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Turbo-Charge Process optimization leveraging Process Mining with Lean Six Sigma

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Integrating Lean Six Sigma with process-mining platforms and how it turbocharges operational excellence

In the rapidly evolving landscape of business process optimization, the integration of traditional methodologies with cutting-edge technologies has become a cornerstone for achieving operational excellence. This white-paper addresses the critical intersection of these domains, emphasizing the need for enterprises to harmonize Lean Six Sigma principles with process-mining technologies. This synthesis is presented as a potent strategy to navigate and overcome the prevalent challenges and trends in process management and optimization, particularly in the context of large-scale transformation projects such as the transition from SAP ECC to SAP S/4 HANA.

The paper begins by delineating the contemporary landscape of process optimization and transformation, marked by increasing complexity and the pressing demand for efficiency and agility in business processes. It highlights the pivotal role of process management and optimization in the transformation projects which underpin the strategic competitiveness of organizations in the digital era. By integrating Lean Six Sigma with process-mining platforms, Deloitte posits a transformative approach that significantly amplifies the effectiveness and speed of process improvement.

In the domains of logistics, transportation, automotive, manufacturing, supply chain and even in other administrative processes such as finance, IT and ITSM, the complexity and volume of data often render traditional process-improvement methodologies insufficient. This paper presents an innovative approach to process optimization by integrating Lean Six Sigma methodologies with process-mining technologies. It is a powerful toolkit tailored to organizations aiming for operational excellence in key processes such as order-to-delivery, fleet management, inventory optimization, supplier collaboration, and demand forecasting. By leveraging these integrated methodologies, companies can identify inefficiencies, uncover opportunities for enhancement, streamline operations, reduce costs, and enhance service delivery to provide a powerful toolkit for superior operational excellence.

Deloitte's methodology, as expounded here, involves a two-pronged approach. First it underscores the need for this integration, attributing the enhancement of operational excellence to the deep insights and visibility afforded by process-mining technologies and complemented by the proven efficiency-enhancing principles of Lean Six Sigma. Then it provides a comprehensive overview of Deloitte's innovative approach to embedding Lean Six Sigma methodologies within process-mining platforms, facilitating a more granular and data-driven analysis of process inefficiencies to enable targeted improvement and foster a culture of continuous process optimization.

It concludes by highlighting the tangible benefits of this integrated approach, including improved process visibility, accelerated cycle times, reduced costs, and enhanced quality. Deloitte uses a series of case studies and empirical evidence to demonstrate how its approach not only addresses the immediate challenges of process optimization, but positions organizations to thrive in an increasingly complex and dynamic business environment.

1. Lean Six Sigma for business and administrative processes in supply chain, logistics, transportation, and other operations.

In the rapidly evolving landscape of supply chain, logistics, transportation, automotive, manufacturing, finance, and IT and IT service management (ITSM) processes, the need for streamlined, efficient, and cost-effective operations has never been greater. As organizations navigate the complexities of digital transformation, Lean and Six Sigma methodologies offer a powerful and unified approach to process improvement. Lean Six Sigma is not merely a set of tools but a paradigm that emphasizes customer value, waste elimination, and continuous improvement to achieve operational excellence.

At the heart of Lean Six Sigma is the recognition that value is defined by the customer, and any activity that does not directly contribute to that value is considered non-value-added or waste. By applying Lean principles, organizations can streamline their processes, eliminating waste and enhancing the flow of value to the customer, while Six Sigma provides a rigorous statistical framework for reducing variability and defects in processes, thereby improving quality and reliability.

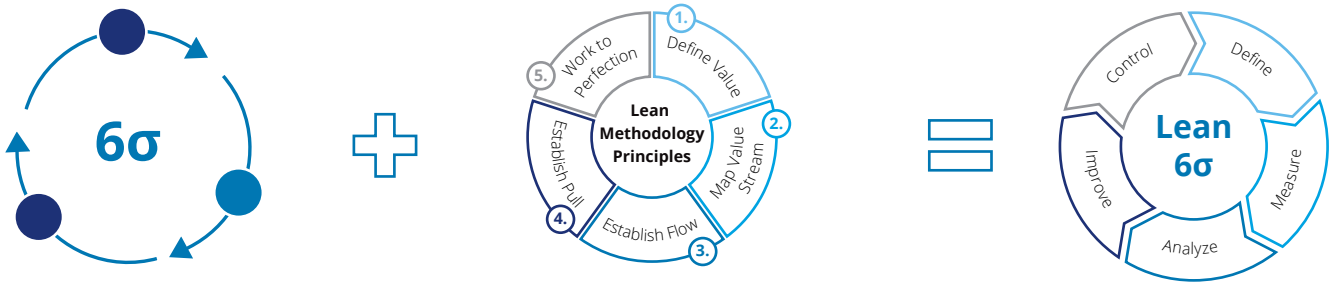
When applied to supply chain, logistics, transportation, automotive, manufacturing, finance, and IT and ITSM processes, Lean Six Sigma facilitates a holistic examination of the entire operational ecosystem. Recognizing that processes are only as robust as their weakest link, this approach underscores the importance of involving business partners and stakeholders in process-improvement initiatives. The collaborative nature of Lean Six Sigma fosters a culture of continuous improvement where concrete actions, rather than theoretical models, enhance real-life outcomes.

Key characteristics of this unified approach include:

- Balanced synergy between common sense and statistical analysis, empowering decision-makers with both intuitive and evidence-based insights
- Deep understanding of factors that impact process performance, facilitating targeted interventions
- Proactive identification and resolution of root causes behind errors and delays, enhancing operational efficiency
- Enhancement of performance predictability, ensuring that processes deliver consistent and reliable outcomes
- Sustainable consolidation of improvements, equipping organizations with the resilience to adapt and continue evolving

Lean and Six Sigma methodologies not only help organizations optimize their processes in Supply Chain, Logistics, Transportation, Automotive, Manufacturing, Finance, and IT and ITSM, but cultivate a culture of excellence that drives innovation, customer satisfaction, and competitive advantage. This whitepaper explores how adopting a Lean Six Sigma approach can transform these processes, delivering stable, results-oriented, and cost-effective outcomes that resonate throughout the entire operational ecosystem.

Fig. 1 – Lean and Six Sigma: a unified approach for operational excellence in business processes



Six Sigma Methodology
Assuring **quality** in organizational processes and systems.

Lean Methodology
Eliminating the waste & Non-Value Adding activities for Process improvement

Lean Six Sigma DMAIC
Process Improvement by improving quality and Efficiency for Process Improvement

2. Process mining for data-driven process optimization

In today's digital era, where the seamless integration of business processes and IT capabilities is pivotal to achieving organizational success, process mining stands out as a cornerstone for data-driven process optimization across supply chain, logistics, transportation, automotive, manufacturing, finance, IT, and IT service management (ITSM) functions. This cutting-edge methodology harnesses the extensive data produced by contemporary IT systems, providing unparalleled transparency into the actual execution of business processes. The meticulous extraction and analysis of digital traces left by IT systems allows process mining to unveil a comprehensive, objective, and empirically grounded overview of the process landscape.

Dubbed as "data science in action" by the field's leading authority, Professor Wil van der Aalst, process mining bridges the gap between data science and process science. It transforms the event data captured by IT systems into actionable insights to support the refinement of processes. This approach functions as an X-ray for business procedures, providing an unfiltered view of operational flow and highlighting areas ripe for improvement.

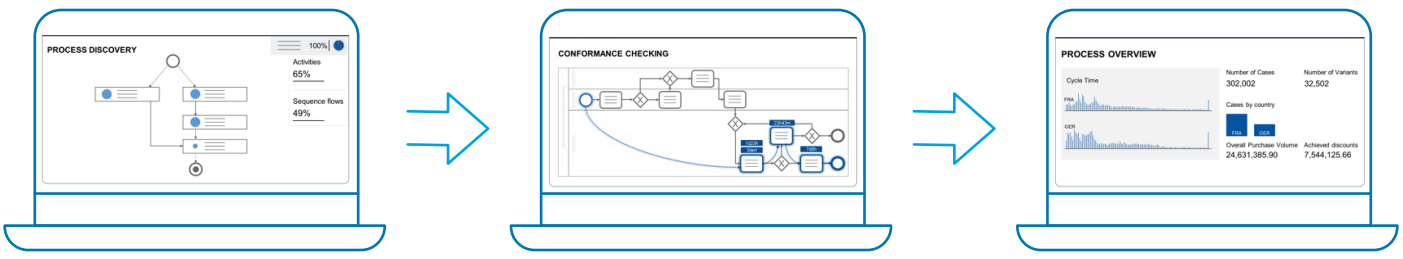
Process mining eclipses traditional process-improvement methodologies by offering tools for automatic process discovery, real-time monitoring, and substantive optimization. It brings to light the direct pathway to operational excellence while nurturing a culture keen on transparency and perpetual enhancement. The methodology is anchored in three pivotal aspects—process discovery, conformance, and performance—each playing a critical role in comprehensive process optimization:

- Process discovery: The genesis of process mining, where event logs are used to automatically generate process models. This illuminates the true execution of processes, uncovering inefficiencies and variations hidden from manual scrutiny.
- Process conformance: Following discovery, this phase involves the juxtaposition of actual process models against ideal standards or regulatory benchmarks. Identifying deviations enables targeted corrective action.
- Process performance: Evaluates the efficiency, speed, and reliability of process steps. It aids in identifying bottlenecks, gauging service levels, and understanding the impact of process variability on customer satisfaction.

Furthermore, advancements in process mining, such as object-centric process mining (OCPM), have expanded the scope of analysis. By mapping a single event to multiple objects—whether a purchase order, invoice, or production order—OCPM enables a more intricate examination of interactions within the process ecosystem. This nuanced analysis surpasses the limitations of case-centric mining, providing a multidimensional view of process efficiency and effectiveness.

By integrating process discovery, conformance, and performance, process mining presents a robust toolkit for achieving data-driven process optimization in the supply chain, logistics, transportation, automotive, manufacturing, finance, IT, and ITSM arenas. This whitepaper explores the transformative potential of process mining, showcasing how it can catalyze process-improvement initiatives, ensure compliance, and boost performance for unparalleled efficiency, effectiveness, and operational excellence.

Fig. 2 – The art of the possible by process-mining methodology



Process Discovery
Process Discovery visualizes the way executed tasks are performed and backtracks the process flow.

Process Conformance
Process Conformance focuses on the mapping of "as-is" data to an existing predefined "to-be" process, e.g., a BPMN process model.

Process Performance
Process Performance is about measuring the process and defining performance indicators that are shown in a dashboard.

3. Key trends and challenges in process optimization

In the dynamic landscape of process optimization, organizations are increasingly turning to sophisticated methodologies like process mining and Lean Six Sigma to turbocharge their operational efficiency. This fusion not only promises enhanced visibility into process dynamics, but a structured approach to eliminating waste and reducing variability. Yet the path to seamless process optimization is not without hurdles in an evolving technological and shifting organizational landscape. A key trend reshaping the terrain is the growing emphasis on digital transformation, compelling organizations to digitize traditional processes and leverage big data analytics for deeper insights into process performance. The advent of technologies such as artificial intelligence (AI) and machine learning (ML) has further enriched process-mining capabilities, enabling predictive analytics and automated process discovery.

But the integration of Lean Six Sigma with cutting-edge process-mining technologies presents unique challenges. Data quality and availability stand out, since the efficacy of process mining is heavily reliant on the integrity of event logs. Ensuring clean, comprehensive, and accurate data becomes paramount and requires robust data-governance frameworks. The cultural shift towards data-driven decision-making also requires a mindset that embraces continuous improvement and change, often challenging traditional organizational norms.

Another significant challenge is the complexity of aligning multiple process-improvement methodologies. While Lean Six Sigma offers a proven framework for efficiency and quality, marrying its principles with the dynamic insights provided by process mining requires a nuanced understanding of both domains. Organizations must navigate the delicate balance of leveraging real-time process data while adhering to the disciplined, iterative cycles of Lean Six Sigma.

Despite these challenges, the convergence of process mining and Lean Six Sigma is poised to redefine process optimization. By staying abreast of emerging trends, such as the integration of IoT devices for real-time data collection and the increasing use of cloud-based process-mining platforms for scalability, organizations can anticipate and mitigate the challenges ahead. The journey towards optimizing processes in this integrated manner demands not only technological acumen but strategic foresight and organizational agility. As we look to the future, the key to unlocking the full potential of this synergistic approach lies in embracing innovation, fostering a culture of continuous learning, and maintaining a relentless focus on customer value. This paper explores these trends and challenges in depth, offering actionable insights into leveraging process mining with Lean Six Sigma to turbocharge process optimization efforts across various domains

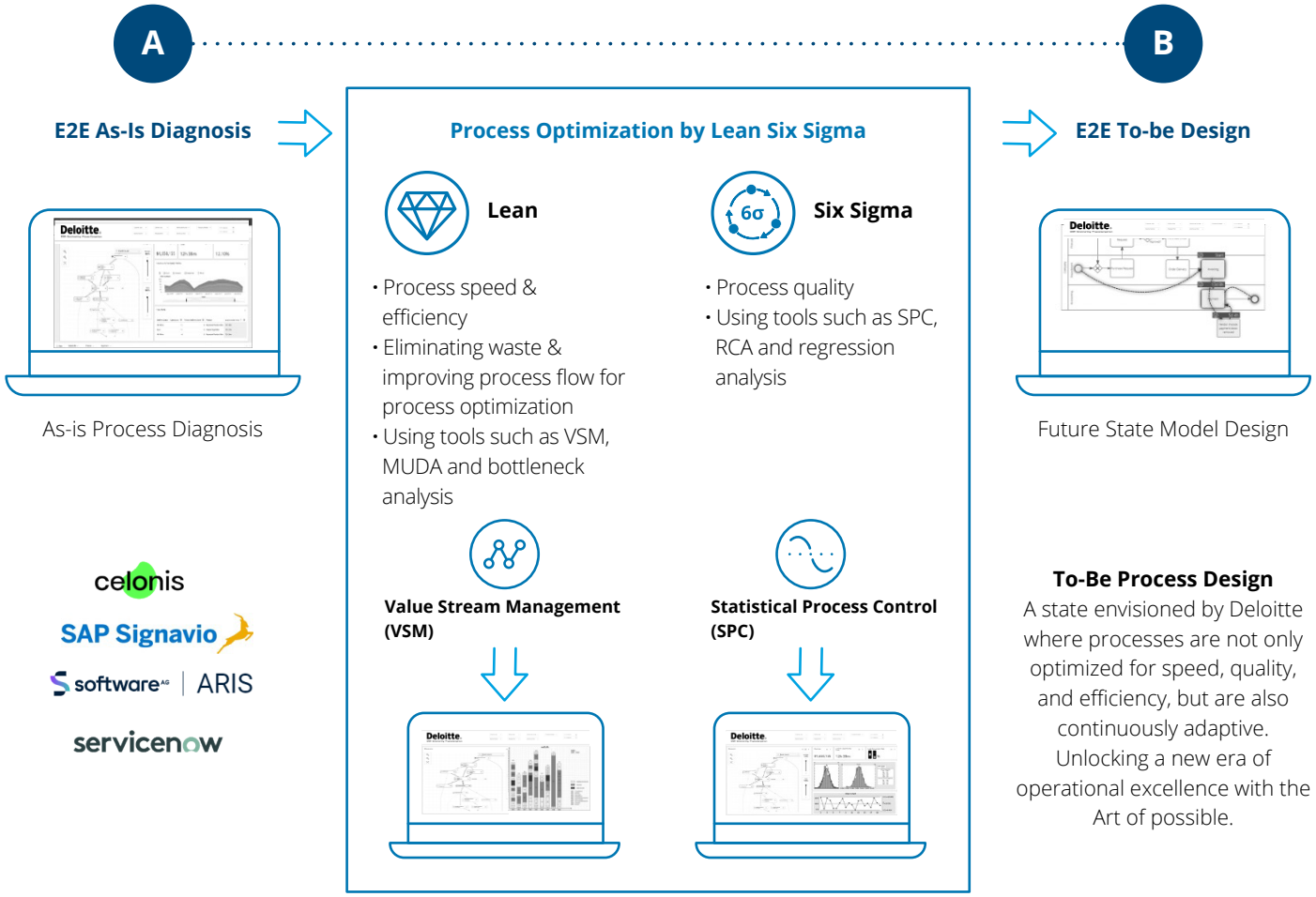
4. How Deloitte integrates Lean Six Sigma with process mining into its consulting practice

Deloitte seamlessly integrates Lean Six Sigma with process mining into its consulting practice by leveraging a structured methodology that enhances organizational efficiency and process optimization. The initial step is the As-is analysis, using process mining to gain a detailed, data-driven understanding of the current state of an organization's processes. This phase involves analyzing event logs to map out actual workflows, identifying inefficiencies, and uncovering areas that deviate from desired performance standards.

After this thorough analysis, Deloitte employs an integration framework that merges Lean Six Sigma tools with the insights gleaned from process mining. This innovative approach is deployed directly on into the process mining platform, allowing for a unique synergy between Lean Six Sigma's focus on waste reduction and variability and the real-time, granular insights provided by process mining. This combination better targets and facilitates the identification and elimination of process inefficiencies.

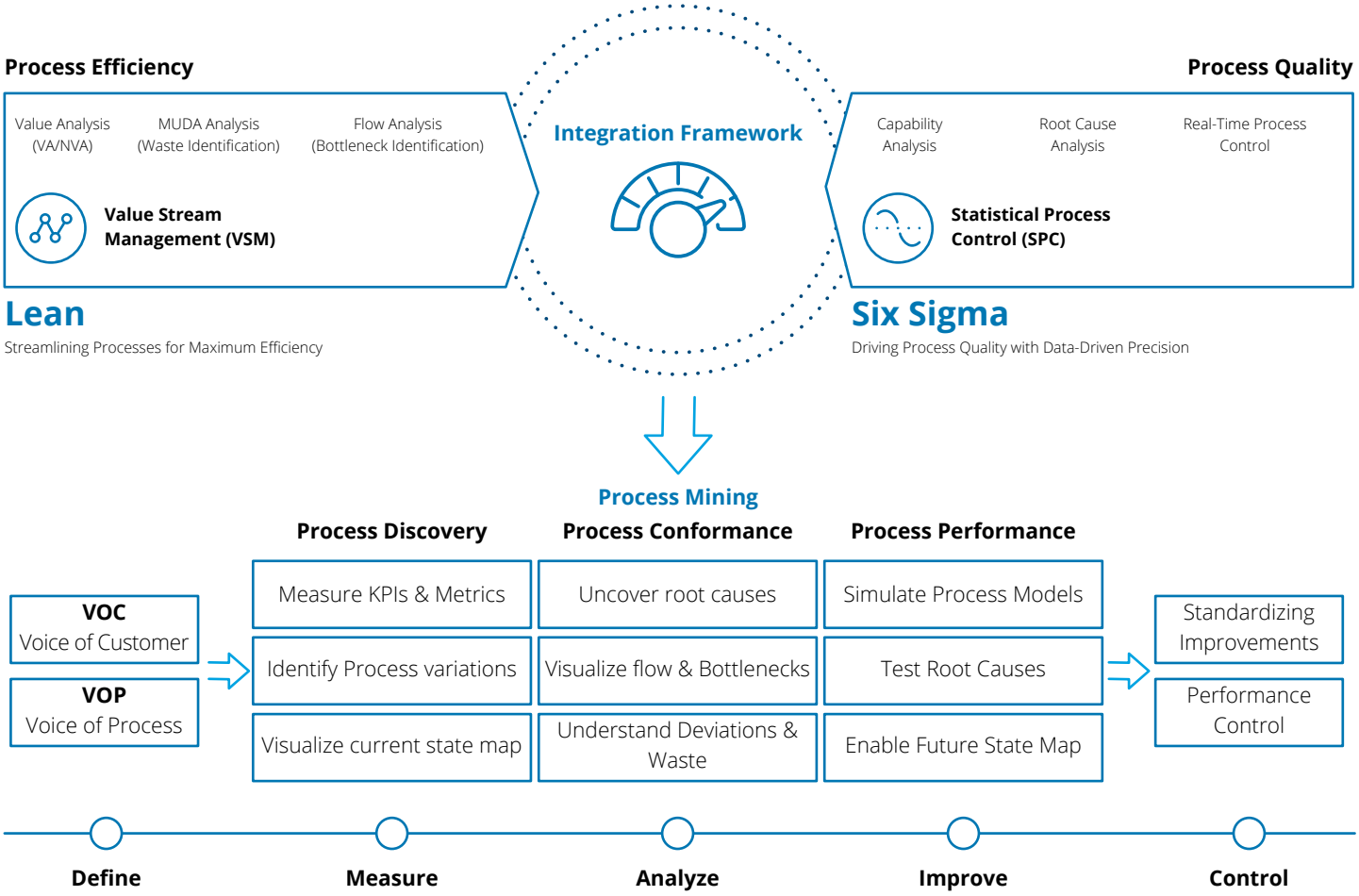
The final step in Deloitte's methodology is the design of the To-be state, which is meticulously based on the data-driven analytics and insights obtained from the initial phases. This forward-looking phase involves leveraging detailed process understanding to redesign workflows, eliminate identified waste, and implement process improvements directly informed by the data. Deloitte thus ensures that the proposed optimization is not only theoretically sound but grounded in the reality of organizational operations, leading to more sustainable and impactful improvement. This holistic approach, combining traditional excellence with innovative technologies, positions Deloitte at the forefront of process optimization in the consulting industry.

Fig. 3 – Deloitte's methodology for Lean Six Sigma with process-mining platform.



When Lean Six Sigma's precision meets the deep insights of process mining, operational excellence isn't just a goal—it's an inevitability. Integrating Value Stream Management and Statistical Process Control within this framework turbocharges the journey.

Fig. 4 – Integration framework for Lean Six Sigma DMAIC approach and process-mining methodology



Lean Six Sigma DMAIC

4.1 Integration framework

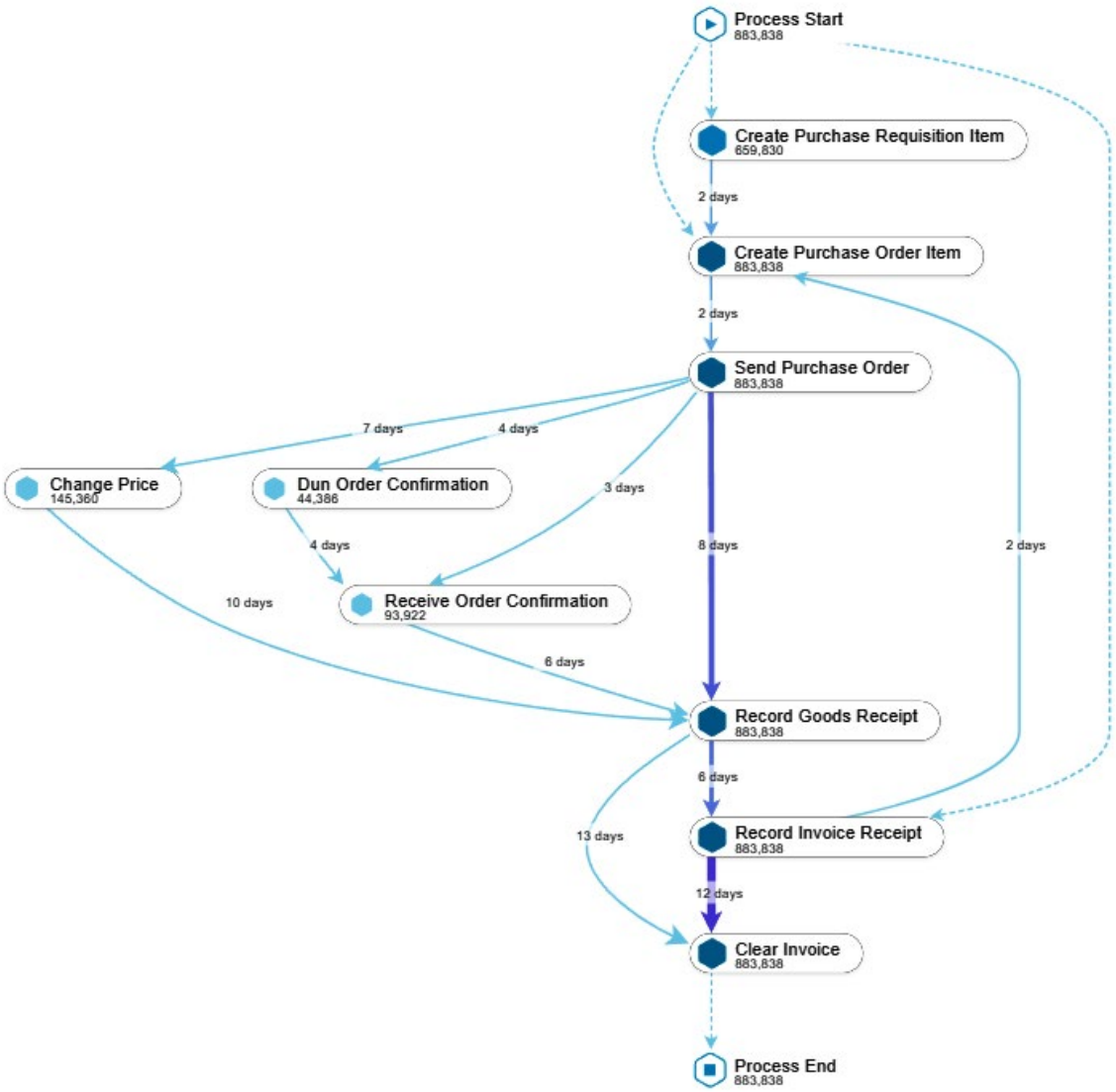
The integration framework for Lean Six Sigma's DMAIC approach to process-mining methodology represents a strategic fusion of traditional operational excellence with cutting-edge data analytics. At its heart is the alignment of the DMAIC phases—Define, Measure, Analyze, Improve, and Control—with the insights derived from process mining. Process mining initially elucidates the current process landscape during the Define and Measure phases, providing a data-driven foundation for identifying problems and establishing baseline metrics. In the Analyze phase, it reveals root causes and process deviations, directly informing the Improve phase, where targeted Lean Six Sigma interventions are crafted based on empirical evidence. Finally, the Control phase benefits from the ongoing process-monitoring capabilities of process mining, ensuring that improvements are sustained and that the process continuously meets its performance objectives. This framework not only enhances the precision of process improvements but accelerates the DMAIC cycle for a more agile, informed, and effective approach to achieving operational excellence.

4.2 Process mining and Celonis

By combining sophisticated process models with event data produced by contemporary IT systems, process mining bridges the gap between data science and process science. Modern process-mining applications serve three main purposes: business process optimization, conformance verification (comparing real and target processes), process modeling, analysis, and discovery. Process mining provides organizations with an unbiased perspective of precisely what is happening in their approach landscape, much like an x-ray for business operations. Three key elements enable traditional process mining tools to extract meaningful information from corporate data: the time stamp (the moment the activity occurred), the activity (a process step, such as "create PO"), and the case ID (a unique purchase order identification, for example).

More in-depth information and extractions (data tables) from one or more source systems (such as ERP or SCM systems) can be found in the event log, which is made up of many of these three-part entries. This data builds a "digital twin" or digital footprint of a particular process, such as accounts payable (AP). The data can then be used by process-mining intelligence to gain more insights. Every event is associated with an item that is undergoing a certain process variant; for instance, a purchase order (PO) processed through purchase-to-pay (P2P). The current landscape of a given process is made up of all of these process variations. Process-mining software can depict every possible process variant, including those that don't work as intended and those that do, in addition to the primary target process (also known as the "happy path"). Usually, greater in-depth analysis and optimization attempts begin with the latter.

Fig. 5 – A sample process discovery of Purchase-to-pay process with variants



Object-centric process mining (OCPM)
While next-generation applications (such as P2P mixed with AP) take a networked approach, traditional (case-centric) process mining concentrates on the in-depth examination of a single process for more thorough mapping. You can now track invoices triggered and processed on the AP side, in addition to evaluating a PO (item) that is issued and processed within the P2P process. Using an advanced analysis technique called object-centric process mining (OCPM), you can map an event to several different objects, such as purchase order, invoice, production order, and so on. The benefits of OCPM are clear: by seeing, analyzing, and optimizing object interactions, you can more effectively depict multidimensional reality. With its innovative focus on object-based process analysis, as opposed to activity-based analysis, OCPM provides a more thorough understanding of the value chain overall. You can find hidden insights and further enhance your processes by gaining a deeper understanding of how things interact inside a process. Better process performance from a focus on object-centric bottlenecks, inefficiencies, and deviations, enhanced process transparency for a better grasp of how processes actually work, and more contextual insights into which objects are actually being used are some of the advantages of OCPM.

LSS integration within the Celonis platform
Process mining and Lean Six Sigma are actually complementing, rather than rival, approaches. Lean Six Sigma is here for good reason: it is effective. But it is not without flaws, and Lean Six Sigma 2.0 does not address the problems. Process mining can help with this. The fact that Lean Six Sigma can be resource- and time-intensive is one of its main drawbacks.

It is common to spend hours in workshops hashing out processes with experts, only to find that what you've captured is neither accurate nor comprehensive. You can reduce this risk and ensure that your procedure for process improvement is effective by utilizing process mining at every stage of the Define, Measure, Analyze, Improve, Control process.

Let's examine the Measure, Analyze, and Improve stages of Lean Six Sigma to see how process mining can illustrate how the two complement one another.

Measure
Here you assess current process performance and establish your KPIs to ensure that any changes you've made are indeed making a difference. When it comes to assessing and reporting current process performance, process mining does all the legwork. After your KPIs are established, you can easily communicate them to the team so that everyone is aware of the progress being made on process improvement. Besides KPIs, Celonis offers further tools and capabilities that can contribute to this stage, such as Variant Explorer, Process Explorer, and Benchmarking.

Analyze
Now that you know what you want to accomplish, it's time to identify the root of your problems. Process mining can be helpful in a number of ways – this is the stage where integrating the two approaches truly shines. Process mining is a great tool for evaluating the assumptions you have developed using classic exercises like Ishikawa. But let's take a closer look at the Five whys for root-cause analysis. The Five whys method identifies the underlying cause of an issue by asking why five times.

To demonstrate process mining, let's examine a real-world example.

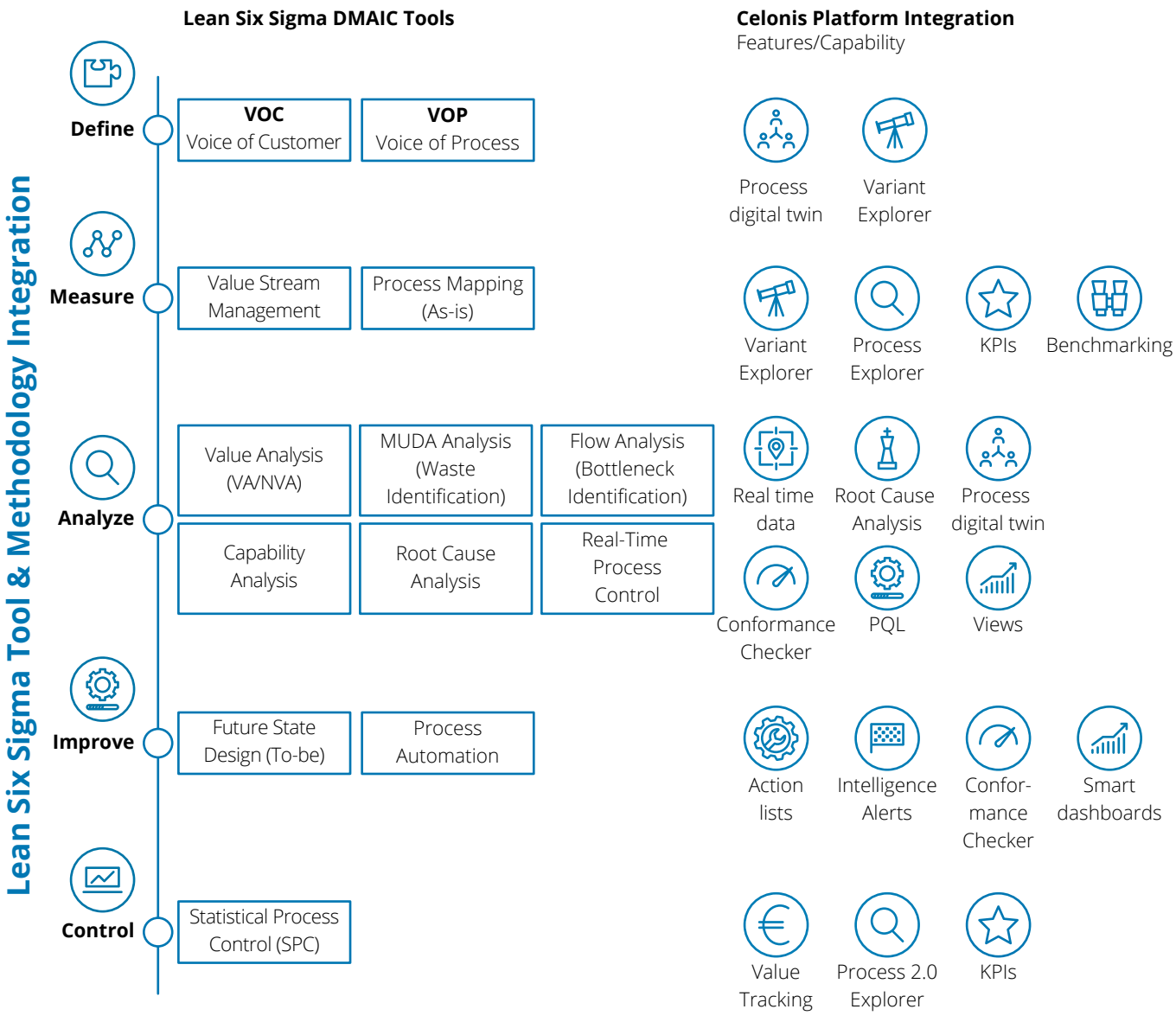
Problem:
Why? There are more complaints than usual.
Why? Recently more orders are getting delayed.
Why? Manufacturing lead times have become inconsistent.
Why? One supplier has become unreliable.
Why? It is sourcing raw materials from a region that is unstable.

In this instance you can use process mining to identify and confirm root causes, completely eliminating guesswork or additional research.

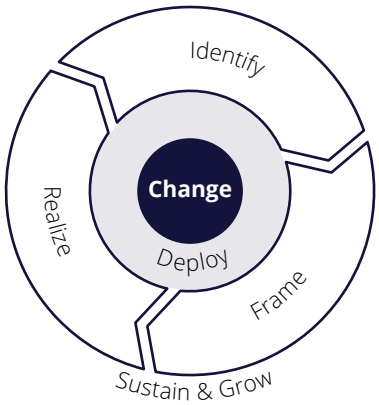
Root cause analysis is just one Celonis capability used at this stage. Other useful capabilities are real-time data, PQL, views, and a process digital twin.

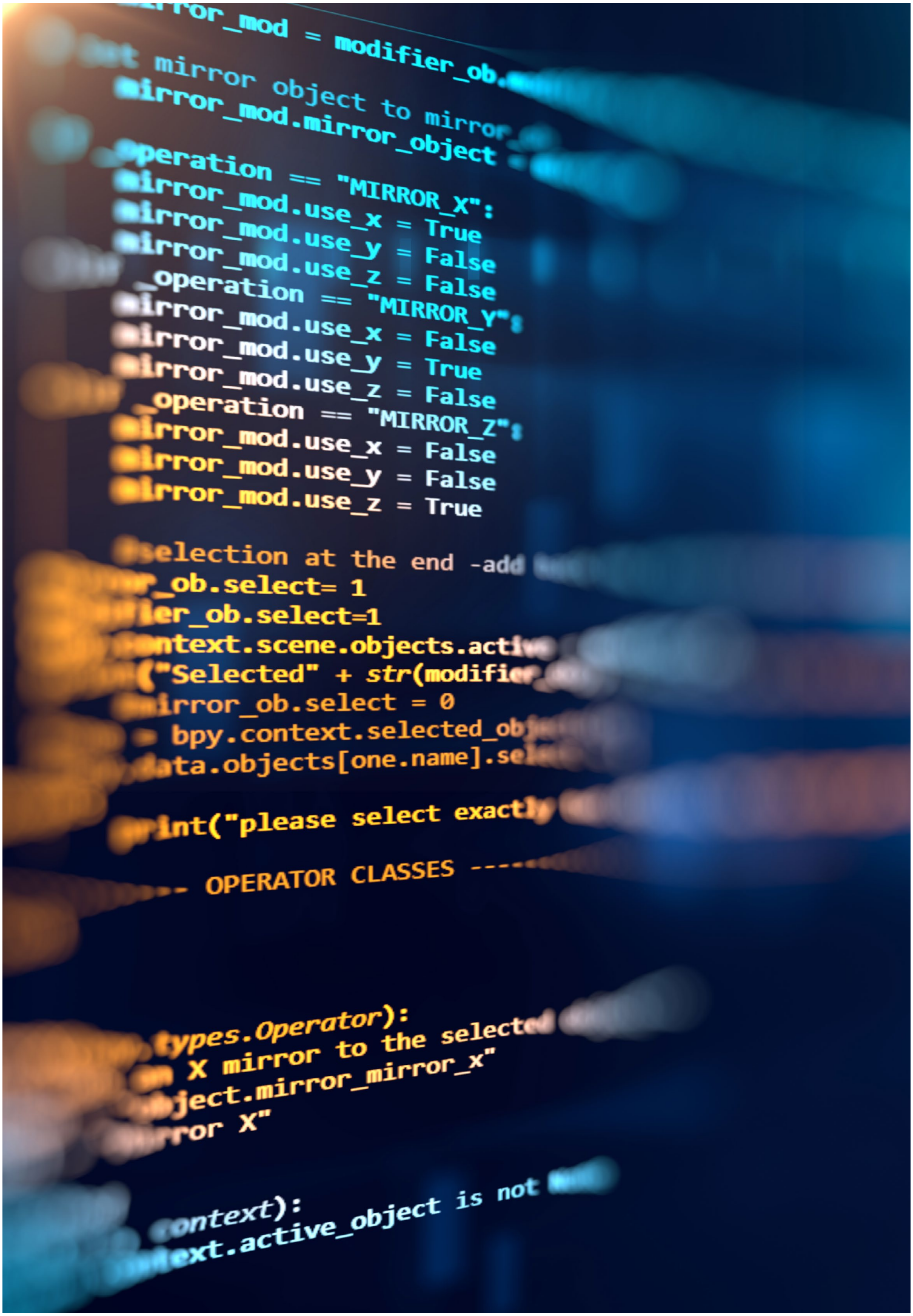
Improve
Using the previous example as a guide, you can pinpoint potential solutions, such as changing suppliers, modifying lead times, combining orders in new ways, or interacting with clients to better control expectations. Moreover, the time required for implementation is much less because you're figuring all this out in a system you already use. IT implementation generally requires many months to complete, but process mining allows you to quickly automate tasks by writing back into your source systems, or by developing action lists that effectively coordinate and standardize work across platforms. You can also make use of alerts, process-conformance checkers, and value tracking to make sure of continuous improvement.

Fig. 6 – Celonis process-mining platform integration



Celonis Methodology
Strong Process Mining Focus

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4.3 SAP Signavio: A catalyst for process-mining excellence

SAP Signavio is a leading platform for robust process-mining capabilities, seamlessly integrating with SAP's comprehensive suite of business solutions. With its user-friendly interface, powerful analytics engine, and advanced visualization tools, Signavio applications like "Process Insights" and "Process Intelligence" allows organizations to unleash the full potential of process mining.

SAP's process analytics tool chain goes beyond just tackling data-driven process analysis by further reducing the time-to-value with its SAP Process Insights app. SAP Process Insights is a comprehensive solution that empowers organizations to optimize their business processes by providing real-time visibility, actionable insights, and predictive analytics. Built on the SAP Cloud Platform, SAP Process Insights leverages advanced process mining, analytics, and machine-learning capabilities to analyze event logs from various IT systems and uncover hidden patterns, inefficiencies, and opportunities within business processes. With SAP Process Insights, organizations can gain a deep understanding of their business processes, optimize performance, enhance efficiency, reduce costs, and drive operational excellence, ultimately enabling them to achieve their strategic objectives, improve customer satisfaction, and maintain a competitive edge in the market.

What can I achieve with this product?

- A better understanding of your processes
- Find the root cause of your problems
- Faster value discovery pre-, mid-, and post-transformation
- Increased process transparency and process standardization
- Reduced transformation time and risks

Yet Process Insights only cracks the door open for quick insights into process performance.

SAP Signavio Process Intelligence is SAP's core process-mining application and a powerful analytics tool that enables organizations to gain actionable insights into their business processes by analyzing event logs and data from various IT systems. Leveraging advanced process mining and visualization capabilities, Signavio Process Intelligence helps organizations visualize process flows, identify bottlenecks, and optimize performance to drive operational excellence and improve business outcomes.

What can I achieve with this product?

- Visibility into real process execution
- Reduced time to insights and identification of root causes
- Improved process harmonization and compliance
- Improved collaboration across your entire organization
- A closed loop from insight to action for faster improvement.

SAP Signavio's Plug and Gain method provides a streamlined approach for quickly implementing and leveraging the process-mining capabilities of the Signavio platform, combining the benefits of both process-analytics applications for fast discovery of process insights and deep analysis of process intelligence. This method simplifies the deployment process, reduces time-to-value, and enables organizations to rapidly gain actionable insights from their business processes. With a data-driven, plug-and-gain approach, SAP Signavio solutions can provide you with a predefined starting point to kick start your transformation project based on the existing SAP ERP Central Component (SAP ECC) and SAP S/4HANA data.

This allows you to accelerate your digital transformation journey by quickly understanding how your business processes are running and determining what to keep and what to change. Once you have optimized execution, you can bring in SAP best practices to benefit from the experience of thousands of customers. The plug-and-gain approach also fosters close collaboration between your business and IT departments, shortens time-to-implementation, mitigates project risk, helps manage change, and drives adoption so you can realize the maximum potential of your organization via continuous improvement and automation.

Leveraging SAP Signavio for process-mining success

To harness the full potential of SAP Signavio for process mining, organizations must adopt a structured approach:

Defining objectives: Clearly define the goals and objectives of the process-mining initiative, including improved efficiency, enhanced compliance, and optimized customer experience.

Data collection and preparation: Gather relevant event logs from IT systems and ensure data quality and consistency.

Process discovery and analysis: Use SAP Signavio's process-mining capabilities to discover, visualize, and analyze the As-is process model, identifying bottlenecks, inefficiencies, and compliance issues.

Optimization and automation: Based on the insights derived from process mining, implement targeted improvements, optimizations, and automation initiatives to enhance process performance and efficiency.

Continuous monitoring and improvement: Continuously monitor process performance, measure the impact of implemented changes, and iterate on the process to drive continuous improvement and innovation.

Lean Six Sigma integration within SAP Signavio platform

SAP Signavio's suite of solutions provides robust support for each phase of the Lean Six Sigma DMAIC (Define, Measure, Analyze, Improve, Control) methodology, providing for continuous improvement and operational excellence.

In the **Define phase**, Lean Six Sigma tools such as Voice of Customer (VOC) and Voice of Process (VOP) are essential. SAP Signavio enhances this phase with its Journey Modeler, which maps the customer journey of understanding the VOC, and Process Manager, which documents and maps the current state of processes to capture the VOP. These tools help organizations clearly define the scope and objectives of their improvement projects.

The **Measure phase** is supported by Lean Six Sigma tools like Value Stream Management (VSM) and Process Mapping (As-is). SAP Signavio's Process Manager plays a critical role in documenting and visualizing current processes so as to identify value streams and waste. And Process Intelligence provides deep insights into process performance, helping to measure and quantify key process metrics, and establishing a solid baseline for improvement.

During the **Analyze phase**, Lean Six Sigma employs tools such as Value Analysis (VA/NVA), MUDA Analysis, Flow Analysis, Capability Analysis (Cp, Cpk), Root Cause Analysis, and Real-Time Process Control. SAP Signavio's Process Intelligence features comprehensive tools for detailed analysis, including root cause analysis and bottleneck identification via process mining. Process Insights provides advanced analytics for deeper understanding of process performance and uncovering opportunities for improvement.

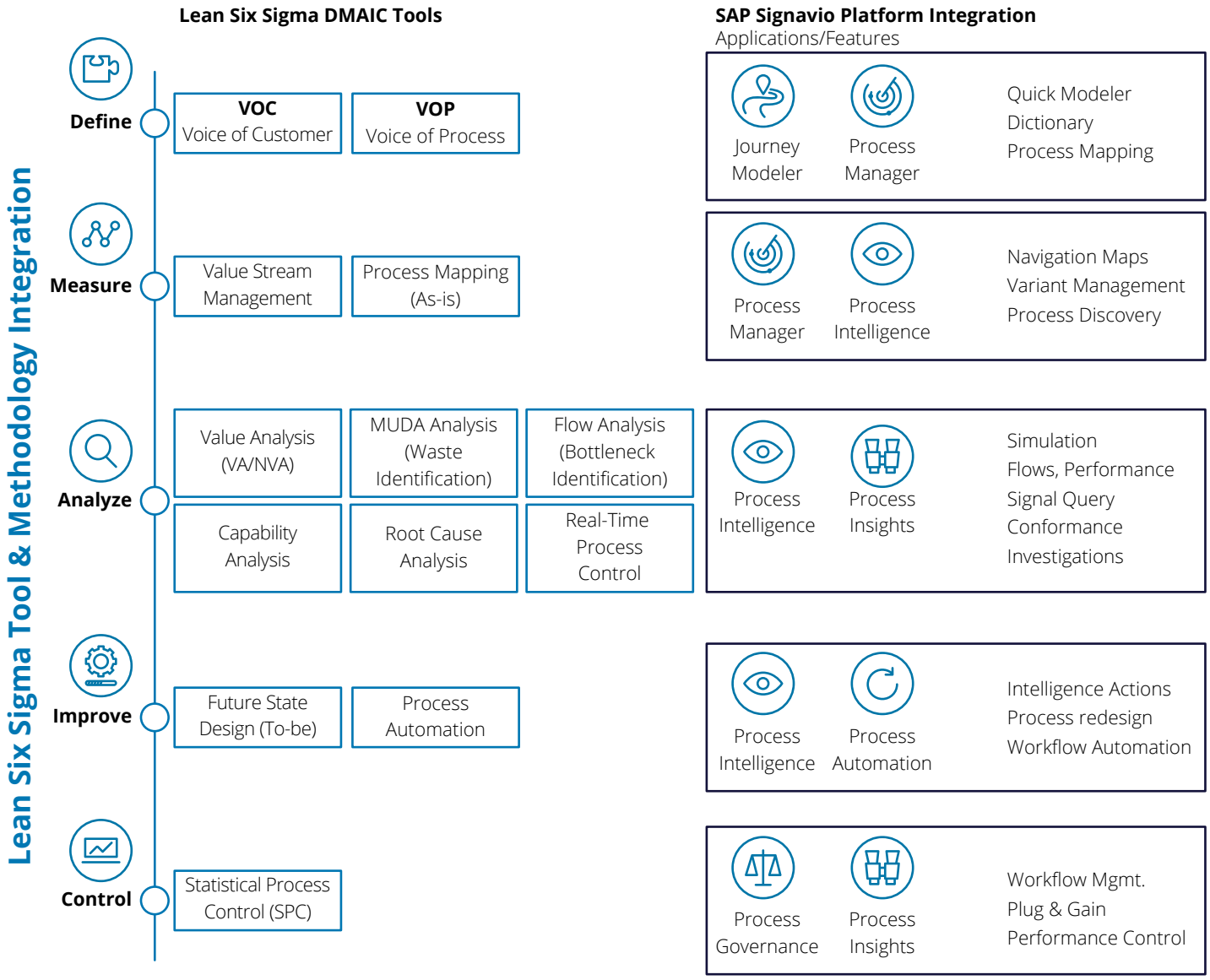
In the **Improve phase**, Lean Six Sigma focuses on future state design (To-be) and process automation. SAP Signavio's Process Manager facilitates the design of improved processes, while process automation streamlines workflows and enhances process efficiency. These features allow organizations to implement effective solutions and significantly improve processes.

The **Control phase** ensures that improvements are sustained over time using tools like Statistical Process Control (SPC). SAP Signavio supports this phase with Process Governance, which ensures compliance and governance of processes, and Process Insights, which monitors process performance and control metrics. What's more, Process Intelligence provides real-time monitoring and control of processes, ensuring that improvements are maintained and continuously optimized.

The SAP Signavio Process Collaboration Hub acts as a central platform, integrating these tools and features to foster collaboration across different teams and stakeholders throughout the DMAIC phases. This combination ensures that all relevant parties are aligned and can contribute to process improvement efforts.

The key tools and capabilities of SAP Signavio include Quick Modeler, Dictionary, and Process Mapping, which support the Define phase by enabling quick and accurate process documentation. Navigation Maps, Variant Management, and Process Discovery aid in the Measure and Analyze phases by providing detailed process insights and variant analyses. Simulation, Flows, Performance, Signal Query, and Conformance Investigations enhance the Analyze phase with robust analytical capabilities. Intelligence Actions, Process Redesign, and Workflow Automation drive the Improve phase by implementing actionable insights and automating workflows. Workflow Management, Plug & Gain, and Performance Control support the Control phase by ensuring continuous process monitoring and management. In summary, SAP Signavio's comprehensive suite of tools and features effectively supports each phase of the Lean Six Sigma DMAIC methodology, enabling organizations to systematically improve processes and achieve operational excellence.

Fig. 7 – SAP Signavio business-process-management-platform integration with Lean Six Sigma



Process Collaboration Hub

SAP Signavio

Holistic Business Process Management Focus

Case study:
SAP S/4HANA implementation with SAP Signavio

For many organizations, migrating to SAP S/4HANA is a significant step toward harmonizing operations, enhancing efficiency, and staying competitive. Deloitte is driving a global transformation project at a multinational German manufacturing company to implement SAP S/4HANA at 150+ entities. This case study explores how our client successfully executed an SAP S/4HANA transformation project, leveraging SAP Signavio for process optimization, governance, and visualization throughout the entire journey and as a basis for setting up the S/4HANA system.

The client, a leading manufacturer with operations across multiple countries and several product lines, identified the need to modernize its IT infrastructure to support growth and adapt to changing market dynamics. It decided to transition from a legacy ERP system to SAP S/4HANA in order to leverage its advanced capabilities in analytics, real-time processing, and simplified data models.

The following key challenges have been identified:
1. Complexity of legacy processes: The existing business processes were fragmented across different systems and lacked standardization, leading to inefficiencies and manual workarounds. Moreover, the process landscape did not reflect a standardized nor harmonized view of business operations.

2. Change management: Implementing a new ERP system requires significant changes in workflows, roles, and responsibilities, necessitating robust change-management strategies to ensure smooth adoption.

3. Process optimization: The company aims to not only migrate processes to S/4HANA but also to optimize them to drive efficiency and agility using a process-management application.

Our solution to building a sustainable and successful transformation:
Our client partnered with Deloitte and adopted a phased approach to the S/4HANA transformation project, leveraging the functions of SAP Signavio to manage, visualize, and optimize their business processes. The key steps included:

1. Discovery and analysis: The project team conducted a comprehensive analysis of existing processes using SAP Signavio's process-mining capabilities, and held process-owner workshops to review and create a business process master list. This gave valuable insight into process variations, bottlenecks, and areas for improvement, laying the foundation for a process redesign.

2. Process redesign: Leveraging SAP Signavio's Process Manager as the modeling tool, the team collaborated to redesign and standardize core business processes in alignment with SAP S/4HANA best practices. SAP Signavio's intuitive interface and collaboration hub facilitated quick iteration and validation of process changes, and provided one single point of truth for business processes.

3. Data migration planning: SAP Signavio's process visualization capabilities aided in mapping out data migration and variant management workflows, minimizing disruptions during the data migration and test phase.

The key results:
1. Streamlined processes: SAP S/4HANA implementation streamlined and standardized core business processes by using one global template approach with the option of regional variations due to regulations and other relevant criteria.

2. Increased efficiency: By leveraging SAP Signavio for process governance and optimization, the company achieved significant efficiency gains, reducing manual effort and streamlining cross-functional workflows (e.g., deviation and approval workflows).

3. Smooth transition: Effective change management, supported by the SAP Signavio toolchain of Process Manager, Process Governance and Collaboration Hub, ensured a smooth transition to the new ERP system, with minimal disruption to day-to-day operations.

By leveraging SAP Signavio throughout the SAP S/4HANA transformation journey, our client not only successfully migrated to a modern ERP platform but optimized its business processes, boosting its efficiency and competitiveness in a dynamic market environment. This case study underscores the importance of process optimization and visualization using SAP Signavio, a holistic solution for sustainable business transformation.

5. Outlook

The future of Lean Six Sigma with Process Mining methodology appears highly promising, driven by the increasing relevance of this synergistic approach across industries. As organizations continue to prioritize operational excellence, these methodologies are set to play a pivotal role in enabling businesses to both identify and capitalize on opportunities for process optimization in a data-driven manner.

Broadening adoption across industries: The universal drive towards operational efficiency, cost reduction, and enhanced customer satisfaction is fueling the adoption of process-mining technologies. When combined with Lean Six Sigma, this approach is poised for rapid growth, transcending industries and providing a robust framework for businesses to achieve operational excellence. The actionable insights generated by process mining will serve as a critical foundation for Lean Six Sigma initiatives and become indispensable.

Enhanced regulatory compliance and risk management: As regulatory landscapes evolve, companies will leverage process mining to ensure compliance and manage risk. This trend is expected to continue, with Lean Six Sigma providing a systematic approach to implementing improvements and controls based on the transparent process insights that process mining offers. Together, they create a powerful mechanism for maintaining process integrity and safeguarding data privacy.

Accelerating digital transformation: The journey towards digital transformation is complex, with companies seeking to automate processes, enhance the customer experience, and streamline operations. The integration of Lean Six Sigma with process mining is set to become a cornerstone of digital transformation strategies. By identifying automation opportunities and process inefficiencies, this integrated approach enables companies to execute digital transformation initiatives with greater precision and impact.

Advances in simulation and forecasting: The future will see a more pronounced use of process mining for simulation and forecasting, allowing organizations to explore the impact of potential changes in a risk-free environment. This capability, enhanced with Lean Six Sigma's systematic improvement and control mechanisms, will enable businesses to proactively address bottlenecks, anticipate future outcomes, and optimize alignment of process performance with strategic objectives.

Combining Lean Six Sigma with process mining methodology is poised to become a transformative force across all sectors, empowering organizations to navigate the complexities of today's business environment with agility and insight. This synergistic approach both aligns and accelerates the road to operational excellence, regulatory compliance, and digital transformation, marking a new era of process optimization driven by data, efficiency, and continuous improvement.

6. Summary

The whitepaper "Turbo-charging process optimization by leveraging process mining with Lean Six Sigma" examines the merging of Lean Six Sigma with process mining to drive operational excellence. It highlights the need for organizations to evolve rapidly by integrating these methodologies for a robust, data-driven approach to identifying inefficiencies and reducing variability. This synergy enhances decision-making, boosts efficiency, and improves process outcomes, ensuring continuous improvement and sustainable success.

Deloitte's innovative approach to integrating Lean Six Sigma with process mining showcases it as a model of excellence. Through a structured three-step methodology—As-is analysis, an integration framework employing Lean Six Sigma tools on process-mining platforms, and To-be state design based on analytics—Deloitte demonstrates how to generate actionable insights that lead to significant operational improvement.

The paper also discusses the strategic importance of selecting appropriate process-mining platforms and tools that complement Lean Six Sigma principles, enabling seamless integration that supports comprehensive process-performance monitoring and fosters a culture of continuous improvement. This fusion offers organizations a blueprint for enhancing operational processes with data-driven insights and systematic strategies for a competitive edge.

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