



OPPORTUNITY

To streamline and accelerate access to Stanford's EPIC EHR system for AI applications such as large language models and chatbots.

INNOVATION

Created access to EHR data that achieves swift and scalable data exchange in real time, fast enough for ED use.

SOLUTION

AXIOM as a system architecture of the EHR, a FHIR repository, and a vector database deployed on InterSystems IRIS.

IMPACT

improved data latency and near real-time response, enabling rapid access to comprehensive patient information. Streamlined clinical workflows, faster decisions, and increased system effectiveness, especially in critical areas.

Stanford Revolutionizes Real-Time Healthcare Data Access with the AXIOM Initiative

[Stanford Health Care](#) identified areas to improve accessibility to electronic health records (EHRs) for AI-driven use cases. Traditional data extraction methods introduced delays that hindered real-time decision-making. Faced with growing clinical demands and the need for scalable AI infrastructure, Stanford Health Care's Data Science and Integration teams reimagined how to retrieve and use patient data efficiently and securely. The team's solution was the AXIOM initiative, or Advance Extraction for Intelligent Orchestration and Medical Insight.

Vector Database and FHIR Repository Power Rapid EHR Query and Response

AXIOM is a groundbreaking solution that transforms patient data access, delivering lightning-fast, low-latency insights from complex EHR systems. By employing a unique recursive data retrieval method, it minimizes data duplication and slashes query times from minutes or hours to just seconds. This innovative approach is driven by a cloud-based FHIR (Fast Health Interoperability Resources) repository on **InterSystems IRIS®**, enabling advanced AI and large language model (LLM) applications to provide real-time insights for clinical decision-making. AXIOM enhances care team collaboration and supports critical use cases, such as augmented triage and optimized patient flow, making it an indispensable tool for healthcare data access.

AXIOM dramatically improves data latency, enabling providers to access comprehensive patient information in near real-time. AXIOM streamlines clinical workflows, supports faster decisions around discharge and care transitions, and increases overall efficiency, particularly in high-pressure environments like the Emergency Department (ED). Determining patient eligibility for transfer from the ED, for example, previously required multiple staff members to manually review much of a patient's history. AI-driven tools facilitate the search for information through tokenized natural language queries, but only with near real-time access to patient data, as AXIOM has achieved.

Key Capabilities of AXIOM

- **Recursive Extraction:** Enables efficient retrieval of targeted data elements without overwhelming EHR systems with too much data at once.
- **FHIR Standardization:** Facilitates interoperability and downstream AI use.
- **Cloud-Integrated APIs:** Provides secure, low-latency access to critical health data, directly integrated into the system.
- **Scalable Throughput:** Supports millions of messages daily, emphasizing the need for a reliable, high-performance system to sustain patient care.

About the Winner: Stanford Health Care

As a part of Stanford University, Stanford Health Care is a leading academic medical center advancing healthcare through technology and innovation. Their mission is to deliver real-time, data-driven care that improves outcomes and enhances the provider and patient experience.

About the InterSystems Impact Awards, Selected by an MIT Panel

Each year, select client organizations are recognized at the InterSystems READY conference for projects driving positive change. Nominations are evaluated by independent judges from MIT on three criteria:

- **Makes a significant difference**
- **Breaks new ground**
- **Sets an example**

To learn more about the InterSystems Impact Awards visit

<https://www.intersystems.com/intersystems-impact-awards/>.

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