# The IBM Health Integration Framework: Accelerating solutions for smarter healthcare

*Healthcare provider edition*

Customers can quickly deploy solutions using their existing health IT investments in their current environment and at lower cost without compromising flexibility and choice.

# Finding the cure
## Addressing the challenge of changing healthcare

At a time when healthcare technology has never been more advanced, the industry has not kept pace in improving healthcare access, cost, quality of care and patient satisfaction. But progress can take many forms, and forward-thinking organizations are instituting improvements in this vital field every day.

Eight in ten healthcare leaders anticipate substantial changes driven by global competition, more knowledgeable and demanding consumers, changing lifestyles and the need to address worldwide prevalence of chronic conditions that require immediate and long-term attention and tend to sap resources that could be devoted to valuable preventive practices.

However, factors such as financial constraints, societal expectations and a focus on short-term needs over long-term solutions can hinder even the strongest desires for reform. When parties don't perceive enough incentive to collaborate, they stay within their comfort zone and continue to follow their own familiar but singular, and often sub-optimized processes.

And then there's the data. Reams of data. Giga-, tera-, petabytes of data. Patient forms and lab results, regulatory compliance reporting, research documents, fundraising and accounting records. If data is digitized at all, it's often spread over multiple systems in incompatible formats, making access a multistep process and comparative analysis a manual effort.

The solution has many facets but, in broad terms, to move toward a smarter, more effective healthcare experience for all, healthcare organizations have to focus on value, core processes and collaboration, concentrating on what they do best and doing it more efficiently. They need to exploit opportunities to improve quality and safety, form new partnerships, and build future capabilities. And they must act with speed to institute change, set leadership agendas and manage risk and performance with transparency.

# The IBM Health Integration Framework

The IBM Health Integration Framework is a unified software platform for implementing comprehensive solutions for healthcare providers, healthcare plans and life sciences enterprises to improve safety and quality of care, process efficiency, and patient and member satisfaction.

This approach is superior to the two traditional practices: custom development, which is lengthy and expensive, and packaged applications that are inflexible, stand-alone, and require heavy customization. The framework enables customers to choose from a variety of industry solutions that are pre-integrated on common middleware and industry-specific extensions. As a result, customers can quickly deploy solutions using their existing health IT investments in their current environment and at lower cost without compromising flexibility and choice.
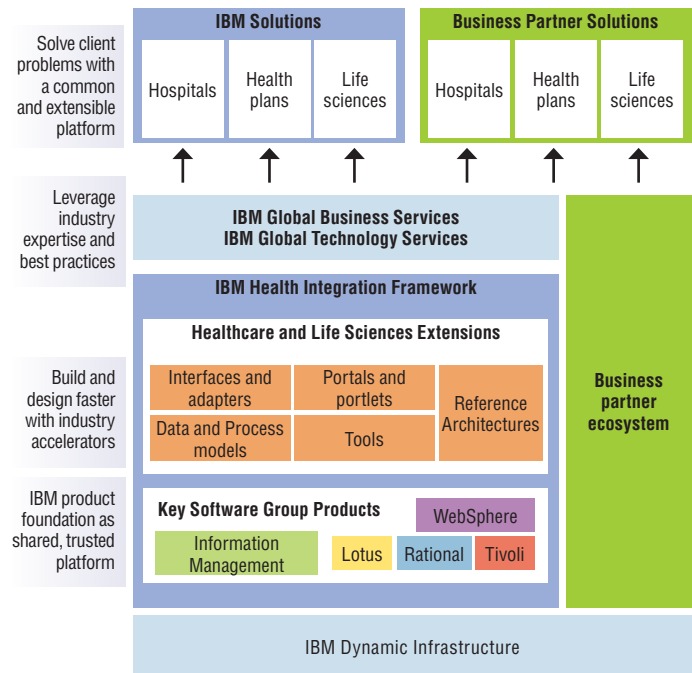
**Extensions and accelerators**

Service Oriented Architecture (SOA) is a business-centric IT architectural approach that supports integrating your business as linked, repeatable business tasks, or services. With the Smart SOA approach, you can find value at every stage of the SOA continuum, from departmental projects to enterprise-wide initiatives

On top of the IBM SOA foundation, healthcare-specific assets called extensions and accelerators add industry relevance and open standards, integrate faster with legacy systems, build new services and provide new capabilities. These include:

- *IBM InfoSphere Clinical Analytics:* An integrated data warehouse platform that provides a single source of trusted administrative, clinical and research information across the healthcare enterprise to help improve operational efficiency and outcomes.

- *IBM WebSphere Message Broker with support for HL7:* An advanced Enterprise Service Bus providing connectivity and universal data transformation for assured delivery and message interchange between multiple applications.

- *IBM Healthcare Industry Toolbox for WebSphere Portal:* Helps hospitals and clinics provide their patients with personalized online, anytime access to on-demand services such as appointments and payments, which can improve patient satisfaction and loyalty while increasing hospital efficiency.

- *IBM WebSphere Transformation Extender Industry Pack for Healthcare:* Helps integrate a range of industry-standard data formats with your enterprise infrastructure with support for HIPAA EDI (including 5010, HL7 and NCPDP) with predefined templates, tools, and conversion and validation maps to reduce risk.

- *IBM WebSphere Healthcare Content Pack:* Provides a rich set of assets for enrollment, case management, employer and group management, claims management, and provider collaboration solution areas.



The IBM Health Integration Framework delivers:

- *Speed:* Incorporates proven software foundation, healthcare-industry-specific extensions, pre-built solution accelerators and implementation patterns for faster deployment at lower risk.
- *Flexibility:* Provides a roadmap that enables customers to build capabilities over time on their existing environment.
- *Choice:* Leverages an ecosystem of industry ISVs and IBM solutions that are built on industry standards and integrated into the framework.
- *Interoperability:* Increases transparency across healthcare entities for more efficient information sharing, service coordination and record keeping.

## Combining strengths in partnership

The IBM Health Integration Framework includes an ecosystem of independent software vendors and systems integrators to provide a wide range of healthcare applications that are proven to run on the framework. This means faster deployment, easier integration, lower cost of operations, and an ever-expanding community with powerful capabilities across clinical portals, clinical analytics, unified communications, privacy and consent management, electronic health records and more.

## Solutions

These examples show how four leading healthcare organizations took bold steps to improve the ways they administer care and organize their operations. With the help of IBM solutions, they're each contributing to smarter, more efficient and effective healthcare in four important categories: enterprise health analytics; healthcare service management and security; enterprise, patient and clinical portals; and clinical integration and interoperability.

**Enterprise health analytics:**
- Provides aggregation and analysis of information from disparate systems across a healthcare enterprise, to improve clinical, financial and administrative outcomes and results.
- Transforms data-rich environments into intelligent, high-value information to help speed medical research, diagnosis and treatment to improve patient care and help reduce healthcare costs

Case study: University of North Carolina Health Care System

For the University of North Carolina (UNC) Health Care System, the problem wasn't just more information than its systems could process. The data resided in multiple repositories, in many forms—from X-rays to research studies to invoices—with scant synchronization of systems and rarely a common language for querying and compiling the information into usable information. UNC's data needed organizational management and analytics.

After starting consolidation and aggregation of its vast array of data, UNC established governance procedures to create organizational boundaries and address regulatory compliance and communications for the many groups that would access the data for clinical, administrative and research purposes.

Then came the centerpiece of UNC's new data management solution: A robust, powerful data warehouse was established using the IBM Healthlink Solutions Roadmap Methodology and was deployed using IBM's Health Integration Framework. The data warehouse links UNC's data systems to provide a single point of access to information.

Now patient records can be accessed, synchronized, interpreted and analyzed more quickly and thoroughly. Researchers can run metrics and test theories in minutes instead of months. Says UNC Health Care System's associate director of medical informatics, Dr. Donald Spencer, "The ready availability of information changes the way people ask questions and think about the problem on the fundamental level."

*Smarter business outcomes*
- Enables researchers, clinicians and administrators to understand complex, interrelated issues from multiple information repositories.
- Reduces analysis and queries to minutes instead of the weeks or months required for manual searches.
- Helps improve patient outcomes, disease management, regulatory compliance and research, and optimizes ROI.

*Key technologies:*
IBM InfoSphere Information Server
IBM System z10
IBM DB2 for z/OS
IBM InfoSphere DataStage
IBM WebSphere Portal
IBM WebSphere Application Server
IBM WebSphere Portlet Factory

**Healthcare service management and security:**
- Tracks assets, patients and staff to improve patient safety and care.
- Enhances enterprise visibility to resources, increasing efficiency and helping contain costs.

## Case study: major children's hospital

This major children's hospital in the U.S. has earned an international reputation for quality pediatric patient care, education and research.

Over the years its IT systems developed—often independent of each other, based on the needs of 40 care centers and 6,000 physicians—slowly outpacing performance demands and storage capacity. Better performance was required and the IT staff needed more visibility into system health and operations for more proactive management.

This hospital sought a comprehensive enterprise management solution, and IBM responded. Within six months, a deeper view into the technology environment was in place, monitoring the network, systems and storage and enabling better access for management and troubleshooting. The next phase of the plan includes business management processes and analytics for performance measurement.

*Smarter business outcomes:*
- Provides better visibility into the system for more precise troubleshooting and faster detection of potential problems before outages occur.
- Lowers failure rates and provides faster resolution resulting in greater customer satisfaction and reduced staff involvement.

*Key technologies:*
- IBM System x
- IBM Tivoli Monitoring
- IBM Tivoli Netcool
- IBM Tivoli Omnibus
- IBM Tivoli TotalStorage Productivity Center

**Enterprise, patient and clinical portals:**
- Offers a secure portal-based user interface for the aggregation of information across a healthcare and life sciences enterprise with custom views defined by role.
- Allows Sharing of information and processes to increase clinical efficiency, improve patient satisfaction, and reduce cost for customer service.

## Case study: Catholic Healthcare West

With 41 network hospitals and medical centers across three states, Catholic Healthcare West (CHW) had instituted an array of information systems and clinical applications as its IT system developed. Subsequently, physicians, staff and community caregivers often had to use multiple logins for multiple systems and manually aggregate information to draw a complete patient history.

"Hospital staff would either print screens of data or—more likely—write it on yellow sticky notes," says Eric Leader, CHW's chief technology architect.

This was an excellent example of why organizations are turning to portals for a single view of multiple information sources. CHW chose a two-part method of using one team to create and migrate applications and another to build SOA wrappers to enable existing applications to flow smoothly into the new portal. Advanced healthcare-specific capabilities were applied by way of an Internet standards-based, JSR 168-compliant portal framework.

The result is an intuitive, secure, HIPAA-compliant interface that requires a single login, whether accessed internally or by an authorized community partner. Users are enjoying major reductions in both the steps needed to access critical data and the time physicians spend on the system.

*Smarter business outcomes:*
- Improves patient care by decreasing time to access clinical information, saving some physicians up to three hours per day.
- Simplifies HIPAA compliance and reporting through comprehensive usage tracking and logging.
- Enables secure remote access to healthcare information.

*Key technologies:*
IBM WebSphere Portal
IBM WebSphere Portal Enable
Carefx Fusionfx

**Clinical integration and interoperability:**
- Facilitates the integration, exchange, and sharing of information across a healthcare organization, be it multiple systems within a single hospital or an integrated delivery network.
- Enables secure access to clinical systems and handling of transactions based on HIPAA and HL7 standards, resulting in time and cost savings.

## Case study: Trillium Health Centre

Trillium Health Centre thought patients deserved a better look. Hosting many disciplines, including an innovative cardiac program and North America's largest free-standing day surgery facilities, this Canadian healthcare organization wanted to overhaul its patients' access to records and pertinent applications and give them greater control over their healthcare information.

IBM is leading eight healthcare-related technology companies to help Trillium integrate its patient data across its systems, enabling patients to manage their own health records and scheduling. This streamlined process will enable patient records to reach from hospitals and doctors' offices to specialists and healthcare agencies—for instant and secure access as needed.

With the potential to transform healthcare delivery, Trillium's THINK initiative can increase productivity and remove informational barriers to necessary data as patients move through the healthcare system.

*Smarter business outcomes:*
- Provides patients, clinicians and staff with a constant, fully integrated knowledge and learning system.
- Enhances the overall quality and safety of patient care and improves patient health outcomes.
- Gives patients visibility into, and control over, their own health records.

*Key technologies:*
IBM Cognos BI
IBM Global Technology Services
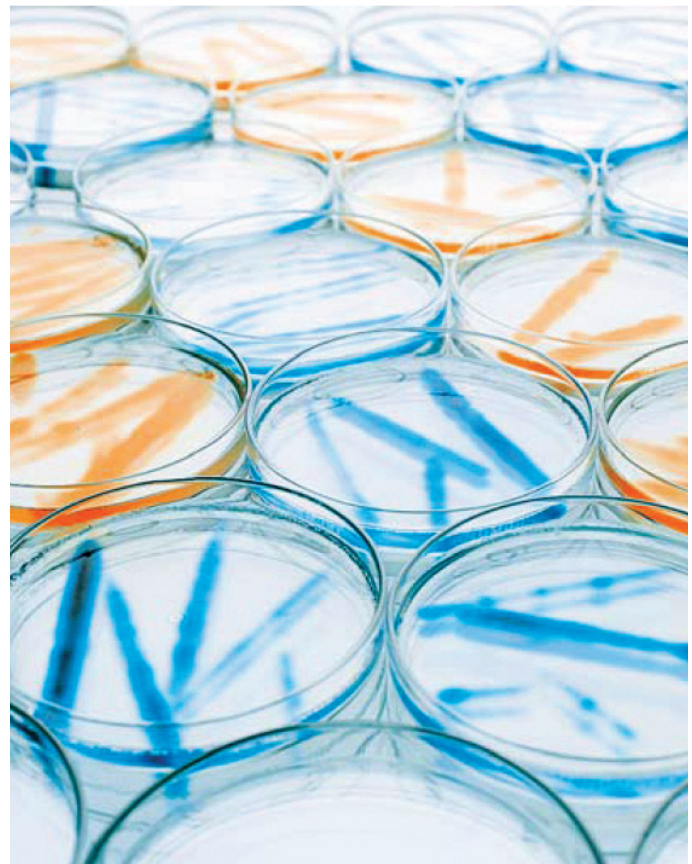IBM Mobility and Wireless Services: Network Consulting

## Why IBM

IBM's deep industry expertise provides the foundation for solving the most complex problems in healthcare. The leader in working with and transforming healthcare provider organizations through service oriented architecture (SOA) and information management, IBM employs dedicated technology research professionals, including the largest clinical consulting staff in the United States. With its long-term commitment to industry standards, IBM has developed proven clinical transformation and health analytics methodology and global delivery capabilities.

## For more information

To learn more about the IBM Health Integration Framework, contact your IBM representative or visit:

**ibm.com**/software/industry/healthcare/

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