

Leading U.S. clinical laboratory adopts IoT platform to accelerate **efficiency** and **speed** to market

HCLTech helped guide the transformation from manual
operations to instrument digitalization

A leading U.S. diagnostics company with a vast network of labs and thousands of instruments found it challenging to monitor the operational health of its onsite labs. With over 150 instrument types, 40,000 devices and 2,500 PCs, the company required enterprise-wide, real-time visibility into tools and digital assets.

The client chose HCLTech as their partner due to its deep understanding of commercial labs and proven 14-year performance implementing cutting-edge solutions for the company.

Knowing the client's needs, HCLTech suggested implementing the CARE (Connected Assets in Regulated Environment) platform. HCLTech designed and developed CARE on Microsoft Azure with security best practices and standards with unique customizations for the client. To accomplish tangible, sustainable, and accelerated outcomes, it connected all medical devices to a centralized IoT platform, monitored lab instruments and extracted telemetry data to build their minimum viable product (MVP). The client also required up-to-date analytics built on elementary historical data to predict machine downtimes.

Challenge:

Difficulty integrating lab instruments under a single platform

The client faced complex and interconnected challenges: high downtimes, rising operational expenses and no precise requirements from the end users. This hindered feedback collection and lengthened the go-to-market time for new lab services and tests. These challenges impacted the company's business outcomes and overall productivity.

Some of these challenges were:

Growing maintenance costs: The client had difficulty ascertaining onsite lab instruments' health and lifecycle maturity. They struggled with inadequate instrument monitoring, sub-par tracking of the number of reagents that machines consume, the pace of consumption and a lack of real-time monitoring of leading indicators to establish patterns and predict machine downtimes. If one engine went down, it affected all subsequent operations in the client's interconnected ecosystem

Lengthy instrument onboarding: All aspects of business functionality, from device onboarding to gateway connectivity, application readiness and advanced computing were heavily impacted by lengthy timeframes for onboarding, implementing, and integrating new machines

Reduced workforce efficiency: Some tasks on the lab floor were manual and there was a need for dedicated resources that surveyed facilities and collected machine data, leading to an additional workforce and reduced efficiency

Impaired remote servicing of instruments: The command center had difficulty servicing equipment when it was not connected to an IoT platform. Specialist engineers had to travel to facilities for repairs and upkeep



Objective:

Scalable IoT model for seamless instrument connectivity

The client needed all assets to be reconnected to a centralized IoT platform that extracts telemetry data for two primary purposes:

- Real-time monitoring of devices and running analytics on telemetry data
- A digital instrument platform that integrated 40,000 instruments across all their facilities



Solution:

HCLTech CARE platform for instrument digitalization

The HCLTech CARE microservices platform and integrated solution stack collects data from a wide range of lab instruments, enabling the client to meet their instrument digitalization objectives at an optimal cost and accelerated pace. HCLTech collaborated with the client to

increase efficiency across labs, streamline inventory management with supervisory control and data acquisition (SCADA) and reduce manual processes. This included instrument onboarding and measuring office management enterprise (OMEs) through

SLA-driven higher instrument uptime. HCLTech conducted multiple walkthroughs and roadshows to bring stakeholders, including architect planners, laboratory personnel, bio-med engineers, and security teams up-to-speed.

Subsequently, HCLTech's POC defined checkpoints and success criteria. Consultative interactions included SMEs who shared their knowledge of future-facing use cases.

HCLTech then executed the POC to predict downtimes by extracting elementary data from the company's 40,000 instruments. HCLTech CARE's digital and cloud-native architecture was built on on-site reliability engineering (SRE) and DevOps principles that helped secure operational and transactional data management.

HCLTech also shared output data with the company's field service engineers to help them address the causes of failures. The solution provides remote services, firmware, and software upgrades to reduce the client's field service costs.

The next stage was to enable the automation of business functions through networked data communication which ensured the seamless integration of onsite lab functions with SCADA. The client now receives role-based hierarchical data visualization reports for added security and enhanced efficiency.



Impact:

Enterprise-wide visibility into instruments and digital assets

HCLTech went the extra mile to generate a visible impact and boost progress for the client. After conducting a robust assessment of their current state of reliability and sharing a detailed roadmap for reaching strategic business outcomes through the CARE platform, HCLTech is helping to improve operations on multiple parameters:



- Proactive monitoring and alerts through real-time business and operational dashboards
- A centralized and secure platform for enterprise IoTs and multiple IT and OT business teams
- Improvements in instrument lifecycle management, onboarding processes and real-time asset management, leading to streamlined inventory flow
- Reduced instrument downtime through proactive vendor notifications, resulting in lower maintenance costs
- Enhanced security with compliance control, OTA support and enterprise system integration

By providing this unique bouquet of proven solutions that automate processes and accelerate time-to-market, HCLTech is powering new revenue streams for the client. It is estimated that machine downtimes will decrease by 80 percent and on-the-ground resource requirement by 25 percent.

HCLTech CARE platform is a future-proof solution stack built on data analytics that can be easily implemented in diverse healthcare environments. HCLTech is committed to building on the client's MVP vision. Ultimately, HCLTech will provide aspirational new features that will harness the power of data and boost progress to new heights.