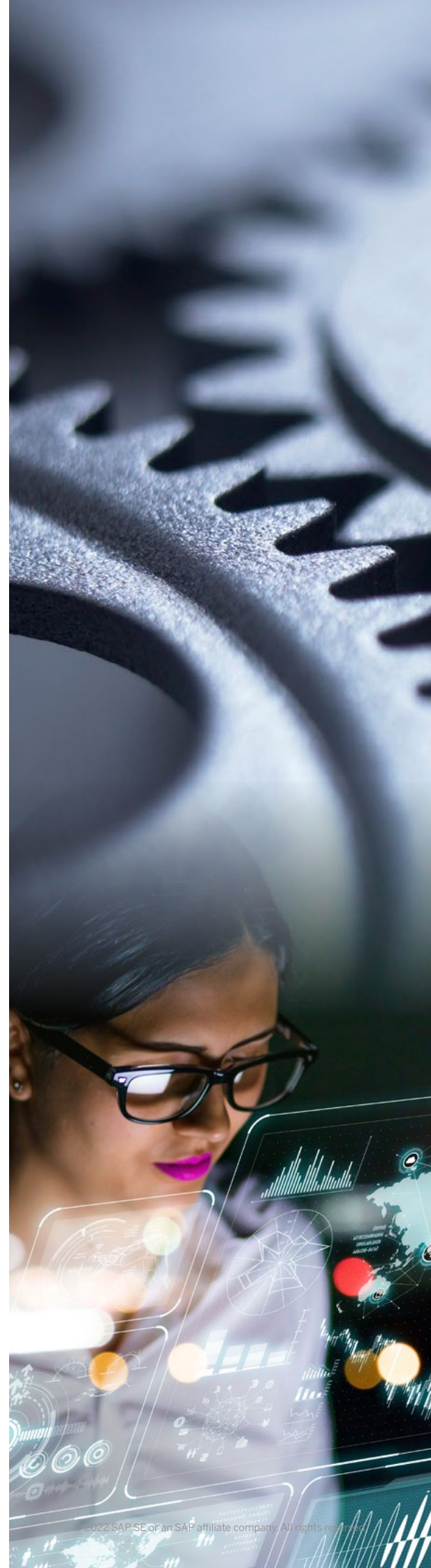
What Is Process Mining, and How Does It Work?

If a football team executed every play the way it was explained in the locker room, they would be unbeatable. But the reality is that plays don't always work the way we expect them to. Out on the field, even the best players miss a pass or two. The top teams have coaches and performance analysts continually looking at what actually happens and using those insights to get closer to perfection. The same is true in business: There's the way things should be done, and there's the way they're actually done. Process mining is the key to understanding the latter so that you can make better decisions faster.

The challenge is, people are often a poor judge of the impact and frequency of exceptions to a documented process. Because of this, gathering people together to build process maps is not only time consuming, but it also allows individual biases and misperceptions to color an organization's understanding of the importance, impact, or function of specific business processes. With process mining, we use data to get a more objective view.

Process mining empowers a business to tap into the data it already has within its IT systems. Whether they are carried out by people, automated, or both, most processes leave digital traces. Process mining uses these digital traces or event logs to "paint a picture" of what is really happening in your business so that you can better align that to your business strategy and goals.

By mining data logs – instead of using interviews and estimates – process mining reveals where work-arounds, shadow processes, bottlenecks, and compliance issues occur, and at what frequency. The results can be surprising. For example, process mining often reveals a much higher frequency of what people perceive to be occasional work-arounds. Skipping a minor step in a complex, multistage approval process might seem insignificant, but process mining reveals a larger impact on compliance and efficiency.

Being able to quantify the real-world business impact of such work-arounds or unwanted process variants can have a demonstrable effect on the efficiency and profitability of any business. This is a major advantage of process mining over simple process mapping or other analysis techniques.

Unlike time-consuming meetings, process mining tools can be connected to your digital systems. You can build an objective view of how each process works and combine that view with process modeling tools that enable you to slice and dice the data – as well as drill down to the root cause of problems – without having to rely on developers to run a complex analysis for you.

You don't need to know every question before you get started. In fact, it can sometimes be better if you don't. One of the benefits of process mining is its ability to uncover data that supports gut feelings built on expert intuition. If a process seems wrong to someone with the knowledge to make that claim, then it probably is, and process mining can help determine how.

Using process mining in combination with tools that let you build process models, simulate changes, and communicate them throughout the organization empowers you to make business process optimization an ongoing activity. With process mining, you can account for human variables often left out of the equation and uncover the processes and work-arounds that really make your business tick.

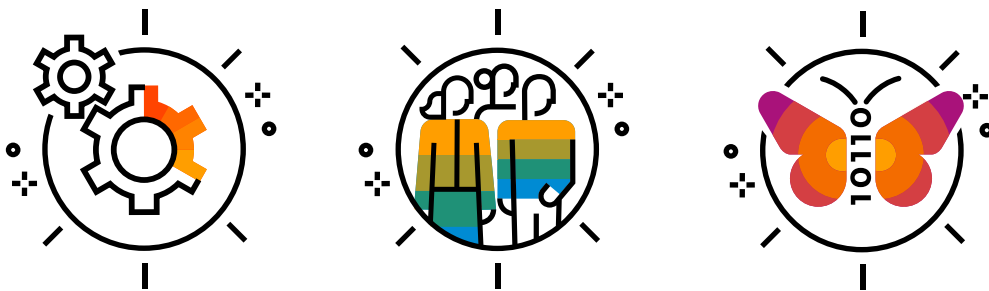# How Process Mining Supports Three Key Areas of Business Success

Process mining is the key to getting your business where you want it to be. It unlocks the data already stored in your systems so that you can use that data to drive impactful change. One data networks innovator tapped into the power of process mining to increase visibility into business processes and support data-driven decision-making. Armed with these insights, the company reduced manual errors by 99%, cut procure-to-pay time by 80%, and integrated process mining into a dashboard that supports ongoing optimization.

Businesses can use process mining to guide process improvements from the beginning, but process mining also adds value when a process improvement fails to deliver results. For example, to improve satisfaction among high-value customers, one company implemented additional quality control steps for large orders. A few weeks later, it saw a rise in customer complaints – the opposite of what it expected. Instead of assuming that the new process was flawed, the company turned to process mining for more insights. The data revealed that employees were splitting large orders to avoid the extra steps.

Process mining won't solve business problems on its own – in the example above, someone still had to coach employees on the importance of following the new process – but it empowers you to act from a place of knowledge. Instead of looking at a spreadsheet or static process map, you can use process mining to reveal what is happening (or not happening) in your business and where changes will have the most impact and add the most value.

In short, process mining is one of the most powerful technologies to transform data into insights, which in turn allow for better and more-informed decision-making on process issues. The end result can be measured in three areas of business success: operational excellence, customer excellence, and business transformation.

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How Process Mining Supports Continuous Improvements on the Road to Operational Excellence
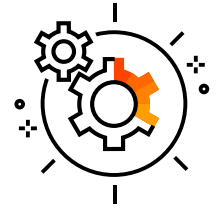
How you define excellence is unique to your business. For the sake of this paper, we will define operational excellence as a discipline that aims to balance the triad of people, processes, and technology; generate benefits for both the top and bottom lines of the business; and ensure delightful customer experiences in the process. It's an ongoing progression of monitoring and optimizing business processes to close the gaps between day-to-day operations and executive strategy.

Achieving excellence is a journey, not a destination. As you improve, you see more ways to improve. To take a real-world example, one business set a goal of reducing customer onboarding errors by 10%. In pursuit of that goal, the company's leaders discovered that 35% of errors resulted from incomplete data on the initial paperwork. This insight focused their attention on that critical step. They implemented a manual data verification step that got them to the 10% reduction goal, but they realized that digitalizing the form and adding real-time data checking could reduce errors and manual work even more.

Aiming for excellence fosters a culture of continuous improvement that yields greater business value over time, particularly given that process mining enables you to measure, take action, and improve on metrics (such as process variance) that can't be measured by traditional business intelligence tools.

This ongoing optimization is the objective of most maturity models, including process maturity. The figure below shows the stages of process maturity – from ad hoc (when a business is beginning to organize its process management efforts, but processes, methods, and tools are not formalized), to managed (when process management tools are more widely adopted, and every important process is documented), all the way to leading (when process knowledge is very high for all employees, including processes, methods, tools, and projects rolled out across the whole business, leading to competitive advantages).
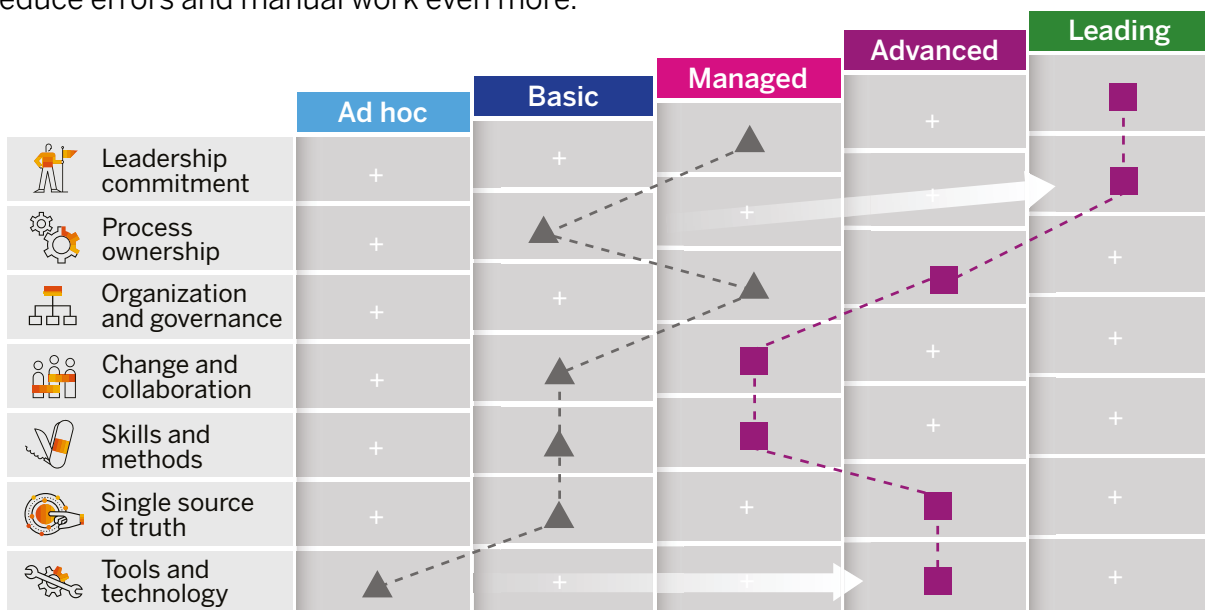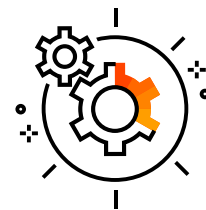

Figure: Stages of Process Maturity

Companies that follow these steps – from simply documenting processes, to implementing process management and review, to a state of continual optimization – can be described as well-oiled machines. They have reached process maturity. Not only do they have clear documentation of how core processes are actually performed, so that they can make strategic changes with predictable results, but they consistently and proactively monitor the way processes are operating to identify variances quickly.

Businesses need to be able to tackle sudden change, and process mining is key to this adaptability, as it allows decision-makers to quickly see and understand how processes are operating in real time. For example, in the face of drastic staff shortages and an international lockdown, one food provider was able to quickly and smoothly pivot to a cross-training program, even in the midst of a crisis, because the company's underlying process framework was solid.

Understanding your business processes is the first step toward reaching a state of excellence in the way your business runs and its ability to adapt. To remain competitive in your market, you need to continuously mitigate risks, optimize processes, and ensure business continuity.
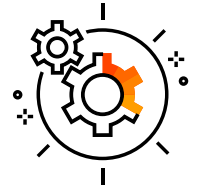
RISK AND COMPLIANCE

Proactively managing and mitigating risk and ensuring compliance are key components of operational excellence for an organization. Highly regulated industries such as finance and telecommunications are under significant pressure to minimize risk and ensure compliance, but compliance issues plague companies across industries.

One of the trickiest places to detect deviance from risk frameworks is when they come in the form of work-arounds. People are often reluctant to admit that they are bypassing defined processes, they underestimate the number of exceptions to the rule, or they might misunderstand the process. Companies can't address these underlying reasons for process deviance unless they know where they are happening.

In other words, organizations need to be able to detect and quantify the work-arounds performed in their processes and to understand their sources. Researchers have found that process mining techniques can detect these four types of work-arounds: bypassing process parts (skipping steps), postfactum information changes (modifying data after it has been used to make a decision), noncompliance to role definition (performing work outside of your responsibilities), and separation of the actual process from the reported process (recording manual work at a later time).

Identifying work-arounds enables you to investigate and address the root cause of these deviances by changing the process, retraining employees, providing more oversight, or automating steps. With process mining, you can uncover and mitigate risks before they result in lost customers or steep fines.

Managing risk and compliance is not simply about risk managers alone in an office identifying risks. It requires a collaborative approach to uncover the underlying reasons and motivate employees to operate in accordance with your risk framework. This is where process mining can be combined with collaborative process mining and workflow tools to create a compliance-oriented culture where risks are identified and resolved faster.

THE TOP THREE WAYS TO USE PROCESS MINING IN RISK AND COMPLIANCE

- Tapping into data to identify and measure risks and compliance violations

- Identifying the type, frequency, and impact of work-arounds so you can address the cause

- Monitoring the impact of process changes on risk and compliance
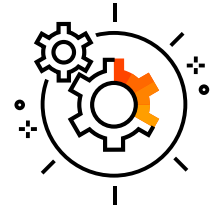
OPTIMIZE, THEN AUTOMATE

Robotic process automation (RPA) offers many opportunities to increase efficiency, cut costs, and reduce errors – all important components of operational excellence. At the most basic level, RPA means using a piece of computer software to complete a specific task by "copying" what a human user would do.

RPA is a valuable automation tool that can deliver great results if implemented well. However, as organizations hurry to bring RPA online, many assume that automating a process automatically leads to improvements. The result is a high failure rate, since automated bots follow a set of rules and are therefore only as good as the processes they are performing. If you pursue process automation without process optimization, you will simply end up doing the wrong thing – faster.

Thinking in detail about which processes you wish to automate, reviewing them from end to end, and optimizing them first is the key to avoiding costly and frustrating problems down the line. Not all tasks are good candidates for RPA. With process mining, you can identify repetitive tasks where automation can free people for more complex work and tasks that are highly susceptible to human error.

Once you have used process mining to identify tasks that are strong candidates for RPA or other forms of automation, you can use modeling tools to test different scenarios. This means you can optimize the role of automation within the larger process to maximize cost savings and risk reduction. Instead of using RPA to patch over chronic process issues, process mining can help you understand the process in question, get to the root cause of any problems, and fix it.

THE TOP THREE WAYS TO USE PROCESS MINING IN RPA

- Identifying and prioritizing tasks for automation

- Optimizing processes first to get the most value from automation

- Monitoring automated processes to ensure they work as intended
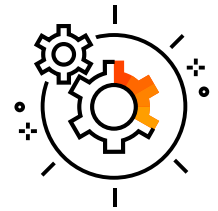
CONSISTENCY AND CONTINUITY

A business's ability to perform core functions consistently is a measure of business excellence. To do this, a business needs operational resilience – the ability to adapt and respond to change.

The pandemic illustrated just how hard it is to predict what crisis or change will challenge us next. But knowledge is power, and companies have a ton of knowledge stored in their data systems. With process mining, you can harness that knowledge to better understand the ripple effects of even a small crisis. A deep understanding of how your business processes work and where interdependencies are empowers you to respond to change with a more complete strategy.

Take, for example, two banks responding to an ATM outage. One bank focuses on getting the ATMs working again as quickly as possible. As the clock ticks, customers line up at physical locations and overwhelm customer support, questioning when the ATMs will be fixed. Tellers, support staff, and customers are all frustrated.

The other bank has a better understanding of its customers' behavior. While it addresses the issue with the ATMs, it also increases staff at physical locations and sends out SMS messages to proactively update anxious customers. In this scenario, the bank is able to keep the ATM crisis from escalating and triggering additional problems.

We often think of business continuity in terms of external crises, but the loss of employee knowledge is a real and often-overlooked risk that can be mitigated by using process mining to uncover how employees execute core functions.

Managers often don't know why one employee or team performs better than another – the

employees themselves might not realize they are doing anything differently – but they can see the difference in results. With process mining, you can uncover differences in how a process is carried out and use the information to optimize the process. Then, you can communicate the optimal process to existing and new employees. In this way, you can tap into employee knowledge to improve overall performance and ensure continuity as employees move on or move up.

This approach can be particularly effective when applied to a sales cycle. Process mining can be applied to data from common CRM systems to analyze sales performance over multiple dimensions and compare the effectiveness of sales teams across regions, market segments, and product lines. In this way, you can find out who is doing better than the rest and how they are doing it, and then apply those lessons across your whole organization.

THE TOP THREE WAYS TO USE PROCESS MINING TO BUILD CONSISTENCY AND CONTINUITY

- Building a comprehensive view of each business-critical process, based on data, not guesswork

- Identifying dependencies that need to be included in continuity planning

- Combining insights from process mining with process modeling to simulate different scenarios and stress-test continuity plans before they are needed

Applying Process Mining to the
Customer Journey
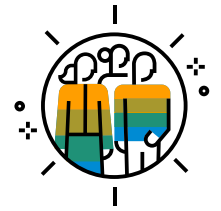
Improving operational efficiency and reducing risks deliver benefits; but those benefits are yours, not your customers'. It's an inside-out approach that covers only half of the equation. Applying process mining to the customer journey provides a view from the outside in that further informs business strategy and ensures that the processes that work for your business also work for your customers.

This customer-centric approach can feel new for well-established brands, but digital-first, direct-to-consumer companies are changing customer expectations. Customers want to engage with brands, and they want those interactions to be personal and relevant. Using insights gained through process mining to enhance the customer experience can be a significant competitive advantage.

With process mining, you can connect the dots between your customer journey and the people, processes, decisions, and IT systems that drive it. This visibility provides a better understanding of how internal processes impact the customer experience. With this customer-centric view, you can improve processes to build a smooth customer journey and uncover new opportunities to delight customers along the way.

For example, one telecommunications company found an opportunity to increase efficiency and reduce customer frustration by improving a key process responsible for ensuring a customer's availability during a technician's visit. The company determined that, of the 155,085 times technicians were called out to a customer address in a given year, around 9% either detected no faults or the customer was not there.

That's nearly 14,000 customers who either received an unnecessary visit or weren't able to have their problem solved in one visit.

Process mining revealed that a single step in the process was causing the majority of unnecessary or incomplete technician visits: a handover between the team responsible for receiving notification of the potential fault and arranging the technician visit with customers and the team responsible for coordinating and dispatching technicians. The telecom company was able to solve the problem by adding a mandatory process step that ensured effective communication between these two teams.

As a result, the company saved more than $6 million in costs while drastically improving the customer experience. Far fewer customers missed their technician appointment and, therefore, were able to have their connection problems solved in a single visit. In the same way, a customer challenge identified through customer journey mapping (incorrect invoicing information, long hold times for customer service, and so on) can be a starting point for a process mining investigation to uncover the root cause of the problem.

Viewing processes end to end from the customer perspective can help you understand how internal changes impact your customers. With this information, you can improve processes from the outside in, building on process changes that have a positive impact and revisiting processes that cause friction for customers. What's more, developing deeper empathy for customers can uncover new opportunities to delight them and lead to new products and services.

How Process Mining Accelerates
Business Transformation
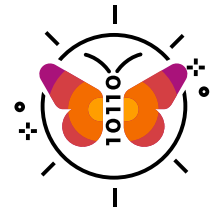
Whether you start with operations or customers, optimizing your way to excellence only gets you so far. Transformation – trying something new (instead of optimizing what you already do) – has the potential to be a game changer. This is the allure behind business transformation initiatives, but it is also what makes them a calculated risk.

One reason transformations fail is that companies take an inside-out approach, focusing on internal operations without accounting for the broader context of market shifts, changing customer expectations, and their own company culture. To successfully transform, companies need to focus on continuous optimization (the inside-out approach) and be open to new ideas that stem from their customers or other external forces (the outside-in approach).

In practice, this means focusing on continuous improvements in operations and customer excellence while being open to larger changes driven by customer need or market opportunity.

Process mining can help you decide which processes should be optimized and which ones could be transformed, both from an operational perspective and from the customer perspective. Using data to drive decisions helps overcome resistance to change by providing a more objective view, rather than a top-down directive. People can better understand the reasons for change and the expected outcomes. This helps build a culture that embraces continuous improvement and is more open to experimenting with larger changes.

# Guide to Launching a Process-Mining Initiative

Process mining initiatives often start with the need to answer questions that arise in day-to-day operations: Why was this customer invoice sent out incorrectly? Why did a group of customers in this area receive their orders two weeks late? Why isn't the figure for "number of products sold" the same as the figure for "number of products shipped"?

One of the most exciting parts of process mining is that moment when stakeholders see for themselves how much information is really stored in the data logs and how simple some of these questions can be to answer.

Longer-term benefits become much more apparent, and short-term efficiency gains can be acted on immediately. Process mining reveals activities you might not have been aware of and then empowers you to dig into those without asking developers to run new reports. This gives you the freedom to start a process mining initiative with a few pressing business questions and then modify the scope as you get a clear picture of the processes you want to improve.

THERE ARE FOUR STEPS TO LAUNCH A SUCCESSFUL PROCESS MINING INITIATIVE:

1. **Define your scope.** Bring stakeholders together to agree upon the project objective, process, and data requirements. Remember, you can change and refine these as you go.

2. **Gather your data.** Process owners often dread this step, but the right data mining tools make it relatively easy – you won't be manually collecting reports. In almost all cases, you will connect the process mining tool to your systems using a standard software connector.

3. **Generate your insights.** This is the exciting part, when you see a process model based on your data and can start to analyze what is really happening at each step.

4. **Improve and measure your results.** Now, you can establish core process performance metrics and start to make data-driven changes
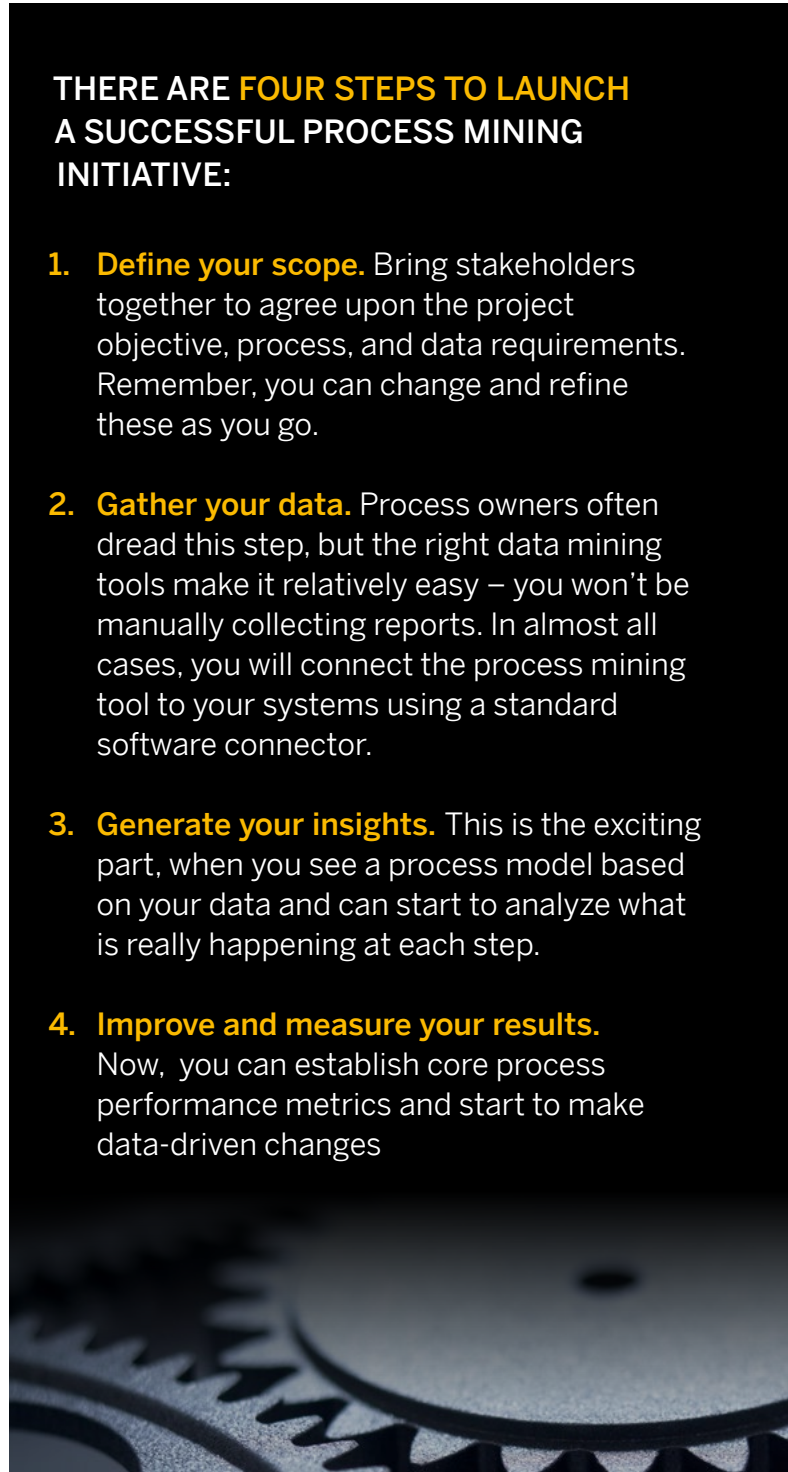
Maximizing the Benefits of Process Mining

Using process mining to unify siloed data and processes in a single hub and provide transparency into how processes really work is powerful. It provides the objective, actionable insights you need to make data-driven decisions. But it does have limitations. Process mining alone reveals what is, not what could be.

To take process mining from a static view to a dynamic tool, you need to combine it with process modeling tools that enable you to simulate and test new processes. In this way, you can act on the insights from process mining in a safe space to see what the impact of potential changes will be, not just on the step you want to change but across the whole process. For companies that would normally have to "quarantine" a process for testing, this can be a significant time-saver, enabling them to continue business as usual while testing process changes.

The ability to predict the impact of changes empowers you to test bold changes, design new processes, and be more open to innovative solutions that can transform your business. Data-driven changes with predictable results build trust, making it easier to get stakeholders on board with future changes and improving compliance, as employees can see that potential problems have been addressed before changes are implemented.

Speaking of employees, another component of process improvement is communication. A risk manager sitting in their office can misinterpret data because they lack context. Combining process mining and modeling with collaboration tools makes it easy to involve more people in process optimization. This adds more color and detail to the picture that process mining reveals and helps you make more-informed decisions. It also helps everyone understand why and what changes are being made.

The SAP® Signavio® portfolio of solutions offers a business process transformation suite that combines process mining and modeling with powerful collaboration, workflow, and communication tools. With these tools at your fingertips, you can create an actionable view of the business and then share that view to collaborate across teams to map, standardize, automate, and share process changes.

SAP Signavio solutions take process improvement out of silos, making it objective and transparent to foster a culture that is open to and compliant with ongoing change – be it a pandemic, new regulatory requirements, or an opportunity to delight customers with a new service.

Find Out More
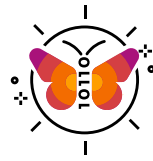
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