PROCESS MINING

Unearthing precious enterprise insights that provide a continued competitive advantage

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Most organisations have heard of process mining, many have considered it, and some have even bought licenses from one of the many vendors out there. But only a very few have successfully managed to embed the capability in their organisations. Those that have know that the most granular operational details are the ones that provide the greatest source of competitive advantage.

Beyond the hype

Process mining is not new. As early as in 2009 (with the establishment of the Task Force on Process Mining by the Institute of Electrical and Electronics Engineers), process mining became positioned as a key enabler for the future of process excellence.

As with all new things, the train of hype left the station at great speed but then quickly ground to a halt as real-world applicability turned out to be challenging. In those early days, use cases were limited, capabilities were basic, usability was challenging and, perhaps more importantly, data availability and quality were causing big headaches. Despite the great potential, many organisations trying their hand at process mining quickly became frustrated, and initiatives faded into corporate oblivion.

In recent years, however, tools have become more intelligent, more processes in more industries have been added to

the libraries, and user experience has improved greatly. But perhaps more importantly, the leading enterprise applications (Oracle, Salesforce and SAP) have actively pushed the integration of process mining vendors into their application portfolio, thereby reducing the technical barriers of entry and ensuring a supply of ample and good data.

Today, big Fortune 100 names generate big headlines with their process mining successes, catalysing new interest in these capabilities. Currently, there are over 40 different process mining providers, which is clear evidence that these capabilities have left the hype behind and are here to stay.

What can process mining be used for?

There is great interest in process mining, so it is important to understand how it actually helps companies and in which scenarios it can be a valuable asset.

Process optimisation
Companies can use process mining for fast and accurate analyses of their processes. The insights generated make it easier to understand root causes of underperformance, such as:

- **Process variability:** How many different ways are there to get from the first to the last step of the process? Why are there so many different ways? Why is there not one way – the best way?

- **Throughput times:** How fast can this process be done on average? Why are there such great differences between the fastest way of doing things and the cases where it takes way too long?

- **Waste:** Where in the process are manual activities that could be automated?

Where is the process being interrupted and prevented from flowing seamlessly? Where are certain process steps being reworked because we did not get it right the first time?

- **Supplier and customer impact:** Which suppliers are causing the most inefficiencies in the process and how (e.g. multiple small invoices instead of a single consolidated invoice)? Which customers are causing high sales processing costs (e.g. frequent order changes, returns etc.)?

Process discovery for automation
To be able to apply automation, organisations need to identify and prioritise the processes most profitable and suitable for automation. Next, the impact of automation can be simulated before it is actually implemented, which also helps build a well-founded business case. Finally, process mining enables creating an internal view of the automation maturities of the various functions, departments and geographies, which can help focus the automation journey.

ERP migration/implementation
IT organisations can also use process mining to manage the complexity of ERP migration, implementation and deployment. When organisations undertake a system transformation or implement a new ERP, the first step is always to understand the current process before designing and building new systems and processes. Without an end-to-end view, there is a risk of migrating the same ineffective processes into the new systems and not solving bottlenecks and problems during the migration.

After deployment, process mining can further help reduce costs in ERP maintenance, development and support because it can help pinpoint mistakes or gaps in the IT systems and, of course, ensure that the designed systems are used as intended by the right users.

Performance management

Process mining allows for deriving easily measurable performance metrics that help create a solid baseline and a comprehensive performance monitoring dashboard. Some tools come with a preconfigured library of KPIs. With such easy access to detailed and repeatable measurements, companies can spend their time taking actions instead of wasting time understanding and measuring processes.

Process simulation

Companies can make future predictions by mining their processes with the data gained from event logs. Their predictive analyses can be used to inform stakeholders and customers. Customers can, e.g., receive an accurate estimate of when their loan application will be processed.

Conformance validation/auditing

Companies can check if the way processes are actually being executed conforms to the way the processes have been designed and are intended to function. Procurement decisions, e.g., need different approvals based on the purchase size and nature of the item purchased. Non-conforming cases, reasons for deviations and conformance trends can be analysed too. Companies can take action to reduce these deviations and ensure that corporate policies and guidelines are followed.

Organisational insights

Process insights can identify organisational relationships, performance gaps and internal best practices. Because almost all processes have a human component, it also helps to understand how people are using the systems and how many employees are involved in execution of a process – often revealing shocking consequences for the internal costs associated with those processes. In addition, it is possible to uncover which users are causing the most errors and understand why (is it because they only seldomly apply the process and therefore have no routine, or is it because they did not receive adequate training etc.?). It can even be taken one step further: which users should not have access to certain processes at all? Process data can be used to understand and improve the human aspects of processes.

How does process mining create impact?

Organisations that are able to successfully apply the functionalities of process mining will find that it delivers deep impact across functions and operations and can result in fundamental, beneficial changes. Some of the most common impacts are:

- Improving **operating margins** by avoiding rework and interruptions, identifying high levels of manual processing steps that can benefit from automation etc.

- Optimising **working capital** by optimising the cash conversion cycle through addressing early/late payments, reducing processing time for invoices etc.

- Reducing **risk** by improving the effectiveness of process controls, enforcing segregation of duties, avoiding maverick buying etc.

- Enhancing **customer satisfaction** by enabling uninterrupted, seamless customer journeys and avoiding delays, frustrations and broken promises.

- Underpinning **business transformation** initiatives by avoiding politics through providing a structured and evidence-based approach and keeping close to day-to-day operational realities.

- Increasing **revenue** by improving delivery reliability, avoiding stockout situations, providing fast response, reducing sales order processing times etc.

- Enabling fact-based **decision-making** by unlocking more transparency and providing fast and deep insights that enable predictive rather than reactive management.

How it all works

Now that we know how process mining can be applied and to what impact, it is time to look into the inner workings of process mining and understand how it all works.

Data ingestion
It all starts with identifying how individual cases/objects move through (enterprise)

systems by looking for the trail of breadcrumbs they leave behind (e.g. an invoice status going from "issued" to "paid" or a customer service ticket changing from "submitted" to "resolved"). Process mining technology connects these breadcrumbs and generates a logical sequence of events.

Different process mining tools have different capabilities when it comes to extracting data from the systems. It could be as simple as exporting an event log from a system as a CSV file and uploading it to the process mining tool. Nevertheless, leading organisations are now able to use real-time data ingestion to produce live process excellence insights.

Process discovery
The big value addition of process mining happens during the discovery phase, where the event logs are used to generate a start-to-end visualisation of the processes as they happen in the real world.
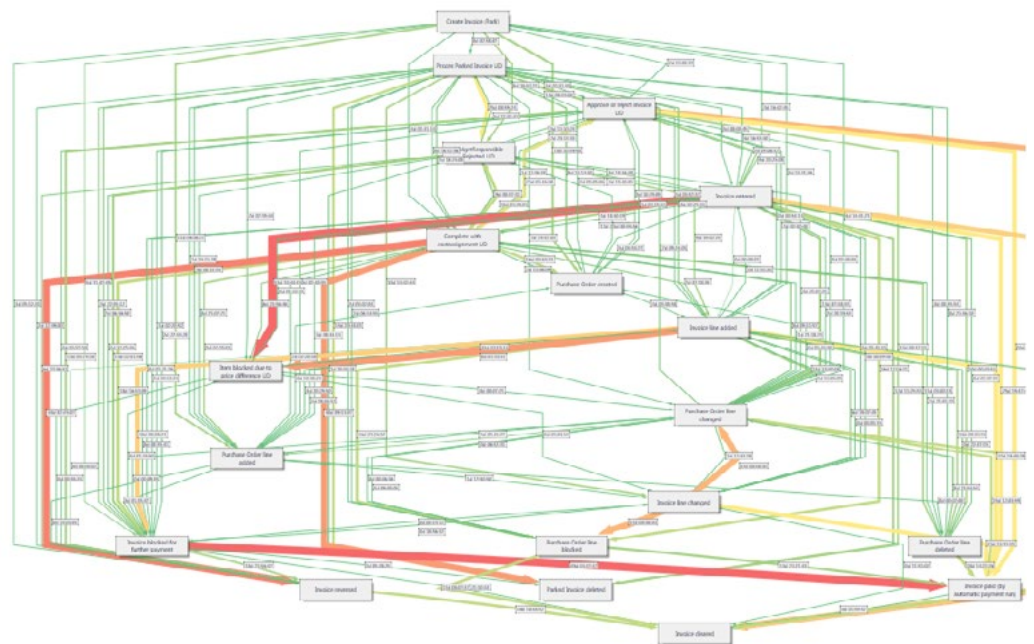

Figure 1: from sales order creation to invoice clearing – variances in sales order processing.

This chronological sequence of events shows all the different ways in which a process can be executed from start to finish. In the example in Figure 1, the colours of the lines show the speed at which, in this case, sales orders move through the process, and the thickness of the lines represents the amount of sales orders following a certain path. Each unique path is called a variant, and variants that do not follow a standard or accepted path are called deviations.

Process discovery allows you to not only explore this interactive process map and understand the high-level view but also to zoom in on the very detailed individual steps for each object (e.g. a single sales order) and, with these insights, begin to understand root causes.

Impact and root cause analysis

By nature, we all tend to be curious and excited to jump right in and explore these new, overwhelming and exciting insights gained by the data we suddenly have at our fingertips. However, to avoid countless weeks aimlessly spent browsing through the data without getting any concrete actionable findings, it is imperative that a hypothesis-driven approach is followed.

This begins by building assumptions about the reasons behind suspected underperformance of the processes and testing these assumptions using the insights from process discovery. If we, e.g., suspect that our purchase-to-pay process causes high operational costs, we might focus on the behavioural component of process execution (e.g. a high amount of rework, a low amount of first time right etc.) and formulate specific analyses to test these hypotheses. This hypothesis-driven approach is the only way to generate actionable insights in a structured and efficient manner.

Benchmarking

Another major selling point of process mining is that it helps establish a clear baseline. The tools provide structured and quantifiable data essential for defining meaningful KPIs. Using this capability makes it much easier than in the past to draw up an "as-is" picture and create a benchmark that can be retested when the improvements have been carried out.

In addition, process mining provides a fact-based benchmark that enables organisations to compare process execution across internal functions and geographies in an objective way, avoiding political conversations that previously were fuelled by anecdotal stories and perceived truths and therefore were detrimental to the change initiative.
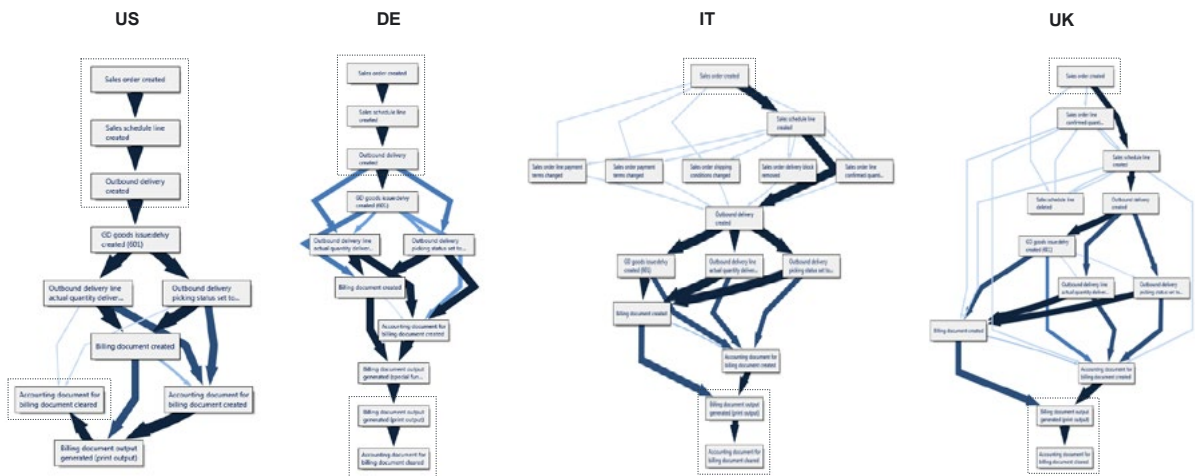

Figure 2: execution differences between countries despite one global system

An example of this is illustrated in Figure 2. In this case, four countries were compared to each other, and significant differences in process execution were found despite the fact that all countries were working on the same system (one ERP globally), had a similar composition of order types and that the analyses focused on the exact same end-to-end process. Such insights help create an objective, fact-based internal benchmark that prevents emotional response and helps reduce change resistance.

Continuous improvement

A further key functionality of process mining is that it underpins an organisation's continuous improvement mindset by enabling low-effort retesting of processes as they undergo improvements over time. While in the past, data sets had to be manually assembled and cleaned, analyses were one-off and mostly locally stored, process mining now allows for a previously configured analysis to be rerun by simply providing a refreshed data source. Because the configuration of the analysis is contained in the tool, the process improvement teams do not have to spend time replicating the same analytics over and over again – instead, they can focus their efforts on more value-adding activities.

Prerequisites for success

Even before taking the first step on the process mining journey, it is important to understand what is needed to achieve success.

C-level support

It is vital that there is C-level buy-in for engaging on the process mining journey. This support is not only critical to managing the emotions and politics associated with the sudden transparency of performance – which some change resisting parts of the organisation might not welcome – but the job of the C-level in this context is also to allocate resources to work on the identified initiatives. Organisations that have neither the capacity nor the willingness to actually commit to seeing the initiatives through to the end – and embed this mindset in their continuous improvement culture – will not benefit much from process mining in the long term.

Data availability and quality

Another key requirement is having data. This might sound obvious, but many organisations still work paper-based in many areas. In the past, data requirements for process mining were quite high, and realistically, only structured data from leading enterprise systems could be applied. Today, there are more opportunities to ingest data – even unstructured data to a certain degree (e.g. manually created and maintained Excel files). Nevertheless, the saying "garbage in, garbage out" very much holds true.

However, do not despair if you – like many others – do not have companywide clean data available in your organisation. In such cases, it is still valuable to begin a pilot. Just make sure to choose a small scope in the process with the best (or the least bad) data availability and quality. The insights and successes of this first, small-scoped pilot will grow the appetite for more and can even help push the organisation forward on its overall digitisation journey.

People and customer centricity

Even more important than C-level support and data availability is to centre the process mining journey around the two most important elements of organisations: people and customers. In the end, the findings and improvements need to be owned by those working with the process.

A mere technocratic approach to process mining will not work in the long term if the people are not engaged

in a manner that adds value to them individually (i.e. makes their work easier, allows them to focus on value-adding tasks, creates less frustrations due to errors and inefficiencies and in general contributes to a sense of pride by having a streamlined and high-quality approach to their day-to-day activities). These engaged and proud employees directly influence customers' perception of quality and satisfaction.

Choosing a tool

With over 40 different process mining tools, it can be daunting to choose the right one for your organisation. Sometimes, the choice is already set because some enterprise systems already come with built-in process mining offerings (e.g. SAP and Signavio).

Figure 3: **Everest Group Process Mining Products PEAK Matrix® Assessment 2021**

If you do have a choice, however, multiple research groups compile yearly overviews in which they assess leading vendors in terms of their process mining products, vision and capability as well as market impact (e.g. Gartner, Everest Group, Information Services Group etc.). These overviews always suggest a clear winner, but that does not automatically mean that it is the best choice for you. So how do you choose? We recommend that you ask the following questions.

What business areas and processes are you trying to address?

Are you interested in targeting the vertical line of business processes and functions or the horizontal corporate processes and functions? In these processes and areas, do you want to focus on information systems like your document capture, ECM or BPM/case management systems, or do you want to focus on your business systems for ERP, CRM, claims, underwriting or other such applications?

What do you want to do with these areas and processes?

At the most general level, process mining enables process discovery, process conformance and process improvement. The requirements for each of these three use cases differ. Determine which scenario is more important to you. Also, clarify if there should be easy integration between process mining capabilities and BPM capabilities.

What are your functional requirements for process mining?

Given the first two questions, you will need specific process mining capabilities for data collection, process discovery, process enhancement and other features and functions important to you. If, e.g., you are planning on using process mining as part of your digital transformation journey, decide if you require any specific out-of-the-box capabilities.
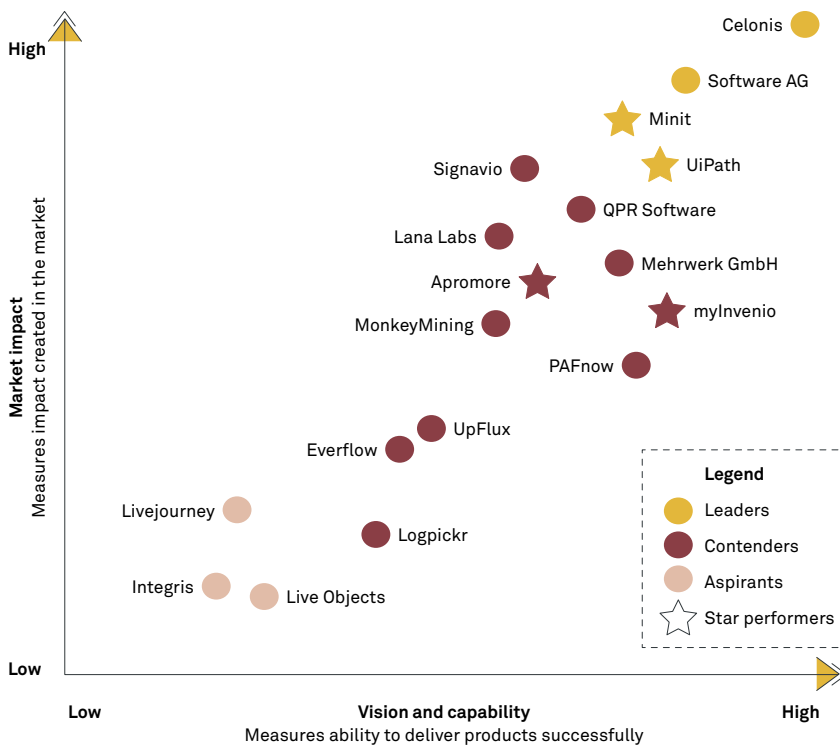
What are your technical requirements for process mining?

Building on the above questions and other factors about your organisation and IT environment, you will have specific technical requirements regarding architecture, performance, security etc. Among other things, decide if you require a one-off process mining analysis or rather continuous monitoring of the process performance and thus capabilities supporting integration with other (enterprise) systems.

How do I test and select the right solution?

In addition to evaluating whether the product adequately does the job, you need to assess the vendor's overall stability, fit for your company, ease of integrations in your enterprise architecture, cost-benefit ratio and ability to support you in the short and long term. The most important thing after selecting a short list of potential vendors is to do trials. This involves selecting a good use case and using the tool to prove the impact while evaluating the tool's viability and practicality for your team.

How Implement Consulting Group helps

The challenges of getting started with process mining do not stop with choosing, implementing and operating the tool. More than anything, the most definitive challenge of process mining initiatives is to learn what and how to analyse and to teach and embed this knowledge to/in the organisation and trigger a paradigm shift towards continuous improvement with the help of the chosen process mining solution.

Implement Consulting Group can support you on your journey from conception to operation. Below, you will find a few examples of how we can help:

- Formulate the strategy, ambition and business case for process mining, supported by a realistic road map.

- Provide an independent, tool-agnostic set of requirements to help guide the vendor evaluation and selection process.

- Manage the initial deployment and configuration process, ensuring alignment between business and technical challenges.

- Build the internal capability by inspiring, training and coaching teams to ensure a culture of continuous improvement.

- Support with hypothesis-based analyses, identifying root causes, quantifying impact and defining KPIs and baselines in dashboards.

- Establish a portfolio of improvement initiatives based on the findings and manage benefits realisation.

Based on our experience, a first viable pilot can be successfully designed, configured and executed within as little as 6-8 weeks. Such a pilot is a great way to prove the concept in an organisation, demonstrate early impact and generate appetite for further initiatives.

We are looking forward to working with you on your process mining journey and help you create sustainable and real impact.

About Implement Consulting Group

We help our clients answer some of the toughest questions that companies face today – around the topics of strategy and transformation, operations and efficiency, digitalisation and IT, leadership and change as well as growth and innovation – by unleashing human engagement to unlock business potential.

What unites us is a huge belief in the power of collaboration and a love of problems. We are committed to leaving organisations and their people in a truly better place – more changeable, more engaged and better equipped for creating a better future.
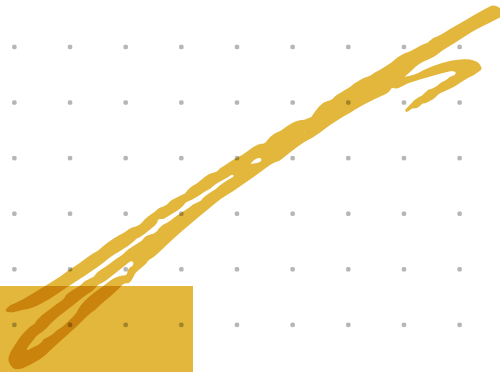
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Founded: 1996
Number of employees: 1,000
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