



HEALTHCARE
LIMITLESS

Unlocking Medical Device Potential: CitiusTech's Operationalizing AI-Driven Clinical Decision Support System for Early Diagnosis Healthcare Breakthrough

In their quest to improve healthcare, a leading medical diagnostics organization developed an AI algorithm to predict sepsis. They aimed to productize their research and make it available to healthcare providers to predict sepsis and take prompt action.

CitiusTech helped the client handle the complexities of operationalizing the algorithm on a cloud-based platform that integrates seamlessly with the hospital's electronic health records (EHRs). The client also aimed to create an AI-driven clinical decision support platform (CDSS), alongside the digital Sepsis system, to assist hospitals in assessing patients' risk of 30-day Major Adverse Cardiac Events (MACE) using blood test data. The team ensured that the multi-tenant scalable solution is built with stringent data privacy and security measures ensuring compliance in the highly regulated healthcare industry.



BUSINESS CHALLENGE

To Operationalize an AI Algorithm that Predicts Sepsis Infection Early

The client produces hematology analyzer equipment capable of generating FDA-certified Early Sepsis Indicators from blood samples. They created an AI/ML algorithm to predict sepsis onset, aiding providers in proactive response. To operationalize this algorithm, the client aimed to build a streamlined digital platform. They had a promising algorithm ready to be put into action, but they needed technical expertise to bring it to life. Their requirements were clear and specific:

- A digital platform with scalable data infrastructure capable of centralized updates for future enhancements supporting CDSS.
- An AI-powered CDSS specifically designed to evaluate the risk of 30-day MACE.
- Integration with the existing EHR system, ensuring a seamless flow of patient information
- A system that provided Real-time updates on patients' risk scores, their latest lab results, and other vital health information
- Robust data privacy and security to safeguard patient data.

THE SOLUTION

A Multitenant Cloud-Based Digital Platform – the Clinical Decision Support System (CDSS)

The client partnered with and enlisted the expertise of CitiusTech to understand the needs and architect and develop a multi-tenanted cloud-based centralized system CDSS and a digital platform. The solution stood out for its flexible, user-friendly, centralized, and scalable design, complete with dashboards, snapshots, lab result tracking, and trend analysis for comprehensive analytics enhancing patient care.

Some of the key features include:

- Secure account, access, and configuration management with efficient logging, tracing, monitoring, and deidentification functionalities.
- Seamless EHR system integration, using Mirth Connect for reliable HL7 and FHIR connectivity.
- Cutting-edge SMART-on-FHIR app with an intuitive and responsive interface for clinical decision support.
- Advanced AI models for myocardial infarction risk assessment, employing leveraging Azure's MLOps pipeline for real-time, accurate risk scoring.

CitiusTech focused on strong security practices, automating data protection in development and infrastructure configurations with DevOps best practices. The team also employed Microsoft's Threat Modeling for robust security and complied with regulatory standards, ensuring the platform's safety and reliability.

The efforts resulted in a premium solution CitiusTech delivered a solution that integrates real-time data from patient health records, provides risk scores, and takes prompt action.



**BENEFITS
DELIVERED**

A Future-Ready AI-Powered Cloud-Based Digital Platform

CitiusTech's transformative solution empowered our client to offer a cloud-based sepsis prediction solution. The robust system gave life to their operationalized the AI algorithm and delivered a secure and compliant service for sustained success in the competitive healthcare market.

Here are the highlights:

- Efficient, scalable, common digital foundation for all CDS applications.
- Standardized integrations across hospital CDS solutions, enabling the sharing of configurations, and data.
- Comprehensive platform for monitoring, operations, and support.
- Uniform application of privacy, security, and compliance standards.
- Scalable solution with the ability to handle high data volumes and complex analytics.
- Accelerated application development with reusable services.

CitiusTech's holistic approach positions the client as a leader in healthcare innovation, offering a secure, efficient, and patient-centric healthcare solution.

To know how CitiusTech can help you achieve digital transformation and cloud-nativity, write to us at info@citiustech.com

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CitiusTech

Our vision is to inspire new possibilities for the health ecosystem with technology and human ingenuity. At CitiusTech, we constantly strive to solve the industry's greatest challenges with technology, creativity, and agility. Together with the world's leading Healthcare and Lifesciences organizations and our partners, we aim to accelerate the transition to a human-first, sustainable, and digital healthcare ecosystem.

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