Mastering Health Data Integration: Build, Rent, or Buy?

A Strategic Guide for Health Tech Firms Facing the Interoperability Trilemma

Working with healthcare data requires sharing information across many divergent standards and formats, and a myriad of implementations that often vary from those standards. Implemented by an integration engine, it is interoperability that makes these different forms compatible for wide sharing and use. Whatever you do with digital health data—transform, store, or query it; expose it for clinical and decision support; prepare it for analytics and AI; send it elsewhere—interoperability is the essential prerequisite that all digital healthcare systems must satisfy to routinely share and use it.

Health information has always been a unique class of data, requiring specialized solutions for reasons of its wide variety, complexity, depth, and mission-critical nature. Privacy, security, and regulatory compliance (such as HIPAA and GDPR) also heavily drive the requirements for health data management. Timely and reliable application and solution development focused on health data cannot succeed except in an environment tailored specifically to health care and founded on interoperability.

Yet even after decades of standardization, healthcare interoperability is hard. The saying goes "If you have seen one HL7 interface, you've seen one HL7 interface," meaning that no two are alike. Each institution has its own customizations, and many vendors make non-standard changes to their interfaces.   Even FHIR, the newest standard, has many extensions and significant variation in how it is used.

InterSystems has been providing healthcare interoperability solutions for many years and knows how to address these challenges. This paper focuses on InterSystems' general approach to interoperability and on two solutions in particular. InterSystems Health Connect is a proven foundational integration engine and provides all the interoperability, performance, and flexibility you need to connect to health data services. InterSystems IRIS for Health includes those same capabilities but also includes facilities for development of health data solutions and applications that require more than interoperability. It is a data platform designed for the unique nature and needs of this complex space, with analytics and AI support built in. Both offerings include a full set of FHIR capabilities as well as many other healthcare standards.

InterSystems®
Creative data technology

Health Data Integration: Threading the Maze of Build, Rent, or Buy

When deploying healthcare IT, companies often face a "build versus buy" or "rent versus own" decision. Organizations today need the flexibility to react quickly to changing demands such as frequent unplanned customer acquisitions and changes in interoperability standards. Not all integration engines are the same: some grant full control over integration, while others are ready-made, inflexible, and hard to adapt.

Integration Paradigm	Build	Rent	Buy
Approach	Code to specs, perhaps leveraging some microservices	Use a *universal API*, and depend on a vendor to translate this to protocols and interfaces	Start with out-of-the-box protocols and interfaces, and tailor to fit
Getting-started cost	High	Low	Moderate
Control and customization	Full	Limited to none	Extensive to full
Prebuilt integrations	None	Many	Many
Cost of keeping current	High	Low	Low
Security & privacy	Difficult to do all yourself	Available but not under your control	Available and customizable
Total cost of ownership (TCO)	Very high	High More expensive with scale	Moderate to low More economical with scale

Major advantages accrue over time to those who retain control over their health data and integration, working with a trusted partner to deploy a modern engine. Under the right conditions, such an engine is the right choice if it also allows you to take advantage of additional services, features, and resources on top of an economical, extensible platform where you *retain control*.

Avoiding Health Data Integration Traps and Loss of Control of Your Data and Interfaces

Any platform should allow you to shape your integration with custom and new interfaces, and external code and applications. Such add-on applications range from end-user-facing interfaces to medical devices to efficient solutions for storage and analytics to legacy system interfaces.

If you *build* an engine from scratch, however, you face the limitations of generic components, reinventing the integration wheel at considerable expense and wasted time. Cobbling together web services with APIs is difficult once you require interoperability, reliability, security, and privacy. Applications will be hard to scale, get to market, and bring into compliance with HL7, FHIR, and other standards without significant architecture work. Reproducing this functionality becomes a distraction from engaging with your users.

Renting an integration service rewards you with quick standup and low price. But this immediate price and speed are unlikely to reflect the total cost and time needed, as holistic planning shows. Even a health IT rental vendor will soon present limitations, with pre-made, inflexible integrations and interfaces. Non-healthcare IT vendors do not usually share your healthcare-driven priorities: cost, features, reliability, security, and privacy; nor are they typically expert with health data.

An immediate rental integration replaces later adaptability, scalability, and resilience with a loss of ownership and control. Essential basics such as traceability and auditing are usually limited. Such solutions typically come with consumption-based pricing as well. As you scale operations, your system will hit a wall of restrictive constraints, typically accompanied by sharply rising costs as your connections and complexity grow.

Customize Without Building From Scratch, Work With Cloud Services Without Losing Control

Optimal choices in this space means avoiding immediately attractive extremes. The limitations of open-source DIY become apparent after a honeymoon with cheap modular approaches. The tempting choice of rental integration leads companies to not invest and acquire expertise that will be needed later, and to loss of control over engine and data. Both choices threaten vendor lock-in.

Avoiding these traps requires greater immediate expense and effort that pays off later with growing size and complexity. An upfront investment in an integration engine becomes more economical as it grows. Its costs do not scale with operations, and functionality needed later is built in early. Your operations grow easily, and you own your interfaces and data. In the face of an unknown future, over time, such an initial investment embodies value, flexibility, and resilience, virtues proven, for example, during the COVID pandemic.

A health data platform should run inside containers and in public and other clouds, like AWS or Azure, but you should still retain control of the data platform or engine, the data that it hosts, and its design requirements. Managed services should supplement the platform without loss of control. InterSystems Health Connect and IRIS for Health meet all the preceding challenges.

Partnering With InterSystems for Health Integration and Development

InterSystems Health Connect is a foundational, interoperable integration engine that works at massive scale and speed, with the following essential features:

- Continually updated and essential health data standards such as HL7® V2, HL7®FHIR®, CDA® and CCD®, X12, advanced FHIR, and much more, flexibly implemented to keep you in control and enable data acquisition with the full range of healthcare APIs

- Comprehensive integration with **Electronic Health Records** (EHR), Labs, Medical Devices, and other common health care systems

- Out-of-the-box, enterprise-grade FHIR server features

- Extensible **cloud services** managed by InterSystems, including FHIR services

- Compliance with **regulatory standards**—privacy and security, in particular

With all the features of HealthConnect, **InterSystems IRIS for Health** then adds far more, resulting in an all-in-one data platform with a unique combination of powerful, modern features:

- Multi-model translytical database
- Native ObjectScript, Embedded Python, drag-and-drop plus code
- Business intelligence (BI) and reporting
- Machine learning (ML)
- Natural language processing (NLP)
- Generative artificial intelligence (GenAI)

Both platforms run locally or in the cloud with standard hardware. They can be scaled and modified as your needs change and are easy to learn and use.

InterSystems Health Connect and IRIS for Health provide capabilities required for advanced data architectures in a single product, without the need to integrate and maintain dozens of different technologies. They are proven in critical applications that ingest up to millions of records per second while simultaneously querying incoming data in real time. Attempting integration and interoperability through build-your-own or rental cannot attain such cost-effective performance.

Backed by award-winning support, these core technologies are suitable for both startups new to health data and experienced teams continuing with current and legacy systems, regardless of your team's size. A distributed, cache-based architecture allows for massive scale and exceptional performance, with a proven record of enabling innovation and accelerating value. You do not need a large investment to get the speed and scalability that your business needs. Flexible licensing and deployment options, and our Smart Health Data Services in the cloud, let you meet current and new requirements and help future-proof your work. For technical details, see the **Health Connect fact sheet**, the **InterSystems IRIS for Health Technology Guide**, and **related material**.
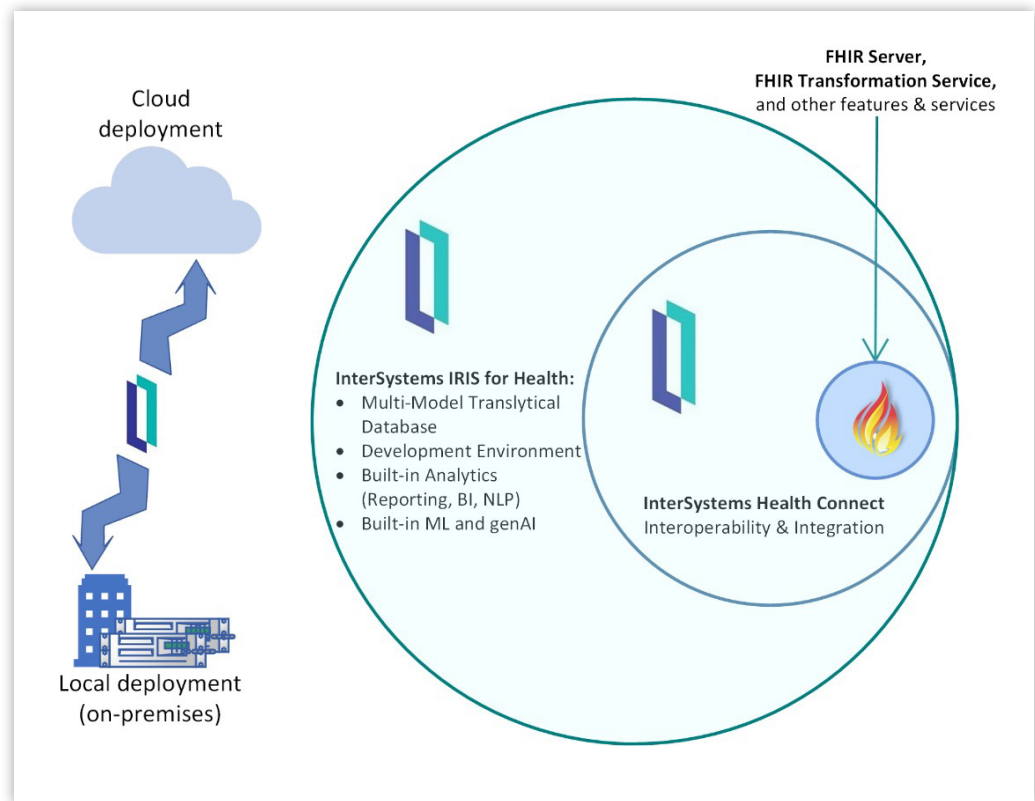
Develop, deploy, and customize with health data on InterSystems IRIS for Health

InterSystems IRIS for Health includes a unified graphical and code-based environment that streamlines development and maintenance of sophisticated data- and analytics-intensive health applications. Developers can graphically design integration flows, incorporate business rules and human workflow, and transform data and messages from diverse sources. It seamlessly manages all connection states and adapters, message queues, and payloads to external applications and systems. And InterSystems supports a thriving developer community.

The platform's heart is a multi-model, multi-workload, vertically and horizontally scalable object database. Once collected, structured and other data is stored in one representation that—without being moved, copied, or mapped—can be queried through multiple interfaces: relational, graph, key-value, document, XML, vector, columnar, and so on.

Fee-based **cloud services** used with your deployment still leave you in control of integration, interfaces, and data. The platform is **secured** by reliable and high-performance authentication, role-based authorization, audit logging, and all-data encryption.

Accelerate Innovation with API Development and Management

For build-your-own within these platforms, InterSystems offers a robust set of APIs to build an ecosystem and new revenue streams, proven to accelerate integration of disparate systems by enabling API factories. Essential in today's market, they incorporate self-service capabilities and existing and custom APIs, ensuring transparency, high performance, and limited total cost.

InterSystems IRIS for Health provides comprehensive API management that supports modern, cloud-ready microservices for development and innovation. You connect and unify incompatible APIs on the platform by interoperability templates; extensible, pre-defined transformations between representations; and a wide range of delivery protocols (REST, SOAP, etc.).

With InterSystems, you have the power to connect with any customer within days, with your priorities and timetables for building those connections. Our goal is for you to always have the technology you need to work with health data from your affiliates.

The InterSystems Difference

Comprehensive Healthcare Interoperability

Our broad and deep coverage of healthcare formats and standards connects you into the healthcare ecosystem with high performance and conformance.

Highly Flexible

InterSystems IRIS includes the tools to solve unfamiliar problems and adapt as business needs change. Every aspect from data transformations to workflow can be tailored, and low-code tools let you put some customization in the hands of business users.

Quicker to Business Value

A wide range of capabilities are pre-integrated and designed to work seamlessly together, which simplifies development and deployment to accelerate business outcomes.

Industry-Leading Support

We are focused on making our customers successful and ready for any challenge, which is demonstrated by some of the highest customer satisfaction ratings in the category.

InterSystems Knows Healthcare

As a longstanding leader in healthcare data technology and standards-based interoperability, InterSystems has the experience to solve real-world healthcare challenges.

For more information about **InterSystems Health Connect** and **IRIS for Health**, see our website and downloadable materials at **www.intersystems.com.**

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