

# Streamline HL7 FHIR Initiatives with InterSystems



## Accelerate Results with Enterprise-Class Solutions and Deep Expertise

**HL7® FHIR®** (Fast Healthcare Interoperability Resources) is a modern, global standard for exchanging healthcare information electronically. Hospitals and healthcare systems, payers, researchers, health information exchanges, medical device manufacturers, and MedTech companies are looking to FHIR to increase data insights, streamline information flows, and improve treatments and patient outcomes. But FHIR implementation nuances, data privacy concerns, and server reliability constraints can impair FHIR development and integration efforts, and stall FHIR initiatives.

FHIR is designed to be modular and extensible. FHIR provides a flexible data model that allows organizations to define their own resources and extensions to accommodate their specific requirements. This flexibility ensures that FHIR can adapt to evolving healthcare needs and support various use cases. But it also leads to interoperability challenges. Implementation variabilities (varying terminologies, vocabularies, data structures, etc.) across different systems and organizations can complicate application development and integration efforts and lead to compatibility issues and integration challenges.

This paper explains how InterSystems can help you overcome common FHIR implementation and interoperability challenges, streamline FHIR projects, and accelerate business results.



## Why InterSystems for FHIR?

Operationalizing the FHIR standard and developing FHIR applications is no easy matter. It requires the right technology and the right skills. InterSystems has the products, real-world knowledge, and proven track record to help you succeed. Our enterprise-class FHIR solutions deliver comprehensive functionality; high performance, scalability, and reliability; and the strong security your applications demand. And our FHIR experts can help you overcome the most complex interoperability issues and development challenges. A designated InterSystems sales engineer with a detailed understanding of the FHIR standard and extensive FHIR experience will be there to help you every step of the way, providing expert advice across your entire journey from initial engagement to proof-of-concept, to full-scale deployment. In addition, our experienced [implementation partners](#) can help you further streamline FHIR integration efforts and accelerate deployments.

### A Leader in FHIR From the Start

InterSystems is fully committed to FHIR, has helped drive the development of the standard, and has practical, hands-on experience with real-world FHIR implementations. Our people have been actively involved in FHIR Accelerator projects as directors, working-group chairs, individual contributors, and project leads. The company has participated in FHIR Connectathons since the first release of the FHIR standard, and we continue to do so. InterSystems has served as an HL7 Benefactor Member for over 20 years.

## Break Down FHIR Interoperability Barriers With InterSystems

### Transform and Map Disparate Data Structures

FHIR provides a standard framework for accessing and exchanging healthcare data, but implementation subtleties can lead to compatibility issues. FHIR data models, terminologies, and formats can vary from organization to organization. Mapping these varied data structures to FHIR resources and profiles can be a resource-intensive, time-consuming proposition requiring careful analysis and complex data transformations. ***InterSystems has extensive experience mapping different healthcare data standards, including FHIR. Our experts and proven data transformation solutions can help you save time and resources, and simplify data transformation efforts.***

## Overcome System Integration Challenges

FHIR aims to facilitate interoperability between different healthcare systems and applications. However, integrating FHIR with existing systems (electronic health record [EHR] solutions, health information exchanges [HIEs], payer solutions, clinical decision support systems, etc.) can be complicated. Achieving seamless data exchange and interoperability requires extensive system integration efforts, including establishing data interfaces, defining communications protocols, and addressing data consistency and integrity challenges.

***A leader in interoperability for over 40 years, InterSystems has a long history of interfacing different healthcare technologies. We have the right people, products, and experience to help you efficiently resolve interoperability issues, and accelerate application and system integration tasks.***

## Secure Data, Comply With Data Privacy Regulations, and Mitigate Risk

Healthcare data is sensitive and subject to strict privacy regulations, such as the HIPAA in the US and GDPR in the EU. Data breaches can damage your organization's reputation and lead to costly regulatory fines and legal settlements.

InterSystems FHIR solutions can help you meet stringent data security requirements. We encrypt data-at-rest and data-in-transit to protect data privacy, we support strong authorization protocols such as OAUTH 2.0 to tightly control access to FHIR applications and systems, and we provide detailed audit trails for compliance and forensics.

## InterSystems FHIR Solutions

InterSystems IRIS for Health™ is a comprehensive, digital health development platform that provides all the building blocks needed to work with FHIR data and develop FHIR applications. The solution includes an enterprise-class FHIR server, a FHIR SQL Builder, and a Bulk FHIR import/export capability.

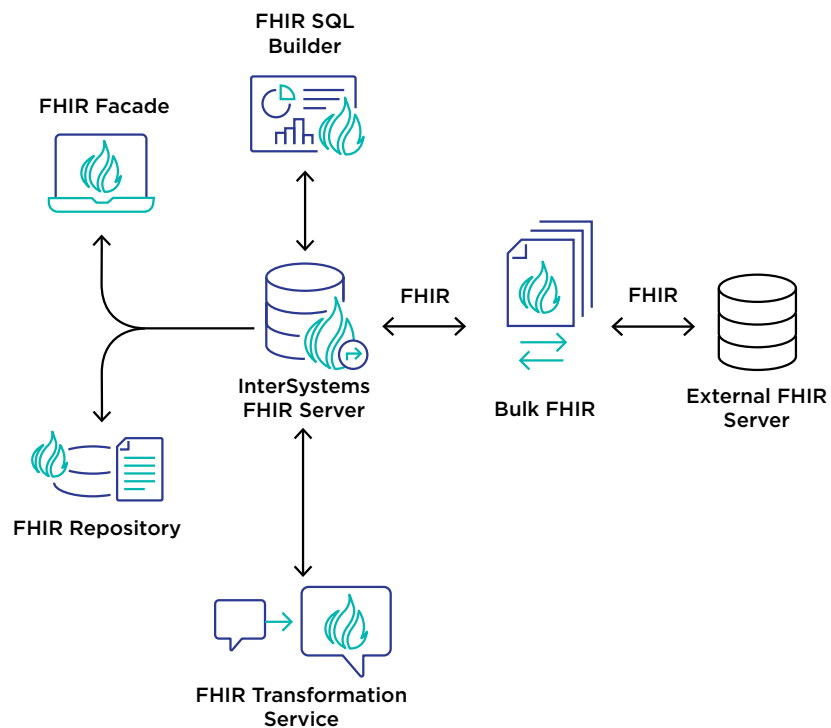
InterSystems also offers a FHIR Transformation Service that easily integrates with IRIS for Health, InterSystems HealthShare® Health Connect, InterSystems high-performance Healthcare Integration Engine, or any other application or managed service using RESTful APIs.

## InterSystems FHIR Server

IRIS for Health includes a full-function backend server for collecting and retrieving FHIR data. It lets you add robust FHIR data storage and management capabilities to any healthcare application. The extensible InterSystems FHIR server includes a massively scalable FHIR resource repository that supports all FHIR resource types.

You can implement the InterSystems FHIR server as a façade for efficient integration with legacy data. With a façade approach, legacy data remains in its original source, in its original format. The InterSystems FHIR Server automatically translates and transforms the data to FHIR format in real-time in response to queries. The façade model provides on-demand access to legacy data, without duplicating or moving data, helping you avoid performance penalties and storage overhead.

You can deploy the InterSystems FHIR Server on-premises, in a public cloud, or as a cloud-based service managed by InterSystems. InterSystems also offers the FHIR Server as a SaaS solution for ultimate operational simplicity. The SaaS version lets you store healthcare data in a cloud-based data repository as FHIR resources and access the data from any application via a RESTful API.

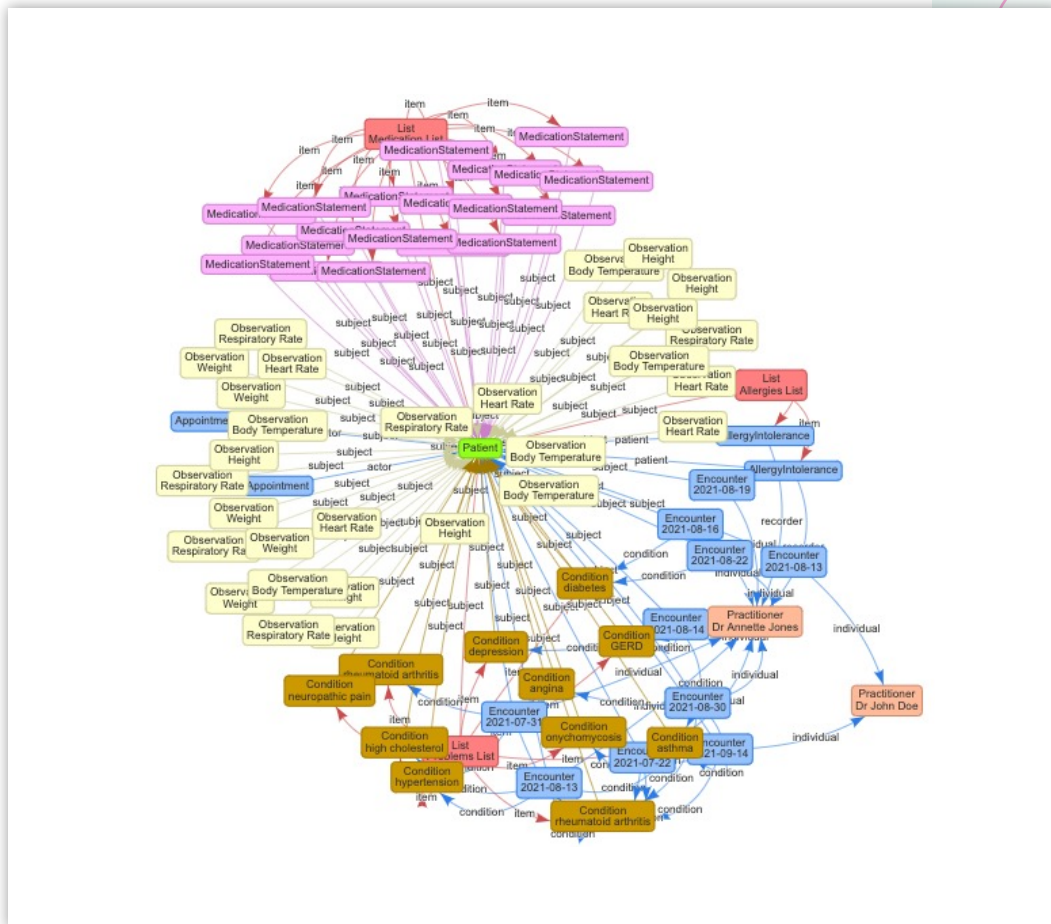


## FHIR SQL Builder

FHIR SQL Builder, lets data analysts and business intelligence developers work with FHIR data using familiar tools such as ANSI SQL, Power BI, or Tableau, so they don't have to learn a new query syntax.

FHIR data is encoded in a complex directed graph and cannot be queried using standard SQL syntax commonly used by data analysts. FHIR SQL Builder lets you create custom SQL schemas based on data in an InterSystems IRIS for Health FHIR repository without moving data to a separate SQL repository. SQL Builder secure projection allows users to query data in real time, and to update and integrate foreign tables to the model. It avoids data duplication and storage increase and cost.

You can deploy FHIR SQL Builder on-premises, in a public cloud, or as a cloud-based service managed by InterSystems.



FHIR Representation of a Patient Record

## **Bulk FHIR**

Bulk FHIR lets you efficiently import or export large FHIR datasets for research, analytics, population health management, data migration, or other use cases. With Bulk FHIR, you can retrieve large volumes of FHIR resources in a single request for greater efficiency and performance. An integral InterSystems IRIS for Health feature, Bulk FHIR makes it easy to manage large amounts of data across different healthcare systems and locations.

## **FHIR Transformation Service**

The InterSystems FHIR Transformation Service lets you convert legacy healthcare data formats such as HL7 v2 or CDA to FHIR for a smooth integration. The service lets you easily operate on data from different sources and disparate data exchange standards. You can deploy the solution in a public cloud or as a cloud-based service managed by InterSystems.

### **InterSystems FHIR Solutions in Action at the UK National Health Service**

[eConsult](#), the developer of the UK's leading digital triage system, leverages InterSystems IRIS for Health to make triage data usable across the UK's National Health Service (NHS). eConsult uses the FHIR capabilities of InterSystems IRIS for Health to validate patients against the NHS Spine system and to facilitate secure data exchanges between 23,000 healthcare IT systems across 20,500 providers.

The eConsult solution optimizes how patients are directed to care settings, assigning provider resources in ways that are more cost-effective and deliver the best outcomes. The solution helps the NHS improve clinician and patient experiences, reduce patient wait times, and cut costs. The NHS estimates the eConsult digital triage system helps them save over £1.0 billion per year.

“Their (InterSystems) extensive expertise means that we can move data between or within integrated care systems and trusts (hospitals) to inform commissioning decisions and, in turn, improve patient and clinical outcomes.”

**Mark Harmon MD, Chief Strategy and Brand Officer  
at eConsult**

## Conclusion

Deploying and operationalizing a FHIR solution can be a daunting proposition. InterSystems is a leader in healthcare data technology and standards-based interoperability, and has the products, people, and partners to help you succeed. To learn more about how InterSystems can help your organization accelerate FHIR initiatives and improve business results visit [intersystems.com/solutions/fhir](https://intersystems.com/solutions/fhir).

## Next Steps

Want to experiment with FHIR? InterSystems has developed a fully functional, containerized online lab experience on the InterSystems IRIS for Health platform where you can interact with FHIR. Check out our [FHIR Integration QuickStart](#) to get started. Or [download](#) the no-cost Community Edition of InterSystems IRIS for Health to test drive the product and start developing FHIR solutions today.

## About InterSystems

Established in 1978 and powering over 1B health records worldwide, InterSystems is the leading provider of data technology for extremely critical data in healthcare, finance, supply chain and other industries and throughout the public sector. Its cloud-first data platforms solve scalability, interoperability, and speed problems for large organizations around the globe. InterSystems is committed to excellence through its award-winning, 24x7 support for customers and partners in more than 80 countries. Privately held and headquartered in Cambridge, Massachusetts, InterSystems has 38 offices worldwide.

