apromore

Keeping a Healthy Operational Backbone with Process Mining

A Five Step Approach

Index

The Pain

Today's organizations rely on IT systems to support their business operations. Whether it is an ERP system to track production processes or a CRM system to coordinate sales and customer service processes, there is hardly any process that is not supported by one or more IT systems. In recent decades, enterprise systems have enabled businesses to straighten up their operational backbones. When carefully configured and maintained, IT systems allow businesses to deliver consistent quality with high efficiency.

As time passes though, cracks emerge in these operational backbones. Compliance rules are occasionally violated, opening up risks. Well-intentioned workarounds to address exceptions become a norm and end up eroding the efficiency and quality of business processes. Customer expectations evolve, forcing managers to twist the operational backbone to address them. Evolving market forces put strain on the organization's backbone, eventually leading to cracks.

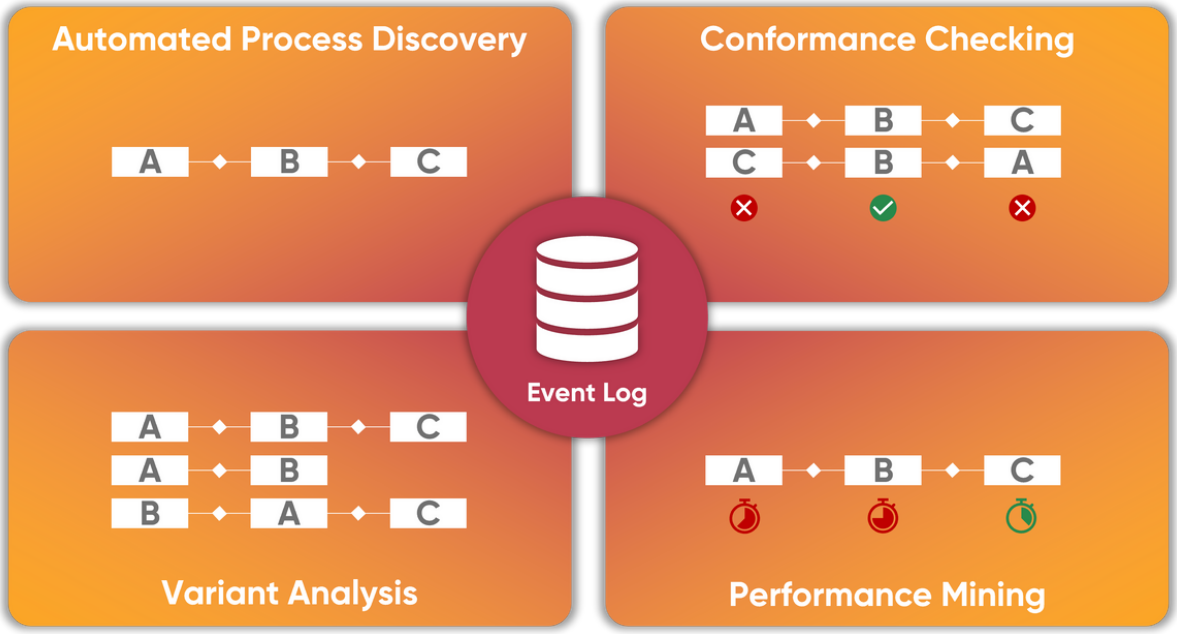


Figure 1: The four main Process Mining Techniques

The Treatment: Process Mining

To keep a healthy operational backbone, companies need to regularly take a deep X-ray of their business processes. This is where process mining comes into play. Process mining leverages the digital traces recorded by enterprise systems in order to to minutely analyze, monitor, and ultimately improve the performance and conformance of business processes, with a precision exceeding what can be achieved with traditional process modeling and analysis techniques.

Thanks to process mining, we can move from a “confidence-based” approach of traditional Business Process Management (BPM), where we trust the process is executed the way we think, to an “evidence-based” approach, where we see the process exactly as it is, at any level of detail we wish.

Indeed, IT systems used by organizations continuously record large amounts of data –every time a purchase order is made, or a service is delivered the corresponding IT system creates an event and stores it. In atypical organization, hundreds, if not thousands of events are recorded everyday. This is a hidden treasure waiting to be unearthed. Process mining does exactly that. It utilizes these so-called event logs to enable companies to monitor, analyze and improve their business processes with microscopic precision.

Process mining techniques are grouped into four main areas:

Automated Discovery

First, there is the Automated Discovery of processes. Process mining software can reverse-engineer an “as-is” model of the underlying business process from these event logs. The model can be a process map, a BPMN model or an abstraction of the underlying social network.

Conformance Checking

The second capability of process mining is Conformance Checking. The goal here is to check that the executions of a business process recorded in an event log abide to a given prescribed or expected behavior. The input of conformance checking is either a set of compliance rules or a prescribed process model. The output is a list of violations of the compliance rules or a list of deviations with respect to the process model. For example, a common compliance rule in a purchase-to-pay process is that an invoice cannot be approved, unless the corresponding purchase order has been previously approved. Another recurrent compliance rule is that if an invoice has been approved by a given employee, the corresponding payment must be triggered by a different employee. This latter rule is called the “four-eyes principle”.

Variant Analysis

Third, there is the area of Variant Analysis which compares two or more event logs representing different variants of the same underlying business process. Commonly, one event log represents all those cases that resulted in a positive outcome, while the other event log contains those cases with a negative outcome. Creating a list of all differences, this capability enables businesses to analyze why some cases end up in an unfavorable outcome.

Performance Mining

The last capability of process mining is Performance Mining, which aims to extract a range of statistics about the performance of the underlying business process. These statistics may take the form of charts or tables in a dashboard, or more commonly, they are overlaid on top of an automatically discovered process model. This enhanced process model may contain, for example, color-coded elements to stress bottlenecks or high-effort activities. Enhanced process models help to answer questions such as: "Where are the bottlenecks in the process?", "Which activities consume the highest amount of effort (processing time)?", or "How do the process performs when the workload is higher-than-usual?"

The Benefit: Digital Transparency

Altogether, process mining provides answers to business-critical questions that organizations could not (easily) answer before. How is the process actually being executed? Are there bottlenecks causing inefficiencies? Are there multiple process variants, and if yes, what is causing these differences? The fast changing and competitive business environment companies face today, forces them to adapt quickly, to be aware of their strengths and weaknesses and to optimize their business processes smoothly. By being able to answer the questions specified above, process mining can lead to:

- more process transparency within the organization through creating "as-is" process models based on real data
- increased efficiency and re-duced process costs through uncovering bottlenecks and unnecessary process steps
- enhanced customer experience through optimized customer journey and process outcome prediction
- advanced compliance through detecting deviant behavior and potential compliance risks

Ultimately process mining can help organizations gain competitive advantage and increase enterprise value, supporting them through their digitalization initiatives in an ever-demanding business environment.

"Improve visibility and understanding of the actual performance of business operations and processes, by investing in process mining."

- Gartner Market Guide for Process Mining 2019

The Challenges: Overcoming Fear and Taking the Pill

Compared to other disciplines in the field of BPM, process mining is a relatively young discipline. The Process Mining Manifesto, published by leading researchers worldwide in 2011, first raised global awareness of the topic. Currently there are 19 process mining vendors that are recognized by Gartner and featured in their 2019 Market Guide for Process Mining. Being a rather new area, internal know-how and a good understanding of the benefits of process mining techniques is regularly lacking in Senior Management, often leading to an extra barrier that needs to be overcome. Specialists worldwide are facing a cultural barrier in terms of process mining acceptance and try to convince their executives of the many benefits and improvement opportunities that come with an investment in process mining.

Besides the cultural barrier, some organizations might face issues concerning the quality of their data. Numerous companies still utilize legacy systems and are unaware of the actual quality of their event logs. Since the event log sits at the center of all process mining techniques, the initiation of a process mining project can be more complicated than anticipated. Nevertheless, if utilizing legacy systems, organizations should by no means stop looking into process mining software. The market offers various distinctive algorithms which address that exact challenge by using cutting-edge technology grounded on academic research.

That is precisely the stage where a “Proof of Value” (PoV) project can be extremely valuable. Such a project is normally defined as a short collaboration between a process mining provider and an organization looking into the benefits of process mining. It focuses on a single business process providing quick analysis results and an assessment of the readiness of the organization to conduct process mining.

For example, “Is the data there to do process mining?” and “Is the data of sufficient quality to pursue process mining?” – these are typical questions a PoV project can answer. A PoV should be executed in just a few weeks, not relying on an extensive pool of resources and by avoiding, where possible, to turn this into a system integration exercise. Beyond the readiness analysis, the main benefit of such a project is that both operational stakeholders as well as senior management can experience the advantages of process mining firsthand, and get a clear understanding of the ROI, should process mining be deployed systematically with the organization.

INSIDER TIP

A PoV project can easily be executed without any tool implementation. That means organizations stay flexible in their decision-making process and gain insight into the cost-effectiveness of process mining. If planning for such a project, try to choose a core process to your organization, define 2 to 3 key questions and the corresponding KPIs that are to be analyzed to make sure that the results positively affect your work. The goal should always be to provide you with as much insight into the field of process mining as possible, but also to create real added value for your organization.

Comparing the challenges that process mining faces now to the vast opportunities it can uncover within the organizations' process landscape, the barriers seem rather modest. Overall, process mining unfolds as a real gamechanger in the field of business process management and a powerful instrument for companies to fully understand their actual workflows.

Administering Process Mining: A Five Step Approach

Process mining offers valuable insights into actual business processes, opening the doors to analyses that were not easily accessible before. Depending on your specific requirements, the starting point of your process mining journey might differ. Nevertheless, when introducing process mining in an organization (including the opportunity of doing so via a Proof-of-Value project) or successfully operating process mining, a 5-step plan has proven to be the most effective approach.

Figure 2: Administering PM - A Five Step Approach

INSIDER TIP

Before starting a project or implementing process mining within your organization, make sure that the key objectives are clearly defined, and key stakeholders are all on board. This will ensure strategic alignment and commitment from all necessary participants.

1 Data Collection

Sources for the necessary data input have to be identified – on a small scale for the PoV project, organization-wide for the company-wide implementation. After identifying the relevant sources, the data has to be extracted and uploaded to the process mining software. For permanent implementation, the process mining software should be connected to your IT systems ensuring an automatic information flow.

Involved in this step:

Business Analyst, System Administrator / Data Engineer, Data Specialist Process Mining Software

2 Visualization

This phase is where the software runs its magic. Mainly in this phase automated process discovery techniques are used to establish the “as-is” process model from the data extracted in Step One.

Involved in this step:

Software

3 Analysis

After the automated process discovery, process mining software offers a vast variety of KPI analyses and comparisons. Especially this phase differs from organization to organization since it is closely related to the identified business goals that should be achieved through process mining. Depending on your objectives, techniques from variant analysis, performance mining or conformance checking can be used to obtain the required business insights. During a PoV project, this phase is often led by the process mining experts.

Involved in this step:

Business Analyst

4 Interpretation and Improvement

The process environment is constantly changing, which means that processes must adapt as well. With the help of extensive KPI-driven analyses, organizations are ideally equipped for process improvement. The real data which has been used

to gain insights ensures that an effective optimization mechanism can be implemented. As for the analysis, the outcomes for each company highly differ.
Involved in this step:
Business Analyst, Process Owner, Senior Management (for decision-making)

5 Monitoring

A constant monitoring of processes in real-time should be established to ensure that changes are adapted, and employees follow the new process design guidelines.
Involved in this step:
Business Analyst, Process Owner

After successfully running through one iteration, an optimized process landscape can be established. Process mining is not a one-time enabler for digital transformation but should be embedded in the BPM or Operational Excellence practices of a company. Only by ensuring constant monitoring and optimization mechanisms, the real benefits of process mining software can be fully reaped.

Staying Healthy: Embedding Process Mining in the BPM lifecycle

Research as well as industry have agreed on a standard approach or best-practice approach when introducing and more importantly maintaining BPM within an organization – the BPM lifecycle. It consists of five broad stages: 1) Strategy or Design, 2)Process Modeling, 3) Execution or Implementation 4) Monitoring and 5) Optimization or Redesign. But how does the relatively new discipline of process mining fit into this BPM lifecycle and where does it offer the most benefit to organizations? To stay healthy in the long run.

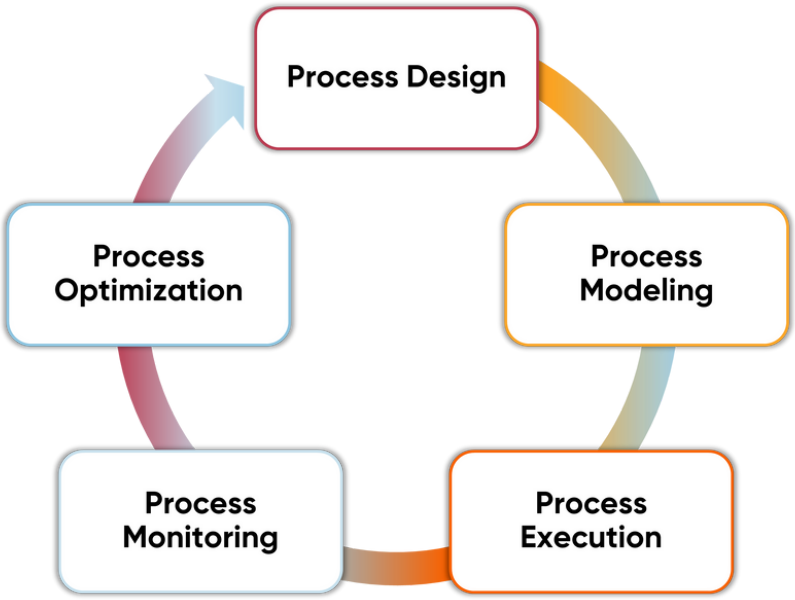


Figure 3: The BPM Lifecycle

To start with a simple answer: The most effective way of using process mining depends on the individual requirements and needs of an organization. And besides being a currently very popular topic in both industry and research, no, process mining will not be the sole solution to all your process-related hurdles and digital transformation efforts. But it can effectively support various stages of the BPM lifecycle within your organization and therefore maintaining operational health.

For example, process mining could act as the starting point of an organization's BPM journey. Instead of running multiple long-lasting workshops, let IT systems and software do that job and automatically create a process landscape of "as-is" processes for you. Of course, that is limited to those processes that are being executed while utilizing IT systems. For example, if you are still approving requests for leave in the form of paper documents, you cannot expect process mining software to design that exact process for you. But it can offer a simple and fast way of gaining an understanding of your existing process landscape. Yet, it does not have to end there.

Process mining software can be utilized to analyze existing or automatically designed processes. It can give valuable insight into the execution of your processes, into existing bottlenecks and differentiating factors of successful and unsuccessful process outcomes. The software is an extremely helpful tool with which process redesign can be executed more efficiently and effectively by experts. And finally, process mining can support the real-time monitoring of your processes.

Altogether, process mining techniques can be used during the Process Discovery phase of the BPM lifecycle by automatically discovering the as-is process models, during Process Analysis to identify performance and conformance issues and assess their impact on the as-is process, and during the Process Monitoring phase, to assess the goodness of a process redesign effort.

Especially in these digital times, the requirements and needs of each organization differ. Digitalization, and with it process mining, offer a more flexible approach to BPM, leading to vast new opportunities. Whether the automation of a specific process is required, or the HR processes must be scaled-up quickly due to rising demand, an agile approach to BPM facilitated by process mining techniques can provide today's organizations with the flexibility they need. By using process mining software, the BPM lifecycle can be traversed much more rapidly (e.g., phases like Process Discovery can quickly lead to results as opposed to running time-consuming workshops, focus groups and interviews with relevant process stakeholders).

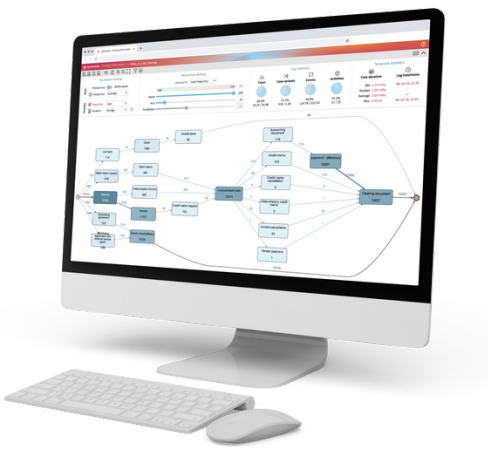
Embedding process mining into your BPM lifecycle ensures long-lasting results – staying fit and healthy!

The Operations X-Ray Machine: Introducing Apromore

Apromore offers its users a vast range of analysis techniques. Besides generating process maps, it can also display processes in the standard BPMN 2.0 process modeling language – e.g., automatically identifying parallel work steps and displaying them in the correct form of gateways. Therefore, an even better understanding of the process can be gained and superior analyses can be executed. The transition between process map and BPMN 2.0 is made through the click of a button to ensure stakeholders get the information that matters to them. This capability is based on the cutting-edge Split Miner algorithm, ensuring high-accuracy in the as-is process model discovery.

After identifying business processes, Apromore can assist its users with a broad variety of analysis capabilities. Use the tool to identify error-prone processes, long cycle times, bottlenecks, or frequent back loops – all color-coded to optimally support performance mining. Different variants can be analyzed with ease, providing insights into their differentiating factors and root causes for such differences. Any improvements to processes can be directly managed within the modeling component of Apromore, assuring that no valuable information or time is lost. Furthermore, custom dashboards with an extensive variety of filtering options and conformance checking possibilities complement the analysis functionality within the tool. Non-compliant procedures, compliance violations and further potential risks can be detected at the level of individual activities and handoffs of work, offering concrete opportunities for rectifying such issues, hence saving costs, and minimizing business threats.

Apromore is a leading provider of process mining solutions and AI-driven business process improvement. Our vision is to democratize process mining by enabling organizations to achieve digital transparency and operational excellence. Our process mining platform results from over ten years of research and innovation at The University of Melbourne (Australia), the University of Tartu (Estonia), and other world-renowned universities.



With over 15 years of experience, we offer our customers a state-of-the-art process mining platform along with consultancy services worldwide, supported by a network of leading international service partners.

About Apromore

Apromore™ is a leading global provider of process mining and AI-driven business process improvement technology. Our mission is to democratize process mining by making it possible for business teams to rapidly use advanced data science techniques to achieve digital transparency and operational excellence. The Apromore platform award-winning technology transforms how teams make decisions and their ability to unlock value in transactional data by revealing inefficiencies, friction points, and compliance violations in their processes.

To learn more about us, visit: https://apromore.com

The Apromore Platform

The Apromore™ platform is an easy-to-use, fast-to-deploy AI-driven process mining solution that enables business and technology teams to quickly visualize and analyze their business processes, and simulate proposed changes prior to implementation in order to measure impact and risk.

The result of over a decade of extensive research and innovation from leading universities, the Apromore platform includes no-code features and a simple UI that continuously delivers new insights into operational performance and compliance.

For more information, visit https://apromore.com/product

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