Improving Patient Outcomes While Managing Costs

A Fujitsu Computer Systems Healthcare Solution Paper

Stylistic ST4000 Tablet PC

LifeBook P1000

LifeBook B Series

PRIMEPOWER 250

Impact of Technology on Healthcare

Healthcare, the most information-intensive of all industries, evolves rapidly as new information supplants old. Information technology not only offers an effective way to collect, store and distribute vital clinical information, but also improves interactions with patients, optimizes clinician training, boosts diagnostic accuracy and provides fast access to current patient information. Information systems reduce costs, eliminate errors, enhance communication among healthcare professionals and improve services to patients. Technology actually helps healthcare organizations turn regulatory and competitive pressures to their advantage.

Complex issues surround the rising costs associated with healthcare. The introduction of managed healthcare in the 1990s appeared successful. However, from the increasing size and soaring costs of pharmaceuticals to the impact of an aging population and an ongoing need for qualified professionals, these and other increasing pressures on the system have forced healthcare executives find creative ways of managing costs while maintaining, and when possible, improving services. Providers and payers are responding to pressure from patients, grass-roots organizations and legislative bodies to improve the quality of care by evaluating and adopting new ideas, new technologies and new strategies. The adoption of innovative pharmaceutical, diagnostic, software and hardware products has altered how and where services are being delivered—and who is delivering them.

The increasing use of mobile computers has augmented the frontline healthcare worker's capacity to recall and process large numbers of relevant variables and to support information management, general administration and clinical practice. Wireless networks combined with mobile devices effectively support the intensive data management and delivery requirements of healthcare facilities by bringing clinical information right to the patient—wherever and whenever it is needed most.

Over the past decade, the automation of point-of-care decision-making, diagnostic systems, physician order entry and prescription management has vastly improved patient safety and the rapidity with which healthcare professionals can perform these aspects of their job. Add to that the increased prevalence of back-office transaction management systems and electronic medical records—including each patient's history, physical information, prescriptions, transcriptions, laboratory and radiology results, and discharge summaries—and it is clear that information systems permeate all aspects of healthcare organizations from provider to payer. Visionary information technology professionals inside the healthcare system look for ways to improve patient outcomes and, at the same time, drive internal efficiencies to create value.

Meeting the Real-world Needs of Healthcare Professionals

The proliferation of mobile computing devices, improvements in wireless technologies, new electronic medical record systems, the advance of regulatory deadlines and the need to improve patient care at the bedside have all converged. Today, CIOs in healthcare tend to look for two things: back-end technologies that deliver reliability and power, and easy-to-use, lightweight end-user devices that support a diversity of applications.

For more than 14 years, Fujitsu has provided medical organizations with healthcare-specific devices and solutions. Fujitsu provides a flexible line of use-appropriate devices that meet the real-world needs of doctors, nurses, administrators and other healthcare professionals. These devices are designed to help improve patient care by facilitating superior point-of-care services through wireless mobility. High-quality Fujitsu products also help to lower healthcare costs by reducing maintenance needs, lowering initial costs and significantly improving worker productivity.

In an industry where swift access to information can literally mean the difference between life and death, bulletproof end-to-end system reliability is vital. No mobility device can effectively improve patient care unless it has the foundation of a reliable, powerful back-end server technology platform. The back-end system must rapidly and accurately locate, retrieve and store relevant information to facilitate first-rate patient care decisions, improve the accuracy of patient/provider/payer transactions, and deliver 24/7 availability of critical systems. Thanks to extensive Fujitsu solutions, medical organizations now have a one-stop resource for both technically advanced back-end servers and innovative front-end mobile devices.

Improving Patient Treatment and Safety at the Point of Care

Healthcare organizations have seen that automating clinical processes improves patient safety and care by reducing mistakes, eliminating transcription errors, and preventing adverse drug reactions, in addition to many other benefits. Providing clinicians and physicians with point-of-care access to diagnostic tools, decision-support applications and such relevant patient-related data (i.e. prescription histories) significantly improves patient outcomes. No human, paper or desktop system could ever instantaneously bring all the necessary information to the fingertips of caregivers when they need it most. Today's wireless computing environments and flexible mobile devices easily bring a wealth of information and best practices directly to the bedside.

Fujitsu mobility products have been superbly crafted to provide healthcare professionals with some of the lightest, most easy-to-navigate and flexible devices on the market today. The company has worked hard on bringing innovation to healthcare. For example, Fujitsu engineers pioneered the idea of the bridge battery that enables healthcare workers to replace batteries on the fly without having to reboot the device. A small bridge battery runs the computer while a new main battery installation occurs, saving valuable caregiver time and ensuring continuity delivering service. This is especially important as healthcare workers need not wait minutes for the system to reboot in a stressful, time-critical environment such as an Emergency Room.

Patients receive superior care because the providers have access from any location and at any time to the most recent patient information. As a result, the on-call doctor always has the immediate ability to retrieve historical and current data, even before the patient arrives at the hospital.

In another example of its innovation, Fujitsu delivers the power to support specialized applications in healthcare delivery with the industry's smallest touch-screen notebook, the Fujitsu LifeBook® P1000, which features a lightweight and ultra-portable design for maximum mobility.

As the United States' third largest Catholic health care system, Trinity Health, headquartered in Novi, Michigan, invests in innovative technologies to deliver superior health care services across its 26 member organizations. To reduce paperwork and facilitate information exchange within its home care division, Trinity Health deployed a mobile computer system based on Fujitsu LifeBook B Series notebooks that has helped field staff deliver enhanced patient care. Trinity Health selected Fujitsu's LifeBook B Series and P1000 notebooks to meet the project's needs for a portable, flexible and reliable mobile computing system.

"Automating clinical processes will reduce mistakes, eliminate transcription errors and prevent adverse drug events by providing clinicians and physicians with immediate access to all patient-related data, including prescription histories, at the point-of-care," explains Lee Castiglioni, senior project manager at Trinity Health. After reviewing solutions from Fujitsu, Panasonic, Compaq and others, Trinity Health deployed 70 Fujitsu LifeBook B Series and 40 LifeBook P1000 notebooks in the rollout of Project Genesis at Mercy Hospital.

Housed in wall-mounted chart boxes throughout the hospital, LifeBook B Series notebooks can be removed and carried to the patient's location or can be used in the chart box with a large screen monitor and keyboard. Trinity Health selected the Fujitsu LifeBook P1000 notebook for its mobile carts because of its small footprint and extended battery life. "Fujitsu delivers the portability we need to reach the patient's bedside," says Trinity Health's senior project manager, Lee Castiglioni.

Likewise, Associated Physicians for Women (APW) in Richland, Washington needed a portable solution that would give its physicians access to up-to-the-minute information—no matter where they were located—to treat patients both in the clinic and in the hospital. While many of the providers had been using laptop computers in their offices and at home, they were looking for a more mobile and less intrusive form of technology—one they could easily carry with them from place to place and use while they were visiting patients. They researched a number of different solutions, and quickly turned to Fujitsu to purchase the Stylistic® ST4000 Tablet PC.

The selection team at APW liked the Wi-Fi-certified wireless LAN connection feature because it enabled them to access and update files from any location. They also liked the large, easy-to-read 10.4" XGA screen and the fact that the Fujitsu Stylistic ST4000 Tablet PC did not require them to use an attached keyboard. According to Vern Turney, APW's practice administrator/IT director, "Patients receive more personalized care. Rather than have a doctor flip through a chart, the Fujitsu Stylistic ST4000 Tablet PC is actually allowing the providers to have more eye contact and deliver more personalized care than before."

At Lehigh Valley Hospital and Health Network (LVHHN) in Allentown, Pennsylvania, improving patient safety and care were top goals for its computerized physician order entry (CPOE) implementation. The portability of the Fujitsu LifeBook P1000 notebook has enabled the system to deliver immediate and seamless transition of information from physician to nurse to ancillary department. To maximize patient safety, the CPOE system also features automatic error checking, which helps ensure that any medications

"The fact that Fujitsu has been making lightweight tablets longer than anyone else made the providers at Associated Physicians for Women feel secure that they were investing in a solid product."

Vern Turney
Practice Administrator / IT Director
Associated Physicians for Women

or procedures ordered are appropriate for the patient. For example, when a physician enters a new medication, the system automatically alerts the physician to any known allergies or drug conflicts. While these safety measures were in place before, because the process was manually performed by pharmacy staff, it would often introduce further delays into the order process. "By enabling real-time, anywhere access to patient information and built-in safety procedures of CPOE, the Fujitsu LifeBook P1000 notebook is allowing us to realize the most important goal of our CPOE solution – patient safety," says David Pucklavage, Senior Clinical Analyst, Wireless/CPOE, Lehigh Valley Hospital and Health Network

Managing Costs in the Healthcare Chain

Providers including hospitals, medical practice organizations and other healthcare associations aim to supply the best possible patient care while at the same time managing expenses. Spiraling healthcare costs and recent economic conditions have made value-based technology spending a financial imperative. Reconciling these two competing priorities is one of the chief strategic challenges facing information technology departments everywhere. Fujitsu solutions resolve the conflict by providing high-performance tools that improve productivity, which in turn leads to better patient care and lower costs.

Fujitsu, a trusted technology partner for more than 30 years, is a compelling one-stop hardware vendor, providing innovative server products as well as healthcare-specific mobile solutions. The company's two lines of server products encompass both Intel- and UNIX® -based systems. The PRIMERGY® server line delivers Intel Architecture servers with rock-solid reliability and industry-leading performance. PRIMEPOWER™ servers bring together the world's fastest bus technology and the latest in SPARC® processor development to provide the best value for money and system scalability in a Solaris™ operating environment.

One of the largest health plan providers in the United States uses the Fujitsu PRIMEPOWER 1000 server as an Oracle database server divided into four partitions to serve its more than 2.4 million customers. The manager of computing systems at the health plan provider found that implementing Fujitsu servers reduced costs while significantly improving overall system performance. While investigating server technologies, the provider discovered that the high performance and advanced partitioning capabilities that Fujitsu offers make good economic sense. Specifically, the IT organization saved money on licensing fees while partitions provided a cost-effective solution for the company's multi-tiered application environment. "We did an analysis on the software we were using for statistical analysis, SAS, and the licensing turned out to be less expensive on the PRIMEPOWER server because SAS's licensing structure is based on the size of the machine," the IT manager explains. By licensing on one large machine rather than four, this Fujitsu client got a much better price point, dramatically reducing licensing costs.

On the performance side, there were significant gains in worker productivity. Once consolidated on the Fujitsu PRIMEPOWER server, transaction efficiency improved dramatically, with queries clocking in two to 10 times faster than on the previous system. Wait times are now very low, a welcome change in a customer-centric operation where users had been frustrated with response times of 30 to 60 minutes for long-running queries. With the Fujitsu GSS 4900™ storage system handling 1.4 terabytes of data, I/O times are also greatly reduced. Queries now run in a few minutes, which

By leveraging Fujitsu solutions on both the front- and back-ends of their operations, organizations reduce vendor complexity, streamline and simplify training, and significantly lower operating and support costs.

means that a user no longer has to switch his or her activity and remember to come back later for results, making operations more efficient and improving customer service.

Since the IT staff is familiar with Fujitsu PRIMEPOWER servers, which are based on the innovative and technically superior SPARC64® platform, this solution helps reduce overall training and support costs. With 15,000 Solaris-based applications available commercially today, the PRIMEPOWER choice means this organization will not be limited due to operating system or application obsolescence.

Ensuring Reliabiity and Availability of Critical Systems

Fujitsu PRIMEPOWER servers also provided IT professionals at the large health plan provider with the opportunity to engineer a robust system based on one server with the ability to run multiple partitions, each with its own processors, memory and disks. With superior partitioning capabilities from Fujitsu, the IT team could customize performance within a solitary UNIX server to allow the complete system to be fully optimized for both interactive and other advanced workloads. This flexibility allowed them to dynamically reconfigure the server based on actual loads. If they found the system without horsepower in one region, they could shunt more resources to boost power in that area. Adapted from the original mainframe design, the technically innovative Fujitsu interconnect delivers ultra-high per second I/O, making worries of failure during peak load times a thing of the past.

Other features of the PRIMEPOWER series support availability requirements. For example, the SPARC64 is the only processor on the market that performs an automatic retry at the hardware level in case of error. This is especially important in critical environments such as healthcare, where high availability is not just a benefit – it's a must-have.

With its internal high-speed bus-to-bus communications capability, the PRIMEPOWER server provides a method for quickly replicating data. A second copy of the data can be used to perform read-only transactions, such as queries, or to transform operational information into a data warehouse for business intelligence. This kind of service means that while executives perform data analysis for business performance improvement, production systems continue to run optimally.

Technology Prognosis

There is huge pressure on information technology professionals within healthcare organizations to keep up with IT demands. Advances in technology can significantly help streamline operations, cut costs, and improve productivity. Yet, healthcare companies must manage increasing technology costs, demands for new technology skill sets and attempt to develop efficient ways to deliver new solutions.

In the long term, healthcare information technology professionals must create real-time enterprise systems that are flexible enough to meet the demands of end-users, while based on a rock-solid back-end infrastructure. Information must flow freely between all of the key stakeholders involved in the care delivery including employers, payer organizations, physicians, suppliers and consumers.

Fujitsu Computer Systems' complete line of high-performance and reliable mobile computers and server products are designed and manufactured to tough specifications based on more than 14 years of

experience implementing systems in demanding healthcare environments. In addition, Fujitsu offers managed and professional services that help diminish risk, reduce complexity, improve performance and help customers achieve operational excellence.

About Fujitsu Computer Systems

Headquartered in Sunnyvale, Calif., Fujitsu Computer Systems is a wholly owned subsidiary of Fujitsu Limited (TSE:6702) committed to the design, development and delivery of advanced computer systems and managed services for the business enterprise. The company offers a complete line of high-performance mobile and desktop computers, scalable and reliable servers, as well as managed and professional services. Fujitsu Computer Systems emphasizes leading-edge technology, exceptional product quality and user comfort and productivity, as well as outstanding customer service.

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