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What are the main developments you see in the process mining market?

“Process mining is becoming a more mainstream activity. In countries like Germany and The Netherlands, most of the larger organizations have applied process mining. Currently, there are over 30 process-mining vendors, and process mining functionality is embedded in all kinds of other tools related to business process management and automation. Therefore, the technology is accessible for any organization. What should improve is the scale of adoption in organizations. In my view, there are too many small pilot projects. To reap the true benefits of process mining, one should not look for quick wins only. Process mining should be a continuous activity, and should not stop when “inconvenient truths” become visible. Organizations that were able to lift process mining to the enterprise level have benefited most.

When I started to work on process mining in the late 1990-ties, the focus was exclusively on process discovery. In research, we soon began to look at other capabilities like conformance checking, prediction, bottleneck analysis, and concept drift. The adoption of these ideas is still ongoing. Although it is clear that conformance checking is an important capability, most vendors are still not really supporting this. It is impossible to interactively edit a process model and see how the process complies. Conformance checking is often reduced to a query for cases that have undesirable properties. This is an inferior implementation of the principle of conformance checking. However, as the ten revised capabilities and the five common use cases described in the Market Guide clearly show, the process mining discipline expanded in several dimensions. When customers start to demand these capabilities, things will improve rapidly.”

Which capabilities do you consider crucial for lifting process mining to the next level?

“I see three main capabilities that have been neglected thus far, but that are crucial for successful applications: (1) action-oriented process mining, (2) object-centric process mining, and (3) interactive process mining.

Action-oriented process mining focuses on the improvement actions triggered by the process-mining diagnostics. How to respond when compliance problems or bottlenecks emerge? This is not supported well and requires ad-hoc implementations not using generic process concepts. Also, process interventions often have unintended effects that need to be monitored continuously.

We rarely do A/B testing in process management and should focus more in the interventions and their effects.

Object-centric process mining deals with the problem that process events may refer to many different objects, e.g., orders, items, customers, machines, rooms, containers, workers, etc. Using classical process mining, we are forced to pick one case identifier leading to the well-known convergence and divergence problems. For example, the same event may need to be replicated, leading to incorrect frequencies and waiting times in process models. Some vendors try to fix this by connecting different processes. However, as shown in our work on object-centric process mining, this is counterproductive, and there are better, more direct solutions.

Interactive process mining aims to remove the gap between modeling and mining. Many organizations use a process-modeling tool or BPM suite and a process-mining tool. Of course, it is possible to save a discovered model and load it into such a modeling tool. However, this is not enough. Users should be able to modify process models and immediately see where reality deviates, or future bottlenecks may emerge. Moreover, process discovery tools should not try to discover things that are already known. Interactive process mining is also a way to better handle data quality problems. If we know that things are not recorded properly, then process discovery techniques should incorporate this knowledge and not repeatedly generate process maps from scratch.”

How does process mining relate to RPA, ML, and AI?

“Process mining can be seen as a form of Machine Learning (ML) since we learn process models from event data. However, process-mining techniques are very different from mainstream ML approaches using neural networks, deep learning, support vector machines, etc. The term AI is overhyped. On the one hand, AI is an umbrella term for anything related to data and intelligence. On the other hand, it is seen as something new and exciting that will solve all problems. In reality, many traditional approaches (e.g., basic statistics and regression) are relabeled into AI. Moreover, organizations that are struggling with data quality problems (e.g., getting the timestamp format uniform) will not be able to apply any of this successfully.

Also, Robotic Process Automation (RPA) has gotten a lot of attention in recent years, and many organizations managed to get quick wins using RPA. However, half of RPA projects fail because of inflated expectations and a poor analysis of the work processes before trying to automate them. RPA can definitely benefit from process mining. This synergy explains why RPA vendors started to add process-mining capabilities (directly or through partnering with process-mining vendors).

The topic of Task Mining is in-between process mining and RPA. In Task Mining, low-level user-interface interactions are captured to learn typical user tasks. From a mining point-of-view, there is nothing new. The challenge is to capture events and add semantics. Also here, vendors are misusing the terms ML and AI in an attempt to add “magic” to basic tasks like screen-scraping, text mining, and image recognition. I noted that still a lot of manual work needs to be done. Moreover, Task Mining does not solve problems related to the end-to-end processes. Therefore, the scope of Task Mining is fairly limited.”

What are the biggest hurdles for the adoption of process mining?

“Data quality and people remain the two main hurdles for widespread adoption. Typically, 80% of the efforts and time are spent on locating, selecting, extracting, and transforming the process. The time needed to apply process mining is short (say 20%) once the data are available in the right format. Process mining often reveals data quality problems that need to be dealt with urgently. Although these processes are costly and time-consuming, in the long run these problems need to be addressed whether process mining is used or not.

In addition, large groups of consultants, auditors, quality managers, and process owners are unaware of the capabilities of today's process mining tools. One can still become a certified Six Sigma Black Belt or Certified Internal Auditor, without being able to apply process mining. Decision-makers are unable to see that process mining is different from ML and AI. Managers may be afraid of process mining results. The increased transparency of processes may reveal mismanagement, inefficiencies, and compliance problems. Therefore, process mining creates management friction, but this is necessary to remove unnecessary friction in operational processes."

How will the COVID-19 pandemic impact process mining initiatives?

"Long before the COVID-19 pandemic, I coined the term Process Hygiene (PH). Using this metaphor, I related process mining to personal hygiene. In my view, process mining should be as normal as personal hygiene and not require a business case. Activities such as brushing your teeth, washing your hands after going to the toilet, and changing clothes also do not require a business case. Similarly, organizations need to be willing to look at the real processes at a detailed level, and address problems related to deviations, delays, and inconsistencies. Objectively monitoring and analyzing key processes is important for the overall health and well-being of an organization. Actually, not using process mining should require justification and not the other way around. The COVID-19 pandemic shows the importance of processes, reliable data, and the ability to respond to completely new situations. When processes change dramatically, process mining still works, and decision-makers can use process mining results to make informed decisions. I see that currently, innovation budgets are cut. However, the pandemic will also fuel new digitalization initiatives, and it made people realize that reliable data and robust processes are critical for the survival of an organization. The problems experienced at the start of the pandemic exposed the gap between the boardroom ambitions and everyday reality with paper forms and excel spreadsheets."