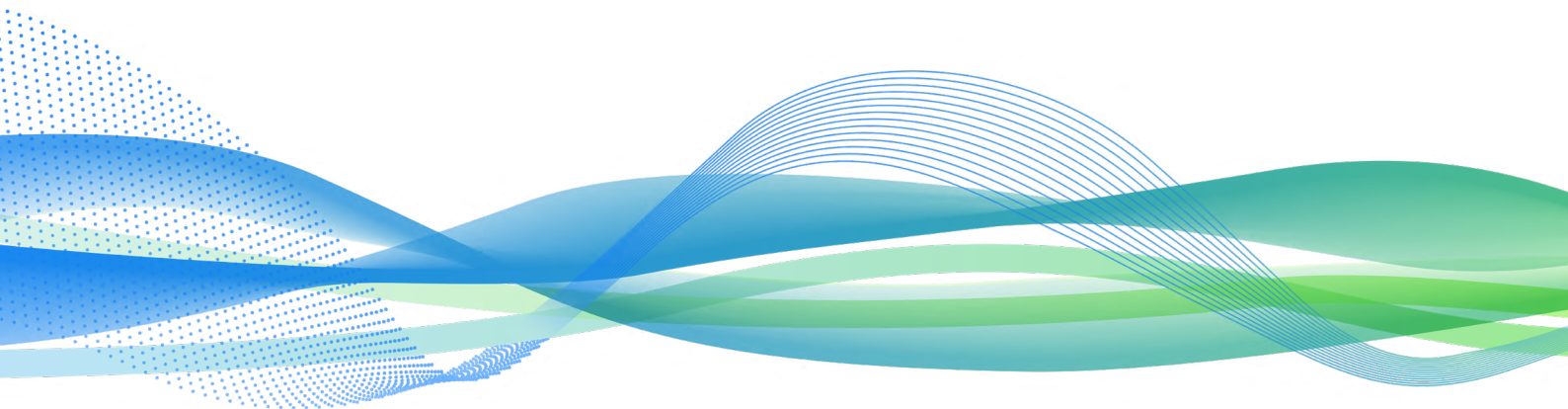




Improving lab efficiency at MVZ Ludwigsburg with **navify**[®] digital solutions for core lab



Executive summary

MVZ Ludwigsburg, a leading medical laboratory in Germany and part of the Limbach Group, has greatly improved its operations by using Roche's **navify** digital solutions. The laboratory faced several challenges, such as inefficient workflows, bottlenecks during peak periods, and a lack of transparency in turnaround times (TAT). They implemented **navify** Lab Operations, **navify** Monitoring, and **navify** Analytics for Core Lab to address these issues, streamline their processes, and make data-driven optimisations.

This integration led to measurable improvements. The time taken for emergency test results was reduced by **29%**, sample processing capacity increased by **10%**, and workload was better distributed during peak hours. The lab observed a TAT reduction of **49%** in the general test panel. Real-time monitoring allowed for quicker issue resolution, while actionable analytics supported strategic decision-making and ongoing workflow improvements.

These advancements highlight the critical role of digital solutions in addressing complex laboratory challenges, offering actionable insights and scalable efficiencies for modern diagnostic environments.

+10%

increase in sample volume capacity

-29%

reduction in TAT in the Emergency Department

-49%

reduction in TAT in the general test panel

Overcoming challenges faced by growing labs

Several common operational challenges appear across many labs, hindering both efficiency and growth.

Lacking integrated digital tools, many labs struggle with an unreliable database for decision-making, preventing them from accurately identifying and addressing inefficiencies.

There is a clear need for advanced solutions to improve efficiency, resource management, and turnaround times – challenges that resonate with laboratories striving for excellence.

1 **Peak period challenges**

Many labs often operate at full capacity during daily peak periods, resulting in bottlenecks and delayed test processing.

2 **Inefficient workflows**

Despite STAT testing being a key feature, there is a general feeling that the workflows are inefficient. However, this perception lacks data support, resulting in labs not fully realising their potential.

3 **Underutilised automation**

Many workflows in labs have the potential to be automated. Validating and addressing the underlying workflow issues is crucial to enhance automation utilisation.

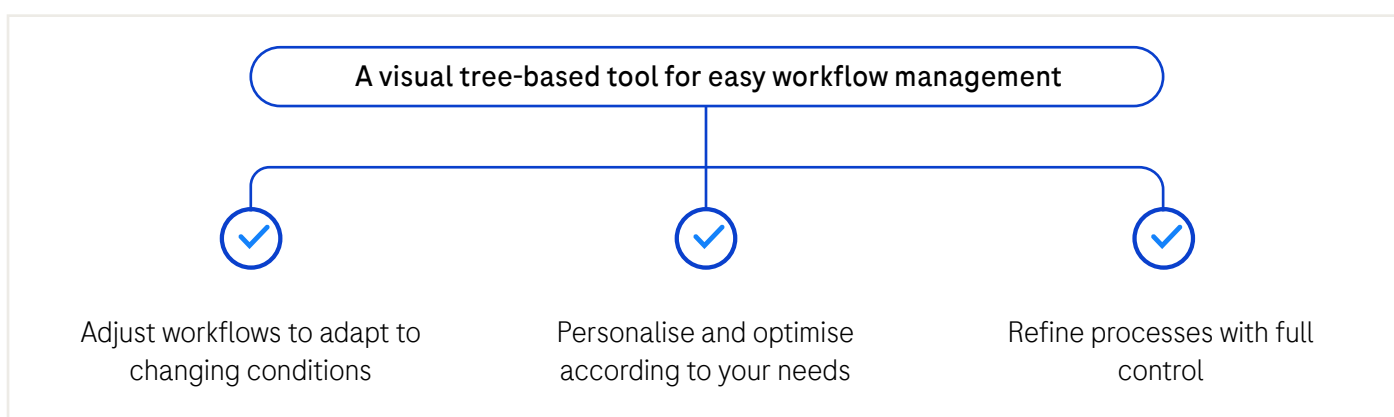
4 **Proving short turnaround times (TAT)**

Laboratories aiming to promote short turnaround times (TAT) often encounter a critical data gap in the preanalytical phase. Reliably demonstrating overall efficiency as a unique selling point necessitates tracking samples from the time of collection, not merely from lab entry. This lack of comprehensive preanalytical data makes it challenging for labs industry-wide to transparently prove their true end-to-end speed.

navify Lab Operations simplifies and improves the lab workflow

navify Lab Operations is a browser-based solution that integrates the entire sample flow, from pre- to post-analytics on a single lab software solution. It extends beyond the lab to manage ordering, sample collection, validation, reporting, and more. Like a navigation system, it optimises sample routing based on real-time insights into factors such as test menu, downtime, calibration, volume, QC issues, maintenance, and time of day.

As an advanced middleware platform, **navify** Lab Operations consolidates all lab data into a single, customizable interface, enabling laboratories to efficiently track, analyse, and respond to real-time data. This enhances productivity by reducing operational bottlenecks and empowering lab managers and personnel to proactively identify issues and implement corrective actions. The solution's auto-validation feature showcases its capability to streamline laboratory operations and boost overall efficiency.



navify Analytics for Core Lab generates actionable insights at your fingertips

navify Analytics for Core Lab enhances data management and reporting by providing greater autonomy and ensuring timely access to critical information, reducing the time and cost associated with reporting. The solution also supports precise staff management through data-driven decision-making and allows for effective monitoring of action plans. By offering lab directors and managers an easier way to track, review, and identify operational trends and challenges, **navify** Analytics for Core Lab increases visibility and guides decision-making toward optimising operations, customer delivery, and overall lab performance.

This solution addresses the unique and complex challenges in the insight generation phase by combining advanced analytics with user-friendly interfaces, transforming cumbersome raw data into meaningful, actionable insights that enable healthcare providers to make swift, informed decisions. The solution's dashboards offer key metrics such as auto-validation statistics, re-run analysis, custom dashboards, volume analytics, outlier reviews, TAT analytics, test and workload analysis, instrument utilisation, and multi-site comparison and analytics, making it a comprehensive tool for managing lab operations.

navify Monitoring improves operational efficiency of labs

navify Monitoring is a browser-based, on-premise solution designed to improve operational effectiveness through real-time monitoring of Key Performance Indicators (KPIs), events, and alerts within the lab. The solution provides centralised notifications of connectivity issues, instrument downtime, and Lab Information Systems/Hospital Information Systems order interruptions to avoid delays.

With tools to monitor individual or end-to-end processes, track sample loads, and visualise lab productivity at a glance, it supports early warnings of operational issues and balances instrument workloads. This empowers labs to quickly validate samples, identify out of range results, and maintain optimal functionality for critical processes.

Case study: How navify digital solutions unlocked innovation and efficiency for the lab in MVZ Ludwigsburg

MVZ Ludwigsburg is a medical laboratory based in Ludwigsburg, Germany. It is part of the Limbach Group, Germany's largest private network of laboratories. Renowned for its excellence in diagnostic services, the Limbach Group prioritises delivering rapid, accurate results to clients.

Initially established as an owner-managed laboratory, MVZ Ludwigsburg has become a pivotal hub within the Limbach Group, leveraging shared expertise and advanced resources. Its strategic location in Ludwigsburg ensures efficient service to the surrounding area, minimizing sample transport times and enabling faster turnaround of diagnostic reports.

Equipped with cutting-edge technology and supported by a team of approximately **150 skilled professionals**, MVZ Ludwigsburg conducts about **5,000 tests daily** and can perform up to **100,000 analyses during peak periods**. MVZ's comprehensive diagnostic portfolio includes clinical chemistry, infectious serology, allergy diagnostics, haematology, infection diagnostics, molecular diagnostics, and coagulation analytics.



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5,000 tests daily



100,000 analyses during peak periods

Improved workflow and efficiency: integrating navify solutions

By implementing **navify** solutions, MVZ Ludwigsburg achieved full **transparency** across its operations, gaining **critical insights into peak times, system utilisation, and TAT** through **navify** Analytics for Core Lab. These data-driven insights uncovered inefficiencies and bottlenecks, offering a clear roadmap for improvement. For example, workload distribution has been optimised by measuring glucose from sodium fluoride tubes before orders are even received, improving operational workflows through **navify** Lab Operations.

navify Monitoring was added because the lab experienced a critical situation: on a single day, a key parameter was masked on one module and unavailable on another. By the end of the day and the shift, many samples with that parameter were still open. This type of issue is now prevented by **real-time monitoring**, which provides **peace of mind** by flagging anomalies much earlier. Real-time oversight provided by **navify** Monitoring ensures that short-term, acute issues

are addressed promptly. Previously, instances of important samples remaining pending at the end of the day went unnoticed until after work hours.

An issue is now resolved, as **navify** Monitoring detects and flags these situations earlier. For long-term strategic planning, **navify** Analytics for Core Lab delivers valuable insights into major trends and systemic inefficiencies, guiding continuous workflow refinements enabled by **navify** Lab Operations.

This holistic approach fosters an ongoing improvement cycle, balancing immediate responsiveness with proactive optimisation. The combination of **navify** Analytics for Core Lab, **navify** Monitoring, and **navify** Lab Operations enhanced operational efficiency and elevated overall performance. The following use cases illustrate the transformative impact of this integrated solution suite.



"We now can rule over our data and continuously track where we stand. We are no longer stuck in a black box."

"navify Monitoring gives us real-time visibility into samples, enabling faster error detection and immediate action. Since implementation, turnaround times for critical tests like troponin have improved significantly, helping us prevent delays and prioritise urgent analyses."

Dr. Stührwohldt

Technical Laboratory Manager, MVZ Ludwigsburg

Automation of key processes

navify Lab Operations excels at automating specific tests, exemplified by the automated measurement of glucose concentration. This process eliminates the need for prior order entry, thus reducing manual intervention and accelerating workflow. The system’s ability to recognise the sodium fluoride tubes and automatically measure glucose levels streamlines tasks and minimises human error.

Enhanced peak load management

An integrated approach ensures efficient processing during peak hours. **navify** Lab Operations distributes the workload by automating tests like glucose measurements outside busy periods (2pm to 8pm), creating capacity during critical times. This strategic load management enables the lab to handle peak periods without compromising on the timely processing of essential tests.

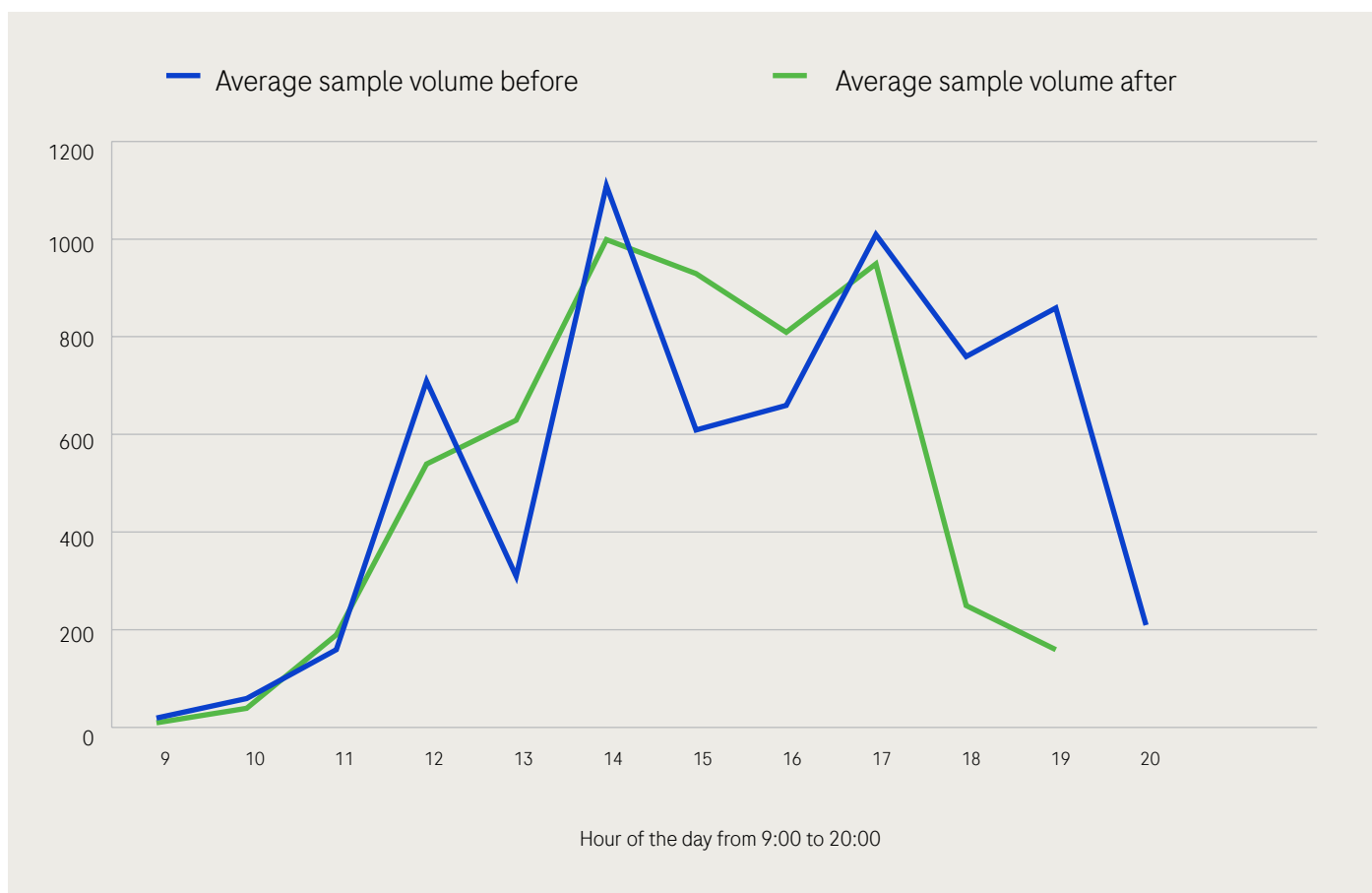


Fig 1. Test sample distribution before **navify** Lab Operations (blue) and after (green). This allowed the sample testing to finish 1 hour before (19:00 instead of 20:00).



“The systematic analysis of the performance of our automation enables us to increase our profitability, pursue strategic goals effectively, provide our senders with laboratory analyses of the highest quality and with rapid results, and thus contribute to the best possible patient care. This allows us to sustainably strengthen our market position.”

Dr. Frick
Managing Director, MVZ Ludwigsburg

Increased sample processing capacity

Actionable insights derived from **navify** Analytics for Core Lab have led to a **10% increase** in sample volume capacity, achieved without additional infrastructure investments. A key contributor to this gain was the operational restructuring of the sample workflow—specifically, the separation of STAT and routine testing—which reduced congestion on the automation system and improved overall throughput. In parallel, the sodium fluoride tube process was optimized: instead of awaiting order arrival, sodium fluoride samples are now sent directly to the automation line for immediate glucose testing, with orders matched afterward. This adjustment alleviated previous backlogs caused by order delays and further improved turnaround time. By combining advanced data capabilities with staff expertise, **navify** Analytics for Core Lab enables targeted interventions that drive measurable improvements, reinforcing its value as a comprehensive digital solution.

Data-driven decision-making and improved analytical insights

Before adopting **navify** Analytics for Core Lab, manual data extraction and analysis were laborious and error-prone. With the adoption of this platform, the lab now has access to real-time and retrospective data, providing a comprehensive overview of performance metrics. This enhanced capability facilitates informed, data-driven decision-making, identifying workflow bottlenecks and enabling continuous process optimisation.



10%

increase in sample volume capacity

“First, clinical chemistry was suddenly finished an hour earlier, with the same sample volume. Secondly, the turnaround time for all parameters was almost cut in half. Even the urgent parameters had their turnaround time halved.”

Dr. Stührwohldt

Technical Laboratory Manager, MVZ Ludwigsburg



Shorter turnaround times

Analysis conducted through **navify** Analytics for Core Lab showed that eliminating special urgent routing led to a linear progression of analyses, reducing clinical chemistry turnaround times by up to **1.5 hours on peak days**.

Overall, parameter turnaround times were nearly halved, significantly improving the lab's efficiency and reliability in delivering urgent results.

The detailed analysis showcased remarkable improvements in targeted areas. Specifically, TAT in the emergency department were reduced from **52 minutes to just 37 minutes**, reflecting a substantial enhancement in timely care delivery. Additionally, the general test panel experienced a dramatic reduction in TAT, **dropping from 37 minutes to an impressive 19 minutes**. These outcomes, highlighted in the accompanying graphs, underscore the transformative impact of **navify** Analytics on laboratory operations, optimising efficiency and ensuring swift and reliable test results.

1.5h

Reducing clinical chemistry turnaround times

-29%

reduction in TAT in the Emergency Department

-49%

reduction in TAT in the general test panel

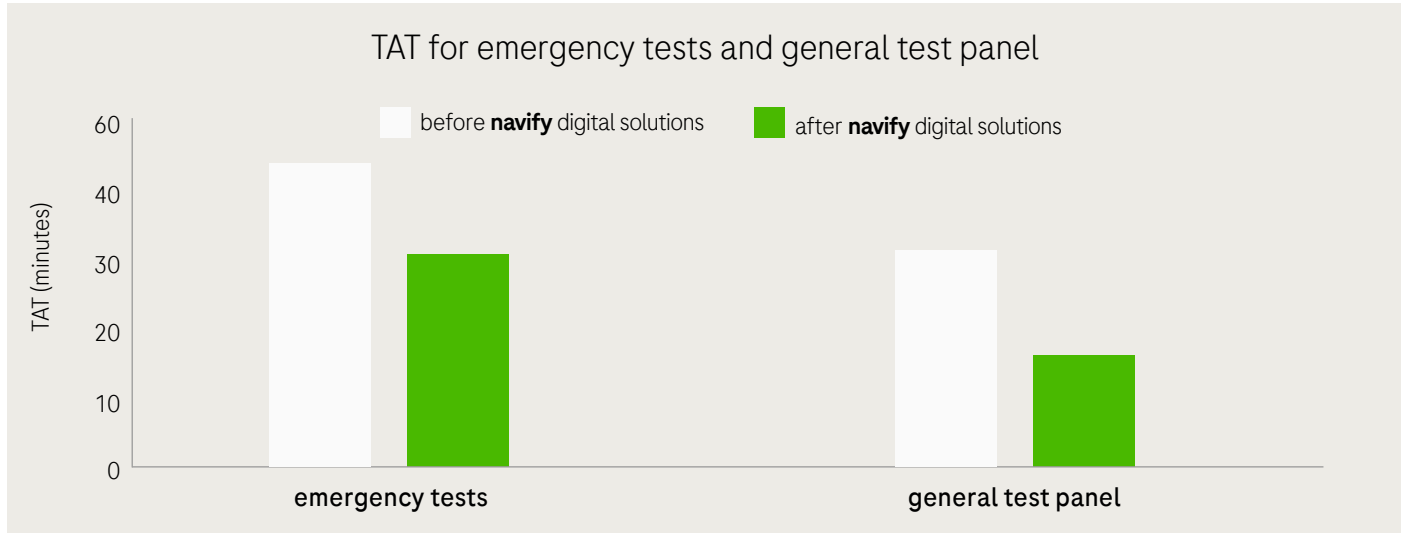


Figure 3: TAT in emergency tests (CRP, CK, Digitoxin, Digoxin, Procalcitonin, and Troponin T) and general tests before and after implementing **navify** solutions

*“We stood in front of our CCM (cobas connection modules) and tried to understand how to enhance the way our lab functions. Thanks to **navify** Analytics for Core Lab, we were able to identify certain features to improve our workflow, resulting in better turnaround times and more free capacity.”*

Dr. Stührwohldt

Technical Laboratory Manager, MVZ Ludwigsburg

Operational optimisation and capacity enhancement

Continuous improvement and resource optimisation

navify Lab Operations provides a comprehensive suite of tools for continuous monitoring and optimisation of laboratory processes. Enhancing scheduling and workload distribution ensures efficient resource allocation, leading to a streamlined and effective workflow.

Data-driven response to issues

The data from navify Analytics for Core Lab empowers the lab to detect emerging issues promptly and address them swiftly. This response capability is critical for maintaining high standards of accuracy and reliability, supporting the lab in delivering exceptional service.



Integrating navify Lab Operations and navify Analytics brought significant benefits to MVZ Ludwigsburg.

The lab has improved efficiency, reduced turnaround times, enhanced capacity, and robust real-time problem-solving capabilities by automating routine processes, optimising workload, and leveraging comprehensive data analysis. These solutions highlight a clear path to enhanced operational effectiveness and strategic growth in laboratory environments.



Improved efficiency



Real time problem-solving



Optimizing workload

Disclaimer: Individual lab results may vary, and testimonials are not claimed to represent typical results. All testimonials are real participants, and may not reflect the typical purchaser's experience, and are not intended to represent or guarantee that anyone will achieve the same or similar results.

References

1. Limbachgruppe [Internet; cited 2025 Apr 15].
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