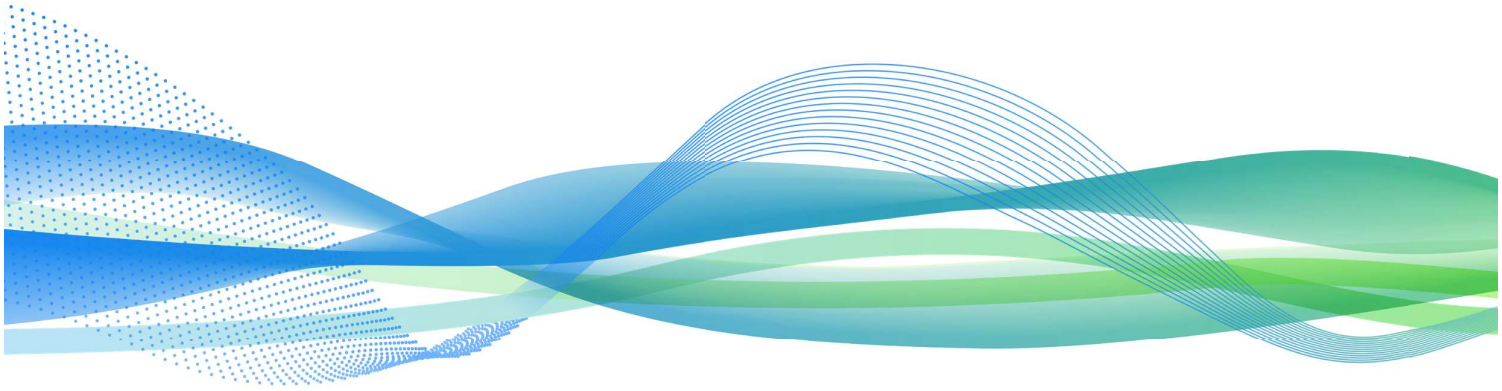
Improving lab efficiency at Clinique Saint-Luc Bouge, Belgium, with **navify**® digital solutions for core lab



Executive summary

As diagnostic labs face increasing demands for rapid, accurate, and efficient data analysis, adopting advanced digital solutions is becoming essential. This need is especially critical when upgrading or transitioning to new analytical systems, where precise tracking and analysis are vital. Clinique Saint-Luc Bouge (SLBO) in Namur, Belgium, serves as a prime example of how **navify** digital solutions - **navify** Lab Operations, **navify** Analytics for Core Lab and **navify** Monitoring - can unlock innovation and efficiency for lab operations.

Digital solutions from **navify** enhanced SLBO lab's digital ecosystem, enabling in-depth analysis of key tests and identifying opportunities to optimize processes, for instance around auto-validation (e.g. for hs-cTnT), increasing it from zero to 53% in just three months and increasing it to 61% in the following months thanks to further adjustments. This transformation improved overall productivity, service levels, and reduced the total turnaround time for selected tests by 16-30%. As a result, healthcare professionals (HCPs) gained faster access to crucial diagnostic information, enabling them to make timely, well-informed medical decisions.

- Actionable insights all year round
- Overall turnaround times **reduced by 16-30%** for selected tests
- Reduction of high-sensitivity cardiac Troponin T (hs-cTnT) turnaround time outlier by over **50%**
- Introduced and optimized the auto-validation for hs-cTnT to **61%**

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Managing diagnostic labs in a digital world

In today's diagnostic labs, there is continuous pressure to produce results quickly and accurately, all the while managing resource constraints. On top of this, labs face the challenge of managing secure, interconnected systems to ensure streamlined workflows and data protection in an increasingly digital environment. Improving efficiency has become essential, as labs are expected to process more tests with fewer staff, placing pressure on both equipment and personnel. Service levels and turnaround times are critical aspects, as healthcare providers rely on rapid, reliable results to make timely decisions for patient care.

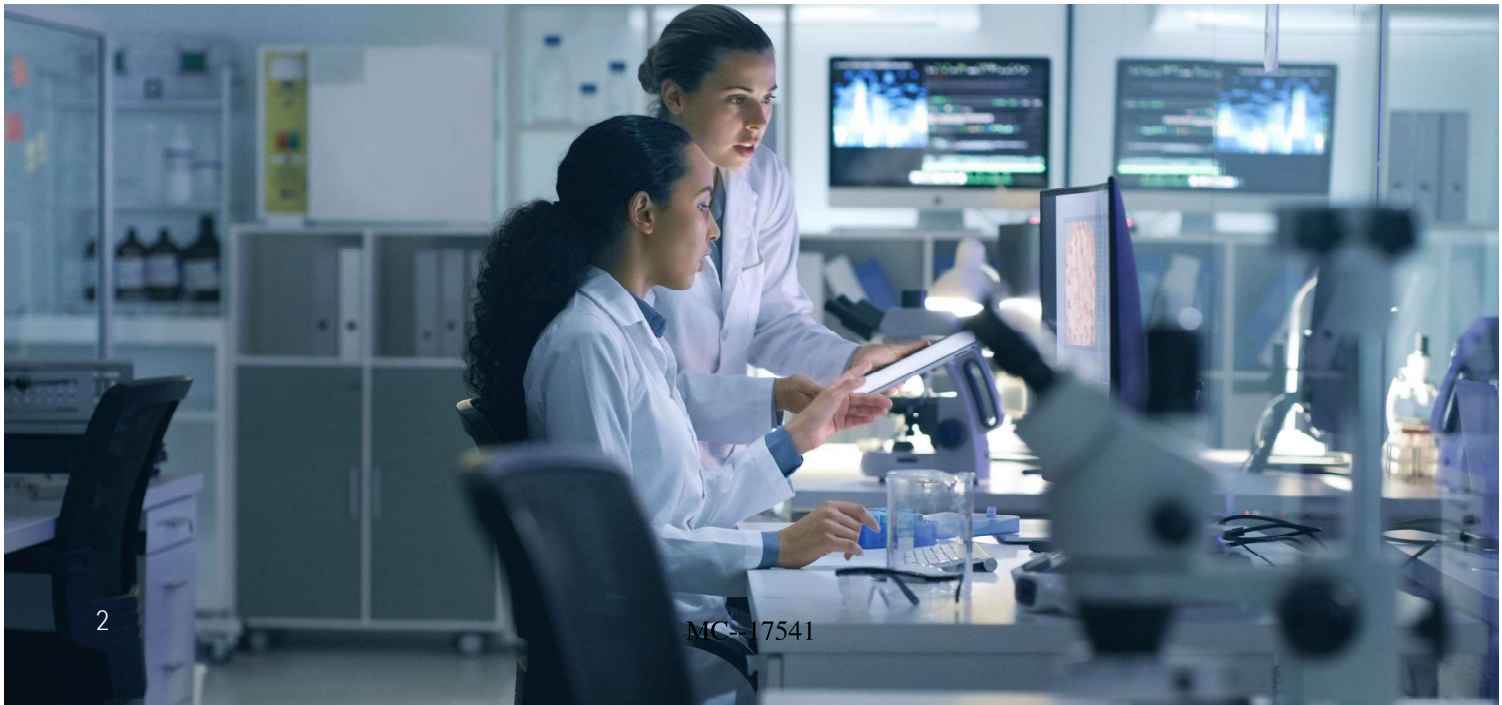
Challenges faced by diagnostic labs

1. How can I manage a secure and more connected lab?
2. How can I be more efficient and run more tests with fewer staff?
3. How can I improve service levels and turnaround times?
4. How can I differentiate from competitors and impact patient care?

Enhanced efficiency and data management for healthcare providers

navify digital solutions optimize lab operations by seamlessly integrating data and providing comprehensive control from sample collection to retrospective reporting. These solutions simplify laboratory processes and workflows, enabling both real-time performance monitoring and retrospective actionable insights. **navify** digital solutions allow lab staff to leverage actionable insights by analyzing operational data and uncovering correlations through multiple dashboards, enabling them to drive targeted improvements. These insights, empower labs to take more informed decisions and manage effectively the lab operations.

By unlocking the full potential of their data, labs can enhance performance at every stage. In comparison to previous practices, digital solutions from **navify** enable tracking, review and analysis of lab trends to proactively identify and course-correct issues to optimize lab performance. These advancements allow labs to maintain operational efficiency and meet the evolving demands of modern diagnostics with greater precision and productivity.



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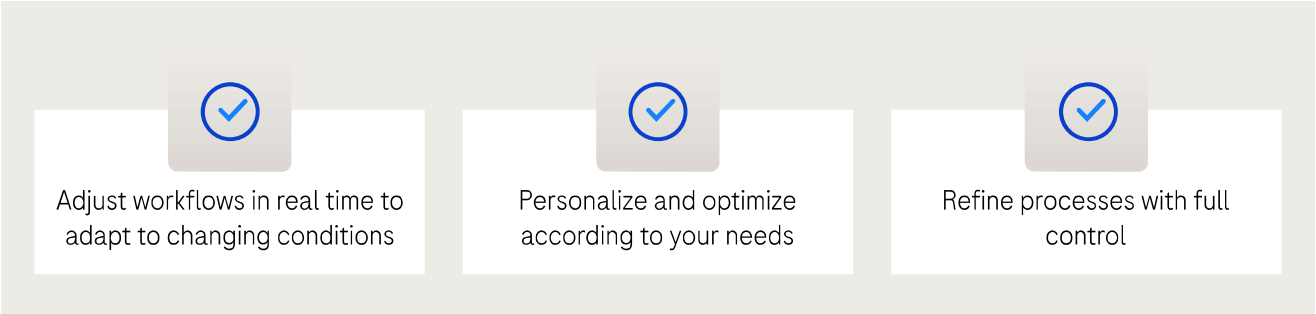
navify Lab Operations can simplify and improve the lab workflow

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 Global Positioning System (GPS), it optimizes 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, analyze, 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 can enhance 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 increases visibility and guides decision-making toward optimizing 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 utilization, and multi-site comparison and analytics, making it a comprehensive tool for managing lab operations.

navify Monitoring is designed to potentially improve operational effectiveness

navify Monitoring is a browser-based, on-premise solution designed to improve operational effectiveness through real-time monitoring of KPIs, events, and alerts within the lab. The solution provides centralized 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 visualize lab productivity at a glance, it supports early warnings of operational issues and balances instrument workloads. This empowers labs to quickly validate samples, identify critical results, and maintain optimal functionality for critical processes.

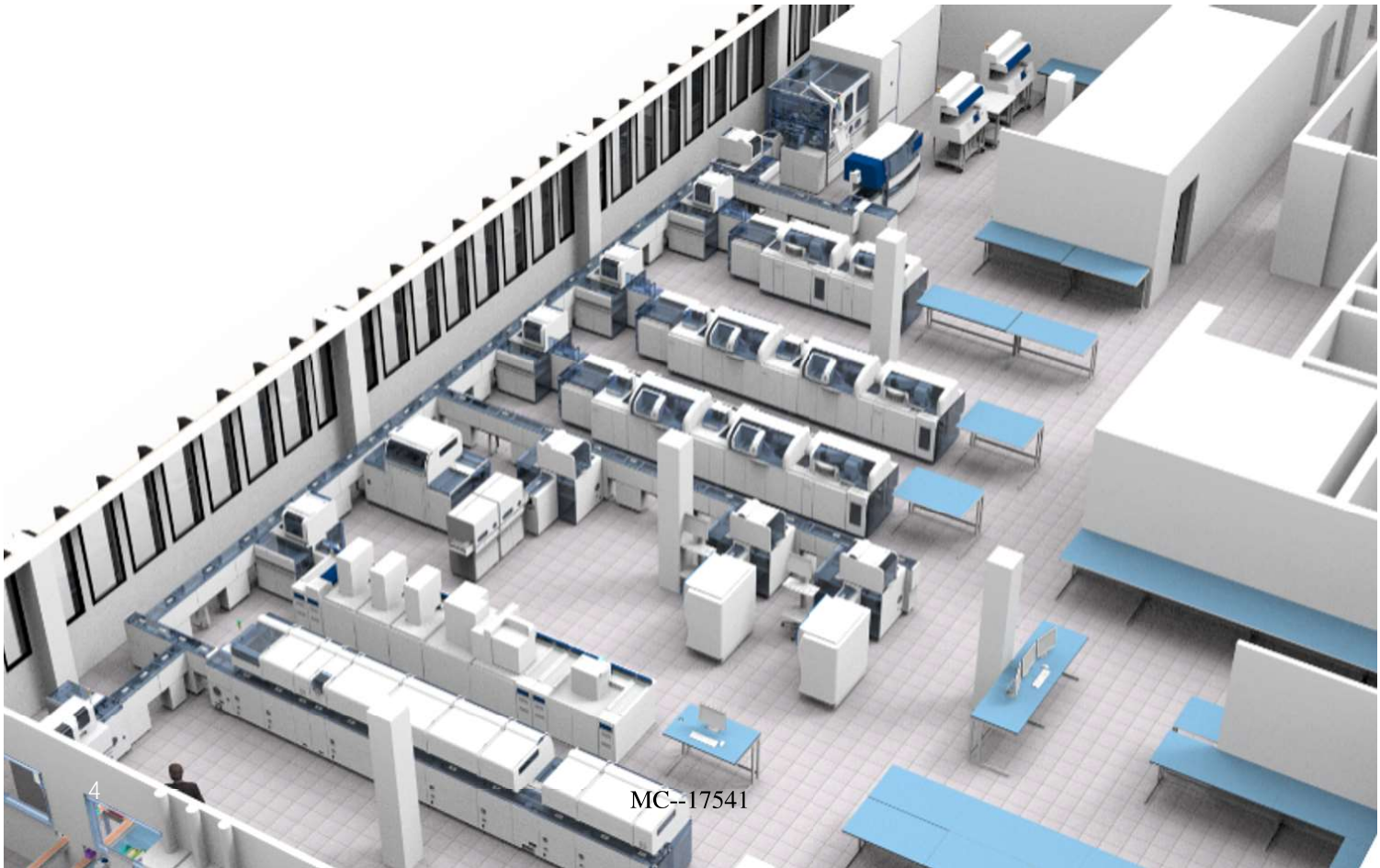
Case study: How **navify** digital solutions unlocked innovation and efficiency for the lab in Clinique Saint-Luc Bouge (SLBO, Belgium)

The clinical laboratory at Clinique Saint-Luc Bouge (SLBO) in Namur, Belgium, handles over five million analyses annually, with approximately 60% of these tests coming from ambulatory medicine. SLBO takes pride in the seamless transition to the new lab, which adhered closely to the tender plans, ensuring no disruption for senders. Over recent years, the lab has also successfully developed services for external providers without compromising efficiency or quality.

Innovative institutions such as SLBO are dedicated to scientific and technological advancement, adopting new methodologies and state-of-the-art equipment to address the increasing demand for qualitative and quantitative diagnostics.

To meet this demand and maintain high standards for internal and external customers, SLBO recently implemented several solutions from the **navify** portfolio - in April 2023, SLBO implemented **navify** Lab Operations and **navify** Monitoring, followed shortly afterwards by the implementation of **navify** Analytics in July 2023.

- 302 beds
- ISO 15189:2022 certification for molecular lab
- 3,500 samples processed daily



Actionable insights: Increasing efficiency with advanced lab performance tracking

Before adopting **navify** Analytics for Core Lab, lab performance tracking relied on manual data extraction and analysis, using tools like Microsoft Excel and internal quality management systems. This process was slow, prone to human error, and diverted staff from more critical tasks. Manual retrieval of turnaround time (TAT) data from the laboratory information system (LIS) was particularly time consuming, involving over 1.7 million data points and limited by Excel's capabilities of maximum around 1.0 million lines.

With **navify** Analytics, this process became automated, allowing for real-time, accurate data analysis and significantly improving operational efficiency. According to ISO 15189:2022 (point 7.6.3), laboratories are required to verify that software is fit for its intended use, and **navify** Analytics has proven to be a reliable tool for streamlining lab data analysis and operational decision making. This streamlined system enables labs to track performance effortlessly, reduce human error, and optimize resource allocation, ensuring a smoother, more efficient workflow.

A comparison of overall TAT was made between manual data extraction and **navify** Analytics for four different measures: hs-cTnT, thyroid-stimulating hormone (TSH), sodium, and potassium. This revealed a mean bias of less than five minutes, likely due to the high workload and risk of error associated with manual extraction (Figure1). It demonstrates that the data displayed on the platform accurately reflects laboratory performance, supporting informed, real-time decision-making.

Moreover, as actionable insights are now so quickly available, the number of them grew almost exponentially compared to the previous setting where data analysis was performed manually. As shown in Figure 2, SLBO now has instant access to an incredible amount of actionable insights.

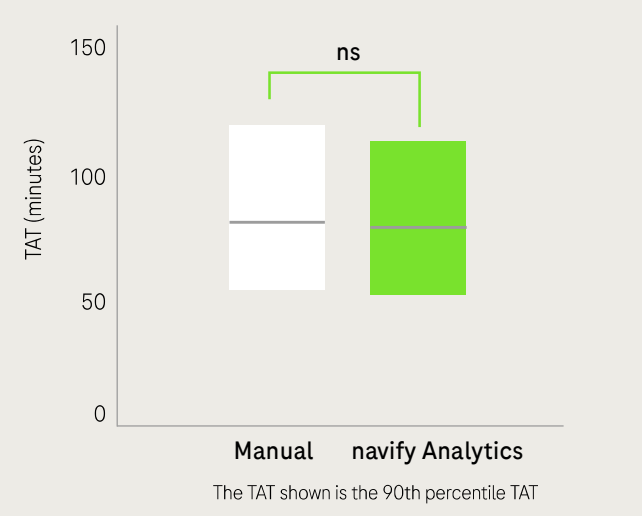


Figure 1. Distribution of 90th percentile TAT according to manual or automatic (with **navify** Analytics) data extraction. The grey line corresponds to the median of distribution. This graph demonstrates that the data displayed on **navify** Analytics accurately reflects laboratory performance (manual data extraction), supporting informed, real-time decision-making. (ns: non statistically significant)

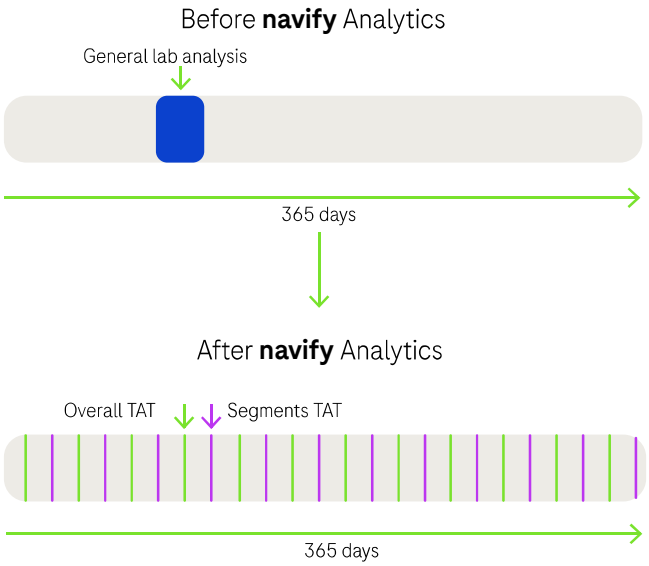


Figure 2. Number and frequency of analytical reports with actionable insights generated annually before and after **navify** Analytics. The thickness of each line reflects relative length of time and effort to generate these actionable lab insights.

"The use of such software is essential for the correct and efficient measurement of all the processes in a laboratory. In the era of big data, it has become nearly impossible to keep updated with manual extraction, especially when we know that Excel has a quantitative limitation after around 1,000,000 lines."

Julien Favresse
Specialist in Laboratory Medicine (EuSpLM) at Clinique Saint-Luc Bouge

TAT improvement: Enhancing TAT for essential lab tests

The combined power of **navify** Lab Operations, and the actionable insights from **navify** Analytics and **navify** Monitoring enabled lab staff to identify additional areas for improvement. Efforts were directed toward increasing the auto-validation rate for other tests, hs-cTnT, TSH, sodium and potassium. This, along with the rest of the adjustments in the lab, had a positive impact on the TAT for all four tests, as illustrated in Fig.3.

SLBO uses **navify** Monitoring on a daily basis to monitor in real time any problems related to the ongoing workflow. When they discover a failure on **navify** Monitoring dashboards, they can take action right away, and they will usually analyze reports with **navify** Analytics the day(s) after to make sure the global TAT was met on the day the problem occurred.

Overall, these enhancements varied slightly between tests but contributed to a TAT improvement of 16-30% (Fig. 3).

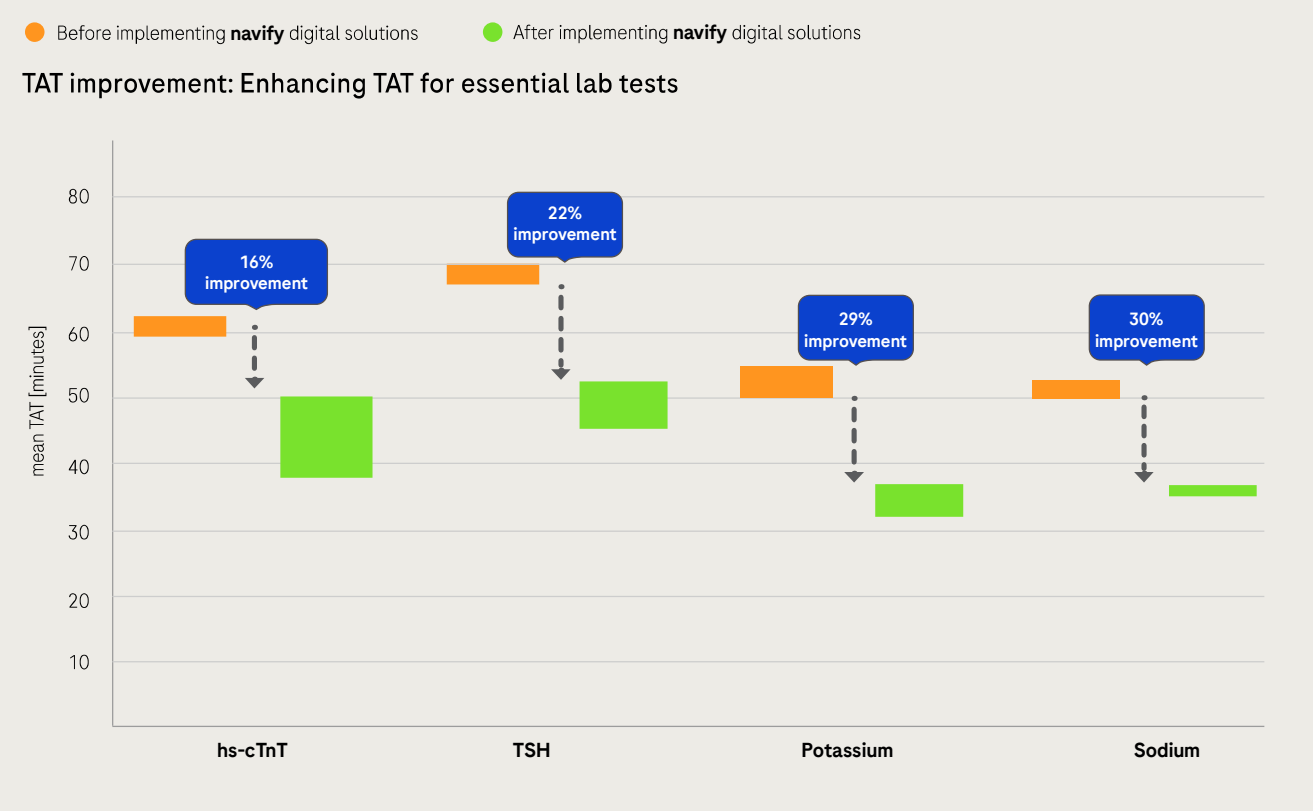


Figure 3. Average TAT per test before and after **navify** digital solutions. The "before" values were measured from September 2022 to February 2023 and the "after" values were measured from September 2023 to February 2024, in order to normalize potential seasonality workloads and allow sufficient implementation times.

From the moment it was implemented, **navify** Analytics provided immediate visibility into the key drivers of TAT outliers for troponin testing. By pinpointing specific operational bottlenecks and deviations from target turnaround times (60 and 90 minutes), the laboratory team was able to take prompt corrective action. As a result, outlier rates were reduced by 54% for the 60-minute threshold and by 66% for the 90-minute threshold (Figure 4).

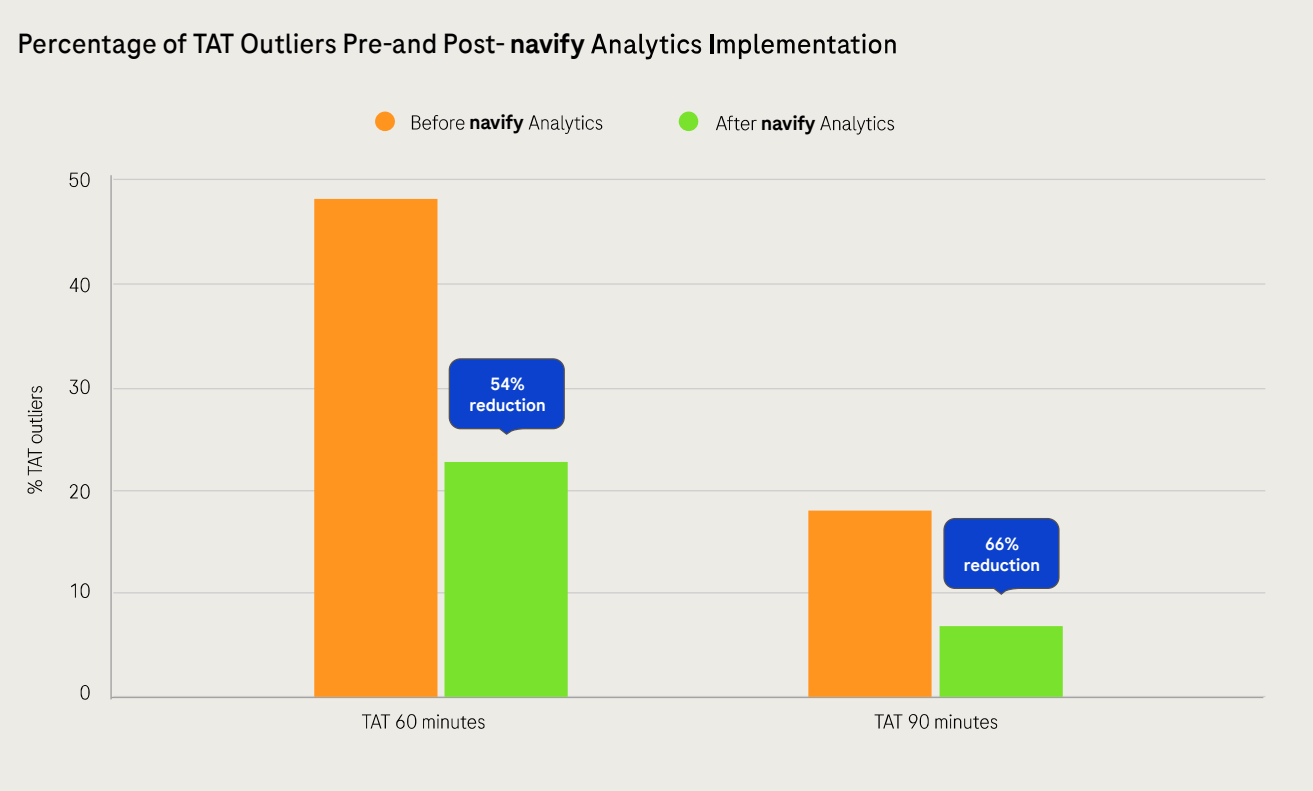


Figure 4. hs-cTnT TAT outliers % at 60-minute and 90-minute TAT threshold. TAT is measured from the time of order of tests to the results being reflected in the LIS.

Streamlining auto-validation to enable TAT improvement

Auto-validation plays a pivotal role in modern laboratory operations by ensuring that test results meet predefined quality standards before they are released without manual intervention. The automation of validation processes like these helps ensure the integrity of laboratory data.

The implementation of **navify** digital solutions, leveraging auto-verification and configurable parameters, has greatly enhanced SLBO's ability to automatically validate sample results. This shift has significantly reduced the need for manual sample review, allowing staff to focus on more critical tasks, thereby optimizing workflow and increasing productivity.

The implementation of **navify** Lab Operations has enabled SLBO to optimize the auto-validation by applying configurable rules based on lab protocols, clinical guidelines, and patient-specific data. These rules typically include criteria such as reference ranges, delta checks, instrument flags, and critical value thresholds.

Results that meet these validation rules are automatically approved and released, while abnormal or inconclusive results are flagged for further manual review. This automated approach reduces both turnaround time (TAT) and the potential for human error, ensuring consistent quality control and accelerating decision making within the lab.

As shown in Figure 5, **navify** Lab Operations enabled lab staff to increase the percentage of auto-validated hs-cTnT samples. Following the implementation of **navify** Analytics in July 2023, the lab leveraged retrospective analysis to further enhance the auto-validation rate of these samples by an additional 12%. Ultimately, by adjusting the auto-validation threshold, **61%** of all test results of the lab were since auto-validated, significantly boosting efficiency and speed (Figure 5).

The measurable impact on key processes, such as reduced TAT for essential tests like hs-cTnT assays, demonstrates the substantial operational benefits that **navify** Lab Operations and **navify** Analytics bring to modern laboratories.

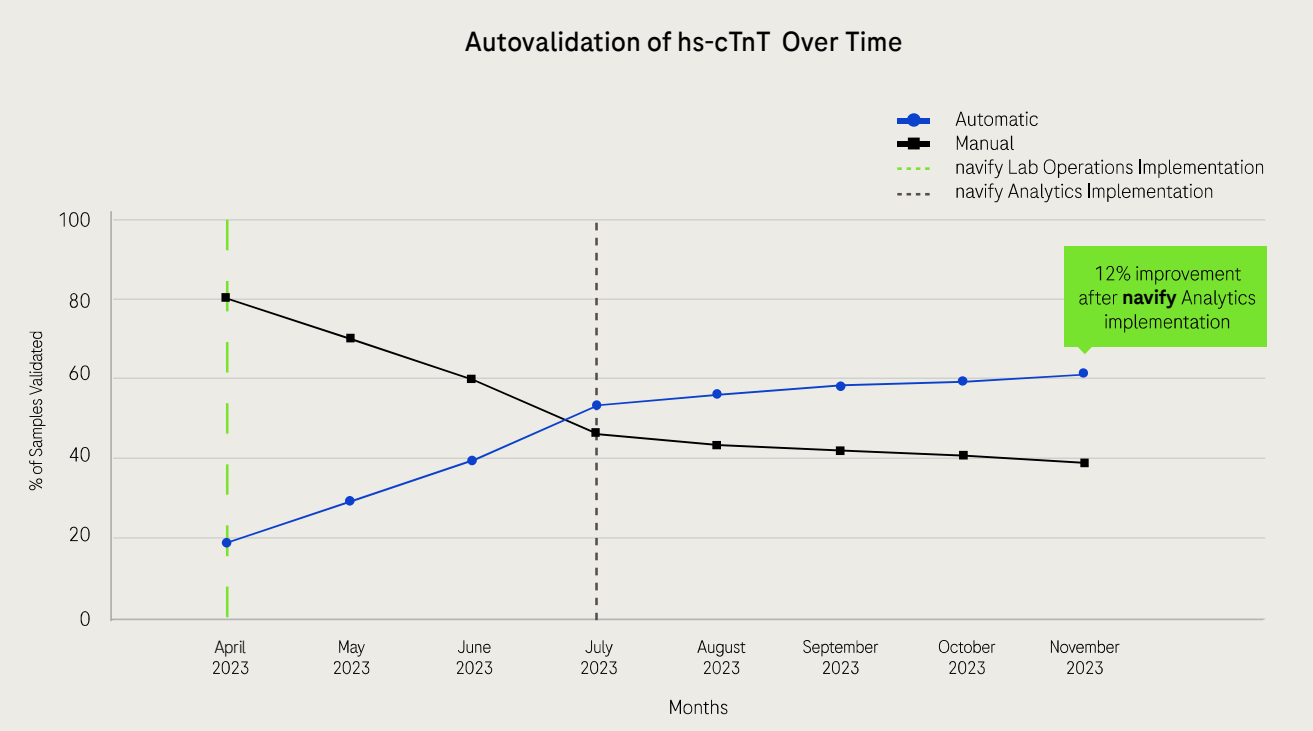


Figure 5. Increase in auto-validation of high-sensitivity Troponin T (hs-cTnT). A 12% relative improvement was observed over four months after the implementation of **navify** Analytics.

Navigating change: transformation through digital solutions in lab workflows

This case study highlights the significant impact of various digital solutions – **navify** Lab Operations, **navify** Analytics and **navify** Monitoring – on lab performance. The integration of these solutions at SLBO has not only substantially increased auto-validation rates for hs-cTnT to **61%**, but also significantly improved overall turnaround time (TAT) for a variety of tests, with reductions ranging from **16%** to **30%**. These enhancements are largely driven by the platforms' ability to generate actionable insights that streamline laboratory workflows and optimize operational decision-making. As a result, the lab achieved faster test results while maintaining high standards. While we've observed remarkable advancements, this marks just the beginning of ongoing efforts to further elevate lab efficiency and effectiveness. These solutions continue to demonstrate their crucial role in shaping future laboratory operations, ensuring that labs can meet the increasing demands of modern healthcare environments.

navify® digital solutions for core lab

Generate actionable insights

Increase lab efficiency by reducing the TAT of a number of different tests

Increase the auto-validation and operational efficiency

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.