



Shaping Healthcare Possibilities

Unlocking medical device potential: Operationalizing AI-Driven clinical decision support system for early diagnosis

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 take prompt action.

CitusTech 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), 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.

CASE STUDY



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.
- A 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

Faster workflows, improved diagnostic precision, and significant cost reductions

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.



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CitiusTech is a global IT services, consulting, and business solutions enterprise 100% focused on the healthcare and life sciences industry. We enable 140+ enterprises to build a human-first ecosystem that is efficient, effective, and equitable with deep domain expertise and next-gen technology.

With over 8,500 healthcare technology professionals worldwide, CitiusTech powers healthcare digital innovation, business transformation and industry-wide convergence through next-generation technologies, solutions, and products.

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