Bastian Nominacher is co-founder and CEO at Celonis in Munich. With Celonis’ Process Mining Technology, SAP customers can finally raise their data-treasures from the depths of their ERP Systems. It is now possible for SAP users to analyze their company’s processes and make the whole organization more efficient and transparent. The end of the Black-Box ERP era opens a path to agility and is a chance for digital transformation.
To understand and optimize business processes, a company’s data wealth needs to be raised from the depths. To accomplish this, Celonis Process Mining uses the digital traces that almost every transaction leaves behind in the company’s global IT systems – and understanding the actual business processes creates clarity, transparency and agility, resolving conflicts and bottlenecks in the organizational structures and workflows. What data mining is for the data analyst and BI expert, Process Mining is for company management.

Quality Solution

Process Mining analyzes and visualizes business processes, improving SAP customers’ efficiency and agility. Unlike the purely quantitative improvement that comes with a faster Hana system, Celonis focuses on quality improvement. A flawed system that merely runs faster after a Hana and S/4 upgrade is still flawed, but Celonis offers the SAP customers a wholly different approach. The software analyzes the processes to create a visual map, making the optimization potential more obvious, ensuring transparency, harmonization, efficiency and agility. Initially, Process Mining sounds like magic; how can you visualize something and find weak points in a totally dark environment? Every ERP system is a black box, isn’t it? „That may have been true for the time before Process Mining,” Bastian Nominacher points out in discussion with the E3 Chief Editor. Specifically, he notes, „Gaining access to systems and data was often difficult and time-consuming. Long waiting times and laborious access paths were frustrating to those working on them. That also made fast and flexible decisions impossible, the kind that agile companies must reach today. Our technology has made this data treasure accessible. And it has done so in a simple way that everyone can understand.”

Securing The Digital Traces

SAP customers now have the chance to visualize processes exactly as they are. „It’s about gathering up the digital traces that each digital transaction leaves behind, and transferring them into a picture, in other words visualizing them,” Bastian Nominacher explains. The weak-points in companies’ processes emerge from precisely this analysis. „At a glance, you see what is really happening and from there you can go straight into the analysis of root-causes,” he explains, based on many very successful implementations of Celonis software in different companies. Classic error-analysis methods reach their limitations quickly. Obviously, they can examine whether a process is running optimally, but they often fail to provide insights on why these bottlenecks emerge, why deviations occur, and where starting points for optimizations can be found. „By contrast, Process Mining by Celonis faces no such limits. Our technology puts us in a position to use, assess, and analyze enormous datasets, involving millions of process instances,” Nominacher explains, pinpointing the difference between Celonis and traditional analysis tools. „One of the really wonderful aspects is the ‘aha’ effect, the sense of revelation we see so often. The insights gained from our process analyses are often very surprising for customers,” Celonis’s-Co-CEO notes, explaining what can be new for an SAP customer. „Many people presume that the snag lies in a
single process or a certain business unit. Yet for a long time, backing this up with proof was often very laborious. The root causes of process deviations or delays can also in fact be found somewhere quite different to what users initially think. With Celonis you can see at a glance where the current process deviates from the requirement, and what effect that deviation will have on the whole company’s efficiency.

For instance, if orders and invoices are given manual follow-up processing, or orders are submitted too early or too late, you can kiss efficiency goodbye.

**Without Deep Interventions**

Questions emerge that are probably on the minds of everyone responsible for SAP infrastructures: which preliminary settings are necessary and how deeply does the Celonis software reach into the ERP system? Which authorizations are necessary? Bastian Nominacher puts the fears to rest. „There’s no need to reach deep into the ERP system.” This is because Celonis uses many standard connectors for a company’s core processes, so the link-up to SAP works quickly and smoothly. „If you process data directly at the productive Suite-on-Hana instance or S/4 instance, you also save the replication, additional hardware etc., and can apply Process Mining directly in real-time in all SAP processes,” Nominacher points out. In principle, the approach of positioning specialized connectors and software agents at specific places in the system is not new. Agents are an established reality both for system monitoring and particularly for the network supervision of wide area networks and local area networks. Up to now, however, nobody had the idea of applying this technique to business processes, or to operational and organizational structures. Celonis is an absolute pioneer in this sector, so it took some time and hundreds of e-mails even to convince SAP of this.

There’s another important question for the CIO and Head of CCC: if Celonis software embarks on the search for weak points, does the productive system’s performance suffer as a result? Here too, Bastian Nominacher allays fears: „Celonis Process Mining runs in the background. It is optimized so as to have no effect on the systems’ productive operation.” And perhaps the CEO and CFO ask themselves: can certain processes and functions in an ERP system “hide away” from the Celonis software? Does it have any ‘blind spots’? „There are only blind spots when there is a media break, i.e. if the process is continued manually,” Nominacher observes. As soon as a process operates digitally, it leaves behind traces. Process Mining only needs three components in the event log: a datetimestamp, a characterization of the event (e.g. ‘pay invoice’) and a key to that operation, such as the invoice number. „Our process-mining technology works independently of the process logic’s actual implementation. The only important thing is which traces emerge, i.e. database entries. The process-mining algorithms can reconstruct a process flow from these traces. If a customer has set up tables in the Z-name area, these first need to be registered, i.e. made known to the system as an event source – and can then be further processed without a problem.”

**Abap’s And Java’s Weak Points**

Noteworthy, of course, is the question: can Celonis find weak points in Hana database functions that are programmed to completion in Abap or Java? And in Net-Weaver Java-Stack? „Celonis identifies the process variants based on the digital traces, i.e. entries in the tables, at database level. This procedure’s great advantage is that it is entirely independent of the stack positioned beneath it. Whether it is Abap...
A SAP base, the Head of CCC, the CIO, the CFO? “That fully depends on the company,” Nominacher remarks. “Our solution is open to users on all levels, and that’s exactly what makes our work so exciting! As we see it, no purpose is served by offering analytics solutions for a handful of specialists. Everyone must be enabled to reflect on their individual processes and to optimize them. At Celonis what we are about is an intuitive solution that cuts across departmental borders and can be used for all processes. You don’t need special IT knowledge for the application – but a bit of process knowledge certainly helps.” And then the result: what is the outcome when an SAP customer researches root causes? Is it the adaptation of the customizing? The optimization of the Abap code and/or the Z-functions? Or is it the adjustment of the operational and organizational structure? “This is a tough question,” Celonis’ co-inventor tells the E-3 Chief Editor. “It totally depends on what problem the customer has diagnosed specifically and what the customer’s starting position is. All the measures that you have just named could be the outcome of a process-mining analysis.”

Practice often shows that it is a combination of technical and organizational measures. Most of all, what is really helpful is that you can immediately recognize the measures’ success straightaway, thanks to the live link-up of the data. “If a particular measure does not bring the desired effect, you can steer away from it. If the approach succeeds, it is worth broadly rolling it out within the organization,” Nominacher points out, based on everyday practice with customers. “Moving away from a Big Bang optimization towards fact-driven, continuous process optimization, is what makes our customers so successful and is the basis for sustained process improvements.” It is always left to those directly involved to decide which measures they take; however, recognizing weak spots can and should bring about changes. These changes can take place in all areas, in technology or in the organization. “We merely offer companies the starting precondition,” is how Nominacher defines it, adding: “This means comprehensive insight into processes, indications of what the root causes are, and even recommendations for action. Here’s another advantage: with Celonis you see, almost in real time, whether a measure is taking effect and, if need be, you can adapt the direction being taken.”

The added value from these efforts takes very different forms for various SAP customers. “The great thing about our technology is that, in all areas, processes are made transparent and are visualized. Again and again, this means that the benefit lies elsewhere. For instance, in Purchasing departments, the matter at hand is organizational advantages; in Production there is a greater focus on technology. Our software offers the customers real-time insights into processes and full transparency for their process flows. Almost always, this leads to extremely fast ROI.” Celonis customers confirm that, in many cases, the investment proves to be worthwhile within half a year.

**BPMN Exports**

For many SAP customers, SolMan has established itself as central platform for documenting business processes, especially in the most recent version, 7.2. To what degree can the results of root cause analyses be integrated into SolMan’s ERP documentation and BPM? “The process samples identified by Celonis Process Mining can be exported as BPMN models and thus directly be taken over into a process documentation. This can be either done to start the documentation from scratch or to add to and update existing files,” Bastian Nominacher points out. Currently there is not yet an automatic, bidirectional interface available between Celonis and SolMan. However, extracted process models can be exported from Celonis as a BPMN model and then be processed directly. Via Pi Conformance it is possible to load existing Business Blueprints into Celonis and identify deviations between as-is and to-be processes. “Machine-learning algorithms help to determine root causes and possible approaches to solutions for deviations like this,” Nominacher adds.

The concluding questions are these: where does Celonis still see a need to act in the future? What is coming up next? What significance does machine learning/deep learning have for Celonis? What can the SAP customer still expect from Celonis in the future? “We are working continually on our solution and further developing it. My firm conviction is that the process data still holds very many more elements of hidden potential. Celonis Pi was a quantum leap for us – above all, because it uses the latest algorithms from AI and machine learning. We are very proud of what we have achieved. But of course we are still constantly developing – SAP customers can still expect some innovations!” Bastian Nominacher remarks, concluding the E-3 discussion. (pmf)
The process-mining technology uses companies’ IT data to reconstruct and visualize processes. Each process can be optimized, in companies of any size or business sector – whether the subject is Purchasing, Production, Sales, Logistics or Customer Service.

What Can Process Mining Do?

Celonis Process Mining fits together the process steps stored in various IT systems. It analyzes as-is processes in companies, automatically and end-to-end. It makes perfect transparency possible at any moment in time and at any depth. Instead of investing a lot of time in the problem analysis, companies can deploy Process Mining to concentrate directly on measures aimed at greater operating efficiency. Companies see at a glance why orders take more time than originally scheduled, or why delays in supply and diversions emerge in purchasing. The diversity and impact of the insights gained through Celonis are often very surprising for customers. A lot of users already sense that certain processes in the company could be improved. However, often the core problems are not where they are initially thought to be. Celonis Process Mining reveals at a glance where actual status deviates from target status, where the reasons are located and what effect these deviations have on the company’s overall efficiency.

How Do SAP Application Users Benefit?

User normally pursue one of the following goals with Process Mining: identifying best practices, reducing process costs, shortening throughput-times, raising process quality, standardizing processes or improving compliance in the processes.

A typical SAP system contains valuable data about a company’s business processes. Accordingly, Process Mining is a strategically relevant and interesting topic, notably for SAP users. Up to now, the assessment of information was often complicated – with Celonis Process Mining it isn’t. Through many years of experience with SAP environments, SAP systems’ link-up to Celonis is almost completely automated. It is extremely easy to set up and operate Celonis’ solution, providing customers with the opportunity to work with a productive process-mining solution, rapidly realizing results and process improvements.

Celonis uses Hana’s performance capability to conduct real-time processing and assessments of its customers’ data, in some instances very large data quantities. The Siemens example shows this - a good 30 terabytes of data are analyzed on Hana. Process Mining’s prerequisites are interactive performance and split-second processing. Even for complex scenarios involving many systems, Hana can be used as high-performance, central data platform.

Where does actual process status deviate from target process status?

X-Ray Machine For Companies

Usually, processes in companies are well thought-through in theory. Yet everyday practice often looks different. There are deviations, diversions and bottlenecks. Alternative process flows may prove to be efficient for the individual team member and to be the faster route to the destination. However, transparency, compliance and greater economies of scale are often abandoned as a result.
A guide to getting started with Process Mining

Starting Up – OK, We Want To, But How?

Just how easily can Process Mining be put into service? Does this new technology bring far-reaching innovations and what precisely is going to change?

By Anton Kurz, Celonis

Actually, implementing Process Mining is relatively simple and quick – all the more so if it is backed up by a well-versed team. The experts at Celonis and its certified partners provide advice right from the get-go – because it is all about starting with processes that promise rapid ROI, are easily to implement and hold out the prospect of high acceptance among employees. Each Celonis customer has an individual Customer Success Manager providing support in the implementation phase.

Implementation

The first step is solid planning. How can I introduce this new technology in my organization? How does my company best work with the newly-acquired transparency? Which processes are critical ones in which departments concerning themselves with operational excellence and lean process issues, Celonis is a valuable solution for this. The advantage of a ’center of excellence’ is that best practices can be exchanged and synergies created. Subsequently, the subject-specialist departments find that the specialized analysts and data scientists operate as their direct points of contact. Yet if the business processes are very heterogenous and are to remain so, a decentralized approach may be the better choice. Normally, the infrastructure is still hosted by the central IT. Those responsible for the analysis are then the people who know the processes and requirements well in their division. They become ‘process specialists’ for their department, are soon very adept at working with the Celonis user-interface and are skilled at using the technology to produce fast, well-suited analyses.

With only a few days of training, a team member who knows the SAP table structures (and possibly even Hana), can set up the installation of the Process Mining software, link up IT source systems and analyze configurations. The Celonis consultants teach the required know-how, meaning that Process Mining is ‘live’ within just a few weeks. After that, it is a matter of educating users and getting them on board. The customer’s specialized analysts and data scientists can independently introduce new analyses and evaluate additional processes. As soon as the documentation and the user-management are handed over, the coast is clear for a broad-based roll-out, including all business units where inefficiencies, reworks or process deviations are presumed to be present.

Celonis emerged in 2011 from technology research at the technical university (TU) in Munich. In the context of a study project, process-data sets were analyzed by Alexander Rinke (mathematics graduate), Bastian Nominacher (graduate in business informatics) and Martin Klenk (computer-science graduate); they found themselves forced to conclude that the available analysis methods, such as data mining or business intelligence, were unable to supply the insights needed. The process-mining approach pursued by Prof. Wil van der Aalst at the TU Eindhoven was more promising. Based on his research, Celonis’s three co-founders developed a process-mining solution for businesses. Soon, prominent companies such as Siemens, ABB, Bayer and Vodafone ranked among the firm’s customers. Now Celonis Process Mining is being deployed in 15 different industries. Celonis is one of Germany’s most-rapidly growing technology companies (’Deloitte Fast 50’) and has, among other accolades, received the EY Award for ‘Entrepreneur of the Year’. With USD 275 m. in growth finance from the Facebook investors Accel Partners and 83North, global expansion followed, with offices set up in New York and Miami. Celonis now employs 160 staff in all with the list of Fortune 500 clients, such as Cisco, Adobe and Dow Chemicals, growing continuously.

Keeping An Eye On Requirements

The question of where best to place Process Mining organizationally in the overall picture emerges from the company organization and the predetermined goals. If there are subject-specialist departments find that the specialized analysts and data scientists operate as their direct points of contact. Yet if the business processes are very heterogenous and are to remain so, a decentralized approach may be the better choice. Normally, the infrastructure is still hosted by the central IT. Those responsible for the analysis are then the people who know the processes and requirements well in their division. They become ‘process specialists’ for their department, are soon very adept at working with the Celonis user-interface and are skilled at using the technology to produce fast, well-suited analyses.

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Celonis is one of Germany’s most successful young companies. What is this success based on?

Bastian Nominacher: These days companies amass large quantities of data. Yet increasingly they are asking themselves how they can use this data to their benefit. This is precisely what Process Mining taps into, delivering an added value directly to our customers. Our innovative technology transforms Big Data into Smart Data. Internal process flows can be visualized and thus ultimately organized even more efficiently. Celonis offers its customers a real-time view into their own IT-supported business processes and full transparency with regard to their process flows. This directly generates added value. Again and again, customers confirm the high level of ROI that our solution delivers. In many instances the investment proves to be worthwhile after only six months. It’s easy to understand why: The transparency that Process Mining creates enables previously-hidden areas of optimization potential to be exploited directly. Process Mining also lends itself to being rolled out very quickly across a whole range of corporate areas. The software’s fast implementation and simplicity of use by the specialist departments contribute to fast amortization of the investment.

So people might wonder why the product has not been around very long ...

Nominacher: Right at the start, in 2011, when my co-founders Alexander Rinke, Martin Klenk and I examined the available analysis methods, such as Data Mining or Business Intelligence, with regard to their ‘process capability’, we were a little surprised ourselves. We believe the time was simply ripe for Process Mining – by founding Celonis, we filled this gap. Set against the background of digitalization, companies increasingly depend on IT-supported processes. Yet these processes are usually highly complex. Users need an automated end-to-end analysis to be able to uncover concealed costs and weak points in these processes. Like with many successful solutions, as soon as people see its potential in daily use, they find it hard to imagine how certain activities even functioned at all before that solution was introduced.

What role does SAP play in this?

Nominacher: Many of our customers use SAP systems that contain valuable data for the important corporate processes. It was thus obvious for us to think of SAP first of all. Our process-mining technology visualizes and evaluates in real time – in doing so we hugely benefit from Hana’s performance capability. Hana’s top performance data-integration procedures are also highly significant for us, especially for building up process-mining platforms. This strategic significance is why Celonis was taken up into the SAP Startups Focus Program at an early stage. Through this, we have gained access to all tools and valuable resources for building up and expanding our successful SAP business. The collaboration was continuously intensified at technical and sales level. Then in 2015 we concluded a very successful global reseller partnership with SAP. Since then, SAP has been selling our process-mining technology worldwide under the product name SAP Process Mining by Celonis.

So where is this journey headed to?

Nominacher: In further developing Process Mining, we gain from the close and constructive exchange of knowledge and insights with our customers. Users and managers at Siemens, ABB, Bayer, RWE, Edeka, KPMG or Vodafone know very precisely what they need to attain greater efficiency in their processes. Many of the new features in Celonis Pi – from machine learning through to the automatic recommendations for action – are based on the feedback and practical experience of our software users. Our customers and Celonis’s highly qualified development team deserve the credit for our technology’s high degree of innovation. And Process Mining’s market potential is huge – we have only tapped into a small part of it. What this means for Celonis is growth. Apart from research and development, we are investing in the expansion of our infrastructure for sales and service, as well as in the further development of our technology. And we’re thinking big. Our number of employees is continuously rising and is expected to cross the one-thousand threshold by 2020. We’re also expanding geographically. Apart from a facility in the Netherlands, we also have two offices in the USA and are now considering our options for Asia.

» Process Mining performs visualization in real time. We benefit from the Hana platform’s performance capacity. <<

Bastian Nominacher, Co-Founder and Co-CEO.
Tracking Down Inefficient Processes

Every specialist department’s processes has its weak spots. Process Mining enables users to exploit this slumbering potential.

By Benedikt Friedl, Celonis

A good example for use of Process Mining is the classic processes in Purchasing – after all, these cover a wide variety of transactions. Approvals, deadlines and internal regulations result in a lot of complexity, further increased by the quantity of suppliers and their individual terms and conditions of business. Only by end-to-end analysis and optimization of the purchasing process, companies can deal with this complexity. Done right, users can for instance avoid work duplications like those resulting from subsequent changes to prices or quantities.

In the supply chain, shorter product cycles, a reduced level of depth of production, but also the trend towards outsourcing more and more steps in manufacturing, all lead to a greater dependence on external suppliers and service-providers. The challenge in this context is to improve these processes’ compliance level and efficiency. Another requirement is to unequivocally identify the causes of inefficiencies such as delays in delivery or high stock levels. Celonis Process Mining here puts customers into a position to reliably fulfill promises regarding deliveries and shorter deadlines. An analysis of the actual processes helps in assessing various players involved and in purposefully directing all flows of material and information. Users can see at a glance whether the material and personnel resources are readily at hand, with at each stage in the supply chain, or if bottlenecks could occur. In IT Service Management, it becomes possible to cut the tickets’throughput-times and to avoid ‘a game of pingpong’. This can obviously significantly cut cost. Yet Celonis Process Mining is also used by subject-specialist and IT departments, on projects aimed at process harmonization. This is done to determine project status and to continuously measure the level of progress. Auditing departments and certified public accountants deploy Process Mining to identify irregularities and breaches of compliance regulations. The software is used to set up audit plans, to conduct the check, and for the follow-up work.

What is often underestimated is the need to cleanse the processes prior to a migration. For instance, if a company switches to S/4 Hana, that could be a good moment for correcting process inefficiencies. That way, a more optimum ROI can be attained for the new solution. In example, possibly an uncontrolled growth of special cases and patches has established itself over the years, favoring process variations. In some companies, several instances of SAP were used. This increases the likelihood that unwanted process variations have taken shape in the various ERP systems. Celonis tracks down all these deviations. It can benchmark them and unify the system prior to the consolidation, creating a better starting point for the migration.

Examples From Practice

Process Mining yields results. Across all areas of its use, companies achieved a process-costs reduction of up to 30 percent – merely by reducing process loops or manual activities. Company-critical processes are often analyzed by using millions of runs, for instance in a supply chain. This is why improvements that fine-tune individual and decisive ‘adjusting screws’ in the process can already lead to major cost optimizations.

Siemens

In principle, Process Mining can be applied to data from all data-source systems. For instance, the Bayer group uses Celonis
technology to analyze data from its (more than ten) SAP systems. Siemens analyzes data from more than 70 SAP ECC systems globally, on a central SAP Hana platform. Celonis Process Mining comes into play directly on this platform with over 2000 users. Now more than 30 different processes are analyzed, for instance purchase-to-pay or order-to-cash.

**Schukat Electronic**

Also medium-sized companies benefit significantly from Process Mining. The best example of this is Schukat Electronic in Monheim, a distributor of electronic components with 25,000 products in its portfolio. Schukat has been using SAP since 2009. In 2012 it was one of the first companies to deploy Business Warehouse based on Hana. Initially Celonis was deployed in Purchasing, to evaluate suppliers. A pilot project on the existing Hana infrastructure proved that Celonis is the tool for the job. This included requirements in speed, transparency created, and the possibility to draw conclusions quickly from the analysis. It even meant that the effect of the measures taken could be observed rapidly. Within only two weeks, the first assessments were presented. Now Purchasing knows exactly who supplies reliably, within what stated lead-time; it can conduct follow-up negotiations and can award orders in an even more targeted way.

To improve the throughput of goods, Schukat followed up by analyzing the warehouse data. This is where the genuine added-value is located but also where the delays were presumed to be. Based on data from an SAP Extended Warehouse Management system, Celonis supplies information on orders, from the registration of the delivery note in the warehouse, right through to the actual supply – bit by bit. The analysis produced a positive surprise. In that department, hardly any time was lost. Recent years’ steps aimed at optimization were successful. With the help of Celonis Process Mining, it was clearly proven that the actual bottlenecks had emerged on the sales side. There were media breaks and self-created obstacles, e.g. supply-stops to a specific client, or credit management. In addition, not all orders were worked-through, start to finish, on an automated basis. Celonis was able to create end-to-end transparency, presenting the management with many points of approach for optimization. As a bonus, the required resource commitment for the analysis was limited. Furthermore, a process-mining assessment in Celonis is built up on a one-off basis. After the first assessment, the data is continuously and automatically updated in the background. Thanks to Hana, the updates happen quickly enough for a user not to notice while always providing the user with the latest data. Within each process step, the decision-makers can analyze precisely what has happened in the given case. Now Schukat has insight, an overview and process transparency, everywhere.

**Von Ardenne**

The mechanical-engineering company Von Ardenne achieved similar results. In 2013, Process Mining was deployed as part of introducing SAP and bringing together what previously had been a very heterogeneous system landscape. The technology was initially used in the purchase-to-pay (P2P) process, specifically in supplier monitoring and in the strategic and operational product purchasing. The results were so convincing that the Service department also declared its wish to use it. Today, Service uses the software for analyzing the service process, spanning the SAP and CRM systems respectively. Further analyses are in the pipeline, for instance in Quality Management, ITSM or in Project Management. Von Ardenne has also recognized untapped potential in Production: from placing the order to product delivery, the plan is to use Process Mining to analyze throughput-times and data. In doing so, the goal is to plan better and more efficiently and to use the insights in business-analytics procedures.

**Celonis Pi: AI and Machine Learning**

**Automated Management Consultant**

Celonis Pi (Proactive Insights) is a logical development of Process Mining, one that also aims at improving processes. To be able to offer functionalities of this kind, Celonis’ developers used the latest insights from artificial intelligence and machine learning.

Key advantage: Celonis Pi learns how a company’s business functions and automatically finds the weak points in a process. It also supplies an analysis of causes and prioritized recommendations for action. This way, statements can also be made about future scenarios. Such statements begin in the Pi Conformance module, with actual-status processes being checked against a predefined process flow or model, for instance in the BPMN format. The deviations revealed are examined from the perspective of their effects on overall process efficiency. Their causes are highlighted and possible optimization measures are proposed automatically. Machine learning in Celonis Pi makes it possible to use past experience for providing insights on the current and future processes and transactions. How can planning security be maximized in Logistics and Production? Where can the user preventively address problems in Purchasing, Warehouse Management, supplier relationships or with certain materials? How can customers be expected to behave and which measures hold out the prospect of success?

Lastly, Pi Companion means that bottlenecks emerging from processes, as well as unwanted burdensome elements in the daily operational business are continuously brought to surface. From the technical viewpoint, machine learning procedures are used to automatically and within seconds evaluate correlations in millions of process-related data items. Here, Celonis Pi takes on the role of an automated business consultant. It reveals potential for improvement but also specific approaches and paths towards solutions, independent of whether they concern the immediate or future optimization of central business processes in Procurement, Manufacturing, Sales, Logistics or Marketing.