

Duke Medicine improves care delivery through greater collaboration and efficiency.

Overview

■ Challenge

Enhance healthcare delivery and build a secure foundation for patient-centric care through a Service Oriented Architecture based IT infrastructure that drives greater alignment, visibility and control of IT services

■ Why IBM?

IBM offered the expertise, best practices and open technologies to help effectively integrate people, processes and technology for improved business flexibility

■ Solution

An IT infrastructure transformation program that helps staff drive growth, find every efficiency and manage risk

■ Key Benefits

Improved service availability; enhanced compliance and security; strengthened relationship between patients and care providers; reduced IT management costs to redirect IT dollars to new initiatives



Duke Medicine, a national leader in healthcare, effectively aligns technology with organizational business objectives.

Transforming traditional IT operations into an agile service-oriented environment can appear overwhelming at first. But Duke Medicine, ranked one of the top healthcare organizations in the United States, is proving that it's not only achievable using a phased approach that integrates people, processes and technology, but also that it can breathe new life into an organization.

As a world-class academic and health care system, Duke Medicine strives to improve the practice of medicine and delivery of patient care locally and globally. Through its various entities—Duke University Health System, Duke University School of Medicine and the

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*—Rafael Rodriguez, Associate CIO,
Academic and Infrastructure Services,
Duke Health Technology Solutions,
Duke Medicine*

Enhanced communication boosts referrals, patient satisfaction to increase competitive edge

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–Rafael Rodriguez

Duke University School of Nursing—Duke Medicine is known for its breakthrough discoveries, educating future clinical and scientific leaders, advocating and practicing evidence-based medicine to improve community health, and leading efforts to eliminate health inequalities.

Several years ago, the organization recognized that its existing IT infrastructure could not effectively support new clinical initiatives and research opportunities. The organization's IT environment had evolved over many years to become a broad array of largely disconnected, silo-based initiatives supported by multiple IT vendors. Because of this, it became difficult and costly for the organization to launch new services and ensure the seamless delivery of information to caregivers and patients across all Duke Medicine hospitals and outpatient centers.

“To support the evolving needs of our physicians, researchers and medical students, we needed to transform our IT environment from a technology-driven model to an approach that was based on IT service management principles,” explains Rafael Rodriguez, associate CIO of Academic and Infrastructure Services, Duke Health Technology Solutions, Duke Medicine. “This is essential in allowing us to provide staff with fast, secure access to patient information while minimizing risk.”

Better alignment of IT to organizational priorities and opportunities

The organization's first step was the creation of the Duke Medicine Transformation Program Office. This group is responsible for establishing the infrastructure that enables Duke Medicine to better manage risk and service availability.

Through its work, the Transformation Program Office teamed with IBM Global Technology Services – Integrated Technology Services to evaluate its existing processes and underlying technology environment and develop a roadmap that would help ensure that IT was effectively aligned with the institution's goals. With this framework firmly in place, Duke Medicine could appropriately prioritize new initiatives and gain the greatest value from its IT investments.

“IBM understood what we were trying to accomplish and helped us build the plan to get there,” says Rodriguez. “Our conversations did not focus on product. Rather they focused on solving organizational challenges. This is essential if we're to continue to improve healthcare.”

Applying service management principles for greater business efficiency

According to Rodriguez, the transition to an IT service management organization required the integration of people, processes and technology across all Duke Medicine entities. To that end, one of the team's first projects was reorganizing IT staff so that skills and expertise were shared across Duke Medicine and not replicated within each organization.

Additionally, in collaborating with IBM services staff, Duke identified three keys areas for immediate focus—strengthening availability of information systems, streamlining access to information while maintaining privacy and security, and increasing collaboration between caregivers and patients. Process improvements in each of these areas would deliver significant financial benefits to the organization while helping it achieve its goals.

A comprehensive business resilience strategy minimizes risk

Central to ensuring the success of Duke's clinical and operational initiatives is the development of the Duke Medicine Operational Center. This world-class command center helps IT staff ensure that the systems that house patient records and run important medical applications remain up and running. Previously, it was not uncommon for the organization to experience daily service outages.

The operations center uses IT Infrastructure Library® (ITIL®) best practices to standardize key IT processes—change management, problem management and incident management—and optimize efficiency. "IBM staff helped us understand how ITIL could help us make this transition to a service organization and make ITIL recommendations actionable," says Rodriguez.

IBM IT Service Management software, including IBM Tivoli Business Systems Manager, IBM Tivoli Enterprise Console and IBM Tivoli Application Dependency Discovery Manager, is used to consolidate information across hundreds of servers and systems. It enables administrators to monitor on a single screen the current performance and availability of essential clinical and operational services. As a result, staff can quickly see if services are performing as required and anticipate potential problems.

If a problem is detected, the software automatically alerts IT administrators to help prevent failures to critical systems, such as intensive care equipment that monitors patients' vital signs. "Disaster recovery is not an acceptable option for healthcare institutions," says Rodriguez. "We wanted to focus on disaster avoidance and business continuity and achieve a goal of no downtime."

As availability of clinical and operational services has improved, so too has the organization's confidence in moving from paper-based systems to electronic ones. "We would not have been given the mandate to take on initiatives, such as electronic medical records, if service availability was a problem," says Rodriguez.

Leading edge security supports compliance and business requirements

Clinical providers are increasingly dependent on instant access to electronic information to care for patients. At the same time, IT staff must balance this need with the need to safeguard information according to regulatory requirements, such as the Health Insurance Portability and Accountability Act (HIPAA).

Key Components

Software

- IBM Tivoli® Application Dependency Discovery Manager
- IBM Tivoli Business Systems Manager
- IBM Tivoli Enterprise Console®
- IBM Tivoli Identity Manager
- IBM Tivoli Monitoring
- IBM WebSphere® Portal
- IBM WebSphere Portlet Factory
- IBM Workplace™ Web Content Management

Services

- IBM Global Technology Services – Integrated Technology Services
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As a result, the Duke Transformation Program Office is standardizing and simplifying identity and password management processes, reducing the number of IDs and passwords required, along with the hurdles of managing them.

Through the use of Tivoli Identity Manager software, Duke Medicine staff members can log in once and gain access to all authorized applications. They can also reset passwords themselves so they don't have to call the help desk and wait for support. Previously, nearly 40 percent of help desk calls were for password resets.

Additionally, IT staff can quickly provide new and visiting clinicians with access to required applications or rapidly revoke access rights when someone leaves Duke Medicine. “Being able to keep pace with staff changes is a major IT audit exposure and the faster we can respond, the more we can minimize risk,” says Rodriguez. “Through this initiative, we can reduce the time to change access rights from 10 days to just hours.”

Tivoli Identity Manager software will also give IT staff the data needed to satisfy audit and regulatory requirements. “We are creating an environment that ensures privacy and security while connecting people and systems to the information they need,” says Rodriguez.

Seamless collaboration elevates patient participation in care process

Another key initiative has been the launch of a new patient portal—called HealthView (healthview.dukehealth.org)—that gives patients access to information from home and improves communication between patients and care providers. In this way, the portal is different from traditional portals, enabling patients to become active participants in their care.

The portal provides patients with a range of information services as they interact with Duke Medicine and their referring physicians. It draws information from a variety of disparate systems—scheduling, billing, workflow management and clinical systems—and presents this to patients within a single, integrated window. Through this portal, patients also can search for specific information. For example, now patients can quickly and easily obtain year-end financial statements online instead of having to call the organization's billing call center and ask staff for a copy.

In addition to profile management and self-registration, patients can currently log onto the portal to view detailed bills, billing and payment history; make payments online; view annual payments for tax filing; request appointments; and view and change insurance information.

The first phase of the portal was completed in just 14 weeks following the planning stage. Phase two of the project will offer appointment reminders, outpatient lab and radiology results, and allergy histories. An express check-in function will allow patients to complete forms prior to their appointments. The portal will also be made available to referring physicians so they can view the status of patient tests and work more closely with Duke physicians in the care of a patient.

"Patient response has been outstanding," explains Rodriguez. "In the first eight weeks alone, we had 2,500 patients register and 500 appointments were made online. We also received more than \$100,000 in payments online."

As Duke staff evaluated the technologies required to support its portal, staff identified three essential requirements:

- *A standards-based platform that wasn't dependent on a single vendor and that provided the security to maintain privacy and confidentiality of patient information.*
- *A scalable environment that would provide more than 500,000 patients with online access to services.*
- *An open architecture that enabled staff to rapidly add new services.*

To meet these goals, HealthView is built on a Services Oriented Architecture (SOA) and open standards using IBM WebSphere Portal, WebSphere Portlet Factory, Workplace Web Content Management and Tivoli Identity Manager software. With this

technology, Duke has been able to extend the value of its existing clinical and operational investments and gain greater flexibility in responding to changing care delivery needs.

For example, with WebSphere Portal technology, integrating disparate systems into a single portal was made easy because portlets are exposed as services available for composing business processes. "The deployment of an SOA was critical," says Rodriguez. "As a result, we looked for products that would help facilitate the implementation of our SOA."

Shaping the future of healthcare delivery

By reducing the cost of maintaining and managing the underlying technology infrastructure, IT staff can focus its efforts on innovation, such as the HealthView portal. As a result, Duke Medicine can continue to deliver services that support its longstanding commitment and reputation for providing outstanding patient care. "Identifying opportunities in which technology can solve organizational and industry issues are a critically important part of our mission," Rodriguez concludes. "We have a track record of successfully directing IT resources to new initiatives that improve quality of care and access to care. IBM has been a helpful partner in this effort."

For more information

Please contact your IBM sales representative or IBM Business Partner.

Visit our Web site at: ibm.com

For more information about Duke, visit: www.dukemedicine.org

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Software Group
Route 100
Somers, NY 10589
U.S.A.

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