PROCESS MINING LIVE 2020

How to become a process hero in your company

Learn from some of the world's leading process mining professionals, about the key challenges of process mining, how you can overcome them and how to take steps toward becoming a process hero

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Introduction

It was evident from all involved in the 2020 edition of PEX Network's annual Process Mining Live event that process mining remains a prominent topic at the forefront of the digital transformation discussion.

Since its inception in 1999, process mining has become a widely adopted technique due to its ability to address key issues in the business process management field. Speaking at Process Mining Live, Wil van der Aalst, a distinguished professor at RWTH Aachen University often referred to as 'the godfather of process mining', noted that he was the first to realize that "traditional process management doesn't work", believing there was a disconnect between traditional process models and how processes function in reality.

More than 20 years after its invention, the success of Process Mining Live: 2020 highlights the importance of process mining today. The event brought together leading industry professionals who offered attendees advice on process mining – lessons that this report will highlight, including the best methods for successful process mining initiatives and advice on how to act on data with the confidence it addresses your business's key concerns. The report also seeks to assess the history of the process mining field alongside its current state today.

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>
> **Michal Rosik, Chief Product Officer, Minit**

A guide to successful process mining

In order to be successful in process mining, it is important to first understand why we mine processes. According to the Process Mining Manifesto, produced by the IEEE Task Force on Process Mining, "there is a growing need to improve and support business processes in competitive and rapidly changing environments".

These shifting environments make adaptation necessary for organizations if they are to survive or grow. Implementing process mining can assist with directing this change by showing you where your processes are going wrong within your business.

However, process mining can be a tricky procedure if it is not fully understood. At Process Mining Live: 2020 Celonis Product Marketing Manager **Anisa Aull** shared the advice of the business transformation software provider by providing a four-stage framework which acts as a guide for any individual attempting to implement process mining successfully:

1. Collect

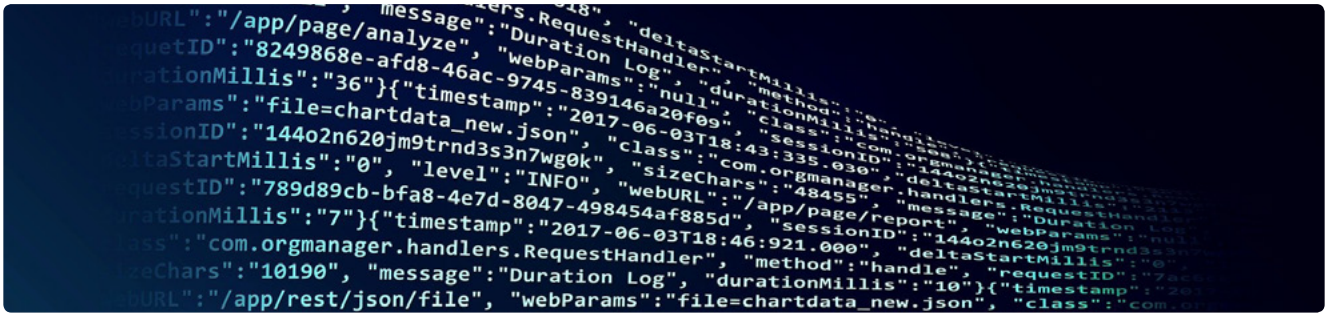
The primary requirement for process mining is data which can be used to form event logs. The first step for any individual attempting to mine processes is to collect event data generated from the interactions within the processes that you seek to optimize, which can be sourced from transactional systems (such as SAP or Oracle).

Event data must be capable of forming event logs, which requires that it contains an activity, a time-stamp and an object or ID.

2. Discover

Now you have your event logs but what does this raw data tell you about your business' processes? To answer this, the data must be analyzed in order to provide a visualization of how your processes are working and allow you to uncover some meaningful insights.

There are a number of process mining tools that have been developed specifically to assist with this, such as ARIS Process Mining or Minit, that provide an easily understandable interface in which to access and view this visualization. From this visualization you reveal your friction points, bottlenecks and root causes and begin to understand why your process is not working the way it should.



3. Enhance

Now it is time to put your new insight to work. The friction points, bottlenecks and root causes identified in the discover stage should be the basis for enhancing your process.

While there are a number of ways a process can be enhanced, the most effective method will be different for every process. The process mining tools discussed previously can also assist with this stage, leveraging technologies such as machine learning and AI to provide recommendations for enhancing processes and even simulating the results.

4. Monitor

So you have made some changes and seen your process efficiency improve as a result, but why stop there?

The key to successful process mining is the concept of continuous improvement, which means keeping track of your goals and understanding how you are doing against them. Feeding this information back into the loop and repeating the four-stage cycle creates a system of continuous process improvement.

Expanding on the guide, Aull detailed four key ways to enhance a process:

1. Standardization

Ensuring that processes are being executed in the same way across the business enhances consistency of implemented initiatives.

2. Streamlining

Automation and removal of redundant steps makes your processes faster.

3. Optimization

Guiding a process towards a specific outcome, focusing on each decision in that process and how it can be optimized.

4. Orchestration

Aligning outcomes across multiple processes, throughout the entire organization.

Following these steps provides process mining practitioners with a detailed guide on how they should be implementing their initiatives. By providing a clear visualization you can achieve transparency of your processes and understand exactly what is going on, believes **Heymen Jansen**, Group Vice President and Head of Advanced Process Analytics at ABB.

"We like to know what is happening in the organization, because then we know how we can improve," Jansen explains.

Overcoming common challenges and mistakes

The accessibility of event data, enhanced analytics capability and improved dashboards mean that process mining is more accessible today than ever before.

Dashboards in particular can be incredibly helpful for those seeking to improve processes, as evidenced in research by Antonio Martinez-Millana et al., published in the *International Journal of Environmental Research and Public Health.* The research sought to develop a front-end application to analyze processes in a surgical operating room, also referred to as a dashboard, providing a complete suite of tools to discover, compare and enhance surgical processes. The dashboard allows discovery and enhancement of flows of patients based on real time patient location data.

In analyzing the efficacy of the dashboard in a surgical setting, participants were asked to provide their recommendation as to the priority of the individual dashboard features. Results showed a 57 per cent consensus from participants that the process mining component of the dashboard holds a higher priority than all other features due to its ability to provide visualization of processes. This supports a previous study by van der Aalst et al., in which the feasibility of process mining tools (ProM) was analyzed in industrial contexts and evidences the usefulness of process mining dashboards for end-users.

Despite these advancements, the following challenges still remain:

Multiple case notions:

The Process Mining Manifesto by the IEEE Task Force states that the accepted method for building event logs is to correlate process events in such a way that they can be grouped to form event logs, typically by identifying a common attribute shared by the events, which cannot be arbitrary but must relate to a specific business outcome. However, this is not always so simple, in many instances a process can be defined by multiple events, none of which are guaranteed to share any attributes, and so the challenge is trying to decide the most beneficial perspective from which to view the data.

Quality of data predictions:

In the past we have seen process mining applied to historic data, which is collected and analyzed in separate chronological stages. What we see from organizations today is a focus on current data, which is continuously refreshed and analyzed.

"This is an area where organizations still need to mature by focusing on predicted data and

what your processes will look like in the future," noted van der Aalst at Process Mining Live. "For this to be possible, the quality of data predictions needs to improve."

Connecting process modelling and mining:

What we see today is that once processes have been modelled and mining has begun, a significant disparity between ideal, modelled processes and mined processes is revealed.

"This is currently a key area of research", remarks van der Aalst. "One of the current challenges is bridging the gap between process modelling and mining."

Comparative process mining:

Process mining can provide interesting insights if you have the ability to compare different instances of the same process against one another (i.e., the same process at two different times or in two different organizations). This can be very difficult, as processes are dynamic and constantly changing, but it is also crucial in order to discover exactly why you are seeing different outcomes for the same process so that root causes can be identified.

Making decisions and implementing changes:

Aside from the challenges of actually collecting your process data and mining it, **Michal Rosik**, Chief Product Officer at Minit, believes there is a much more human element to consider: fear.

"This is the main issue in process mining today," states Rosik. "Once they have conducted their analysis and they understand the issues and bottlenecks in their processes, many practitioners get stuck because they are afraid to make the decision to change the process or are not confident that their solutions make sense."

Becoming a process hero

One of the more prominent topics being discussed with regards to enhancing process mining techniques is the integration of machine learning and AI. We have already seen tools developed that leverage these technologies to facilitate attempts to enhance processes.

At Process Mining Live: 2020, ABB's Jansen spoke about the ability of machine learning to extract massive data sets for use in process mining and how ABB used it to analyze 40 terabytes of data across their global systems. AI can also be utilized to identify the best course of action based on that data, which is a concept Jansen refers to as 'prescriptive analytics'. This concept can save a significant amount of resources that would otherwise be directed towards identifying suitable solutions.

As previously discussed, Minit's Rosik believes that one of the key challenges of process mining today is having the courage to implement initiatives and being confident that they will address identified issues and achieve acceptable ROI. But how can an organization ensure that this is happening?

Fortunately, the field of process mining has come a long way with regards to the tools that are on offer. The most advanced tools combine automation and prediction capabilities to not only provide practitioners with swift, cost-effective solutions to their process bottlenecks but to provide ROI and efficiency predictions before any solution has been implemented.

Software today has the ability to mine your processes from event logs and produce a process model. A simulation of this model can then be generated and adapted which in turn generates simulated event logs. These simulated logs can give an idea of how implemented solutions will fare and what the results will mean for process efficiency.

This can be vital for those who may have lacked the courage to make decisions based on their process models, as they can present these simulated models to key stakeholders and demonstrate the value of their solutions from day one.

According to the Process Mining Manifesto, more and more software vendors are adding process mining functionality to their tools including well-known process mining tools such as Minit, Signavio, Celonis and Kofax among many others.

At **Process Mining Live: 2020, Minit's Rosik provided attendees a demonstration of these capabilities of modern tools** by showcasing the Minit software as well as some case studies as examples of their efficacy.

He explained how the software was used to assist a global telecommunications company with a purchase-to-pay cycle that was a complex and department-jumping process. By applying process mining through their software, Minit was able to help the business realize more than $5m in annual savings.

Rosik demonstrated how tools can be used to continuously monitor the impact of your initiatives through updated data that is refreshed in real time. By mining processes you have enhanced you generate new event data that can be analyzed, effectively closing the loop on your process mining application and creating a system of continuous improvement.

Tools with dashboard functions make this easy to do, providing real-time data on the impact of initiatives in a clear and accessible format, enabling simple analysis of the areas you wish to explore, such as changes in business KPI's or bottleneck shifts.

INTEL CASE STUDY

Steven Remsen, Enterprise Process Excellence Manager at Intel Corporation, provided Process Mining Live: 2020 attendees with an overview of his first foray into the world of process mining, under a framework centered on discovering and enhancing your processes.

Remsen identified a tool on the Intel production line that was causing a bottleneck. He wanted to look at the maintenance cycle of this tool and focus on a specific metric referred to as 'green-to-green time', which represents downtime of the tool when it is not processing work.

By modelling this cycle, mining the event logs to produce an accurate process model and comparing these models, Remsen was able to discover new complexities in what was generally considered to be a well-understood process within the business.

Remsen explains how the process was then augmented and enhanced through the application of machine learning to adjust the actions taken throughout the process, which resulted in these bottlenecks being uplifted and generated significant returns requiring minimal investment.

"This had a significant business impact for Intel, to the order of millions of dollars," Remsen notes.

Conclusion

This report has sought to discuss not only the history of process mining, but also the state of the field today. Offering advice and examples from key industry leaders we have explored the key challenges of the past and present.

We have also looked at solutions for these challenges and provided proven methods and strategies for implementing successful initiatives within your own business, alongside the tools and technologies currently available to facilitate your process mining journey.

Process mining remains a developing field. Despite the numerous issues and challenges that have been overcome to date, there is still some way to go before the discussion of how we can optimize process mining dies down. As research continues, by data scientists, engineers, vendors and businesses, as well as the likes of **Wil van der Aalst** and the IEEE Task Force, we can expect to uncover new challenges and solutions that can further optimize process mining.

There are a number of options for the process mining practitioner of today with regards to tools and techniques that will continue to be developed, as we have seen with the applications of machine learning and AI in process mining so far.

In an interview with Gartner, van der Aalst noted that "today's organizations still use business process modeling tools to document and discuss their processes". He says, however, that many of these modeling tools have become disconnected from traditional process mining tools. As demonstrated at Process Mining Live 2020, van der Aalst believes that businesses that act now to seamless integrate process mining and process modeling tools and embrace the latest process mining models and solutions, will stand to have a competitive advantage over their rivals.

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