Cerner and Interoperability: Expertise from the inside out

Our perspective on building a better-connected world

Notice:

What you are about to read is not a standard white paper.
It is not an academic dissertation written from 10,000 feet. Instead, HIMSS has given us an opportunity to share some success stories, and explain some of the connectivity strategies that Cerner has followed with our client partners on the path toward interoperability. And while we're gratified by our collective progress, we recognize that this is a long journey, and that interoperability is a uniquely interdependent activity. We understand how the accomplishments of other healthcare technology companies are contributing to the development of an interoperable world. Above all, we understand how important it is for all of us to work together in making this very important vision a reality.

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The biggest challenges demand the most experience

According to the *New England Journal of Medicine*, only one hospital in 50 has a comprehensive electronic records system, and only 17 percent of physicians use any kind of electronic records.[1] So with the federal government now mandating change, the need for expertise in this area has increased dramatically. In this paper, we will explain why we believe the primary strength needed to achieve interoperability is *extensive healthcare technology experience across the entire spectrum of care.*

The fact is, interoperability will be both the most promising and the most difficult challenge the healthcare industry has ever faced. It will require technical sophistication and unprecedented cooperation at every level. One can already see why exceptional experience will be essential in a technology partner as government standards become ever more-demanding.

"Interoperability is a defining characteristic for the future of healthcare. It's one of the top two or three things that must be done in order for the transformation of healthcare to occur."

- Dick Flanigan
Senior Vice President
Cerner Corporation

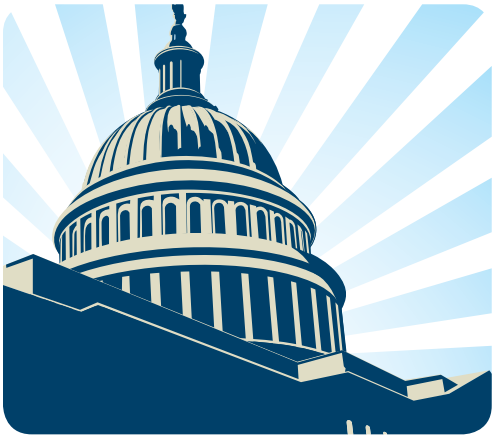
Focused from the beginning

Cerner occupies a natural position of leadership in this process, partly because our commitment to the transformation of healthcare is not a recent development. We've been specializing in healthcare automation for more than 30 years, and introduced many of the most influential concepts in the industry. Today, Cerner has the most comprehensive array of clinical and healthcare management solutions in the world. That's the kind of strength, stability and experience every healthcare organization deserves, regardless of size.

We started by automating a single hospital lab, then multiple departments, then an entire hospital, then an entire healthcare system, and then an entire country. Few other companies have as much breadth of experience across so many automation platforms.

One of the best-connected companies in the business

Because of our unwavering focus on this industry, we know the culture, the language, the nuances of healthcare, and we know how to make all the components work together. In fact, virtually all our installations include non-Cerner software, and we have the largest installed base of hospitals. As a result, Cerner has exceptional experience in making data travel accurately across different kinds of software, which is the core proficiency required for interoperability.



Cerner is represented in the federal IT standards committee, providing expertise to government officials who write interoperability regulations

Cerner: Expertise from the inside out

Throughout our history, Cerner has been a champion of fully-integrated automation within the "four walls" of the hospital. We still advise our clients that the best systems are all-Cerner systems, so each department can be properly integrated with every other department. But while integration is ideal, the reality is that nearly all our clients use software from different vendors.

That's why Cerner has made connectivity a way of life, so data travels easily and accurately from one department to another. In the stimulus era, that data must now travel outside the "four walls" to other healthcare venues throughout the community, including hospitals and physician offices, medical devices and electronic health records (EHR), research organizations and individuals.

Cerner already has experience in building interfaces *within* the hospital, and the same teams will be creating the external connections required for interoperability. So while we still believe in fully-integrated automation inside the "four walls," we have the technology, the experience and the commitment to help our clients connect across their communities, and qualify for federal incentives through the American Recovery and Reinvestment Act (ARRA).

[1] *Use of Electronic Health Records in U.S. Hospitals, New England Journal of Medicine, April 16, 2009, Volume 360: 1628-1638*

CERNER All Together

The Cerner Network: A simple, affordable way to expand healthcare networks

The Cerner Network is a suite of connectivity services that makes electronic data exchange fast, easy and affordable. With *Cerner Millennium*® or any other enterprise-wide HIT platform in place, the Network provides a way to connect physician offices to acute facilities, connect patients to providers, share information with almost any other outside data system, and help providers qualify for federal ARRA incentives. Central to the Network is the *HealthDock*™, a simple device the size of a modem that eliminates the need for hospitals to fax sensitive patient information to the doctor's office.

HealthDock: Fast, accurate and simple

The *HealthDock* allows hospitals to transmit clinical data from a patient's hospital visit to automatically update the physician practice EHR. The information can include test results, radiology reports, discharge summaries and other clinical reports. It can all be transferred in seconds, resulting in a more accurate flow of information and significantly better patient care.

What's more, while installation of other connectivity services can require up to nine months and a small army of technicians, the HealthDock can be operational quickly, with minimal technical support required. Providers can connect their organizations across the care continuum, no matter what EHRs are in use. It's the kind of simple, practical solution you'd expect from a company with more than three decades of healthcare experience.

Key advantages for hospitals and physicians:

- Eliminates the need for primary care providers to spend time and money developing interfaces between multiple hospital EHR systems.
- Reduces the cost for supplies, equipment and labor associated with faxing medical records.
- Improves the speed of data sharing through a real-time, secure HIPAA-compliant network.
- Eliminates the need to have a staff person scan faxed records into the EHR system.
- Clears up the problem of lost or misplaced faxes, eliminates wasted time trying to track them down or re-send them.
- Provides a Master Patient Index to match patients and physicians, ensures clinical information is delivered to the appropriate chart.

Connectivity that works: A cardiologist's testimonial

"Before we had (this system), our nurses were spending two days a week re-keying the hospital's lab results into our EMR (electronic medical record)," said Dr. Robert Middleton, cardiologist at Cardiovascular Consultants in Auburn, Wash. "Now they focus that time on patient care. The amount of time this has saved our physicians, nursing staff and medical records team has been significant. The electronic merging with our EMR has been effortless and continues to allow our staff to get results to patients in a timely manner."

Connecting healthcare providers and individuals

For healthcare to truly be effective, people must play an active role in their own care. Just as having access to information is important for a clinician to make informed decisions, it's equally important for individuals to have access to their healthcare information. This information can help people manage their health, make healthy lifestyle decisions and become active participants in their own care.

Cerner's personal health platform solution goes beyond a basic online repository of self-entered patient medical history. Connected healthcare providers can send data from a patient's hospital or physician office visit directly to the patient's personal health record (PHR). This not only eliminates the manual data entry step for individuals, it also ensures the information is accurately captured in the PHR. In addition, it allows people to control who can access their record, and what information can be seen by those providers.

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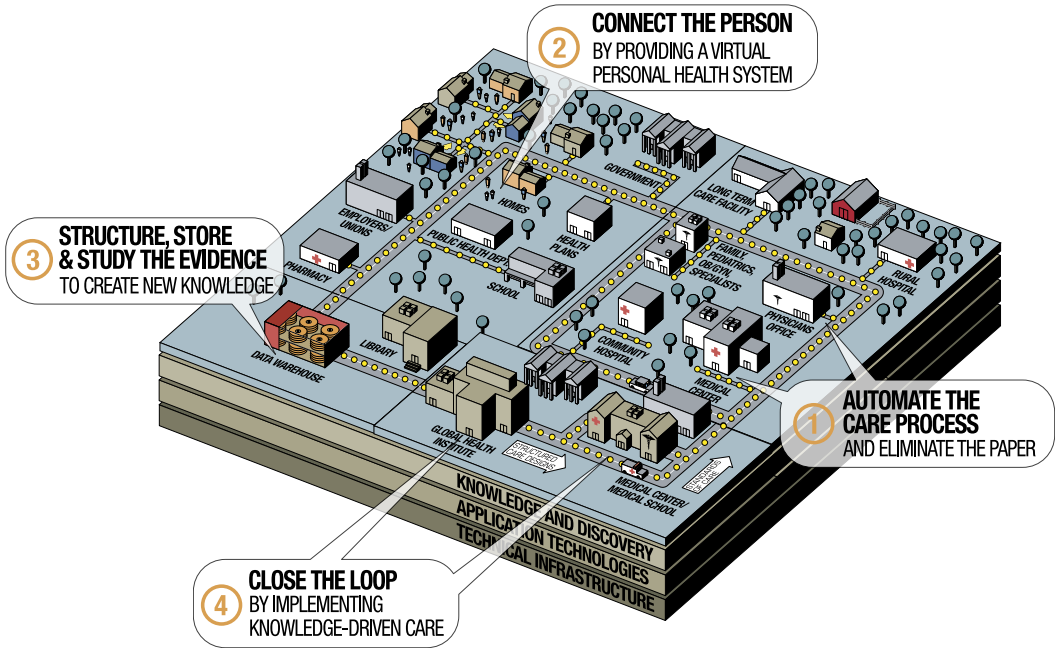
Cerner supports HIE's to create a unified patient record

To provide safe, effective care, healthcare professionals need to see a patient's entire medical record. The challenge, of course, is that patients typically have paper records scattered across a variety of different providers, so there's no comprehensive summary available. To solve the problem, healthcare and community leaders have formed Health Information Exchanges (HIEs), which are organizations that electronically gather clinical information from a variety of hospital, community and regional sources, compiling the data into a single patient record. It's exactly the kind of situation where interoperability is the key unifying capability.

A good example is the Lewis and Clark Information Exchange, a nonprofit 501(c)(3) organization that's formed a partnership with Cerner to serve people living in Missouri, Kansas, Nebraska and Iowa.

The HIE helps eliminate administrative duplication, creates safer, more accurate patient records, and helps reduce costs by eliminating unnecessary duplications of tests and procedures. Most important, it helps providers develop a better-informed diagnosis and treatment for each patient.



Our Community Health Model shows Cerner's vision of an automated system that extends beyond the four walls of healthcare organizations. Cerner technology enables physicians to make the best possible treatment decisions, gives individuals the resources they need to better manage their own care and organizes medical data to help speed scientific discovery. Taken as a whole, this closed-loop system improves the quality and delivery of healthcare.

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CareAware: Connecting medical devices and the EHR

Connecting medical devices to the EHR is an important step toward interoperability. The data captured by medical devices holds an important piece of the patient's healthcare story, and needs to be electronically incorporated into the EHR instead of being manually entered by healthcare providers. When caregivers have instant access to a richer set of patient information, it improves clinical decision-making abilities and ultimately, patient outcomes.

Industry experts recognize the knowledge gap between devices and patient information. Manual data transcription errors and workflow inefficiencies that arise from the separation of the EHR and medical devices can introduce the potential for patient harm. To help hospitals address this knowledge gap between devices and the EHR, Cerner created the *CareAware*® device connectivity architecture. The *CareAware* architecture can connect medical devices to any EHR platform, enabling bi-directional data sharing between medical devices and the patient record.

CareAware iBus: The USB for healthcare

Much like a USB port that connects peripheral devices to a computer, the *CareAware iBus*™ solution provides plug-and-play capabilities for connecting any medical device to any EHR system. The *CareAware iBus* solution was developed through collaboration and testing with Cerner clients and certified device partners to create a standard for medical device connectivity and workflow transformation.

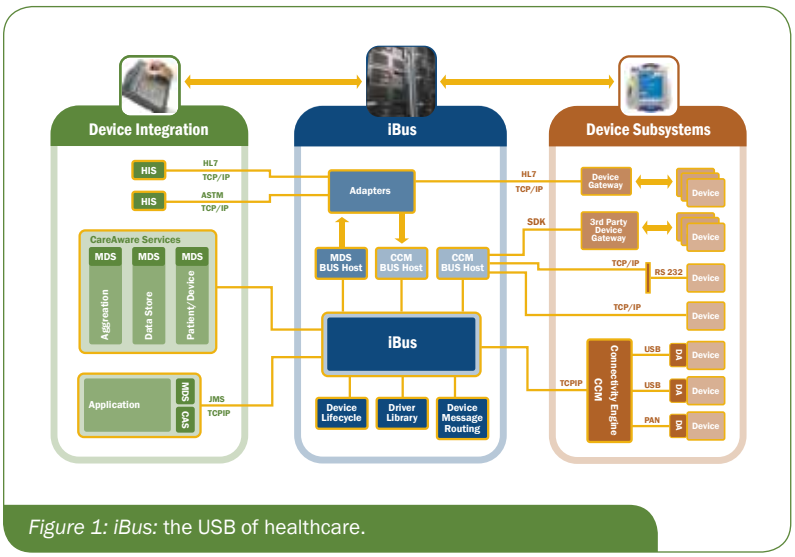

Figure 1: iBus: the USB of healthcare.

The *CareAware iBus* solution manages communication between devices and clinical applications hospital-wide. IT teams can use the solution to monitor device performance, connectivity status and device utilization all within one view. Once a device is connected to the solution, it is immediately recognized and can begin transmitting data to the EHR. The *CareAware iBus* Solution received 510(k) pre-market clearance from the U.S. Food and Drug Administration and is now available in the United States and all U.S. territories.

The UAB story

UAB Health System in Birmingham, Ala., has been using the *CareAware* device connectivity architecture since May 2008 in four different care venues: cardiac intensive care, coronary care, medical intensive care and post-anesthesia care. After seven months, UAB reported the following benefits:

- Reduced the average time needed for nurses to input vital signs from 4 minutes to 20 seconds — a 92 percent efficiency gain.
- Reduced the average time necessary to search and document retrospective data from 10 minutes to 20 seconds — a 97 percent efficiency gain.
- Reduced the average time nurses needed to associate patients to devices from 90 seconds to 10 seconds — an 89 percent efficiency gain.
- Reduced biomed system analyst time needed for troubleshooting from 16 hours per week to 30 minutes per week—a 98 percent efficiency gain.

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Linking research and clinical care

Historically, healthcare information technology and clinical research systems have been disconnected, supporting separate, sometimes redundant, processes and workflows. Use of these disparate systems can result in patient safety concerns, inefficient processes and data quality discrepancies. Cerner bridges these communication gaps with interoperable solutions designed to integrate research and healthcare processes. Cerner developed the *PowerTrials*® and Discovere™ solutions and the Cerner Research Network to facilitate information sharing between research facilities and clinical sites. Patients who indicate interest in research and meet the study qualifications will be fully informed about the study and sign an informed consent before being enrolled in the study.

Enhancing communication between researchers and clinicians: PowerTrials

The Cerner *PowerTrials* solution facilitates clinical trials by integrating research processes into the workflow of clinicians who use the *Cerner Millennium* EHR. The *PowerTrials* solution provides clinicians, site researchers and patients with increased opportunities to contribute to the development of new therapies supporting a safe and effective research environment which leverages evidence-based knowledge.

Integrating research processes into the workflow of the *Cerner Millennium* EHR will facilitate communication between clinicians and site researchers. Clinicians and patients will have access to information about prospective research studies, and patients who voluntarily choose to enroll in a trial will have their consent information and enrollment status readily accessible by all clinicians.

Connecting research sites with research sponsors: Discovere™

Cerner has expanded its focus beyond integration within organizations by building solutions to support interoperability between collaborating research sites and between research sites and sponsors. The Cerner Discovere™ solution streamlines research study build and reduces the time associated with study start up. Once research participants are consented and enrolled in a study, site research personnel enter data directly into the online form or review the data relevant to research that has been electronically populated from a participant's EHR.

The Web-based platform will allow biopharma researchers to:

- Gain a clearer picture of how a product is performing in the real world by easily integrating data from consenting study participants and site researchers
- Accelerate study start up and implementation through intuitive data collection workflow and the ability to pre-populate electronic Case Report Forms (eCRFs)
- Increase data quality by reducing transcription errors

The Cerner Research Network

With the advent of EHRs, technology can help solve the problem of connecting clinical sites and patients to available research studies. The Cerner Research Network identifies research study opportunities for clinical sites by scanning aggregated data in the *Cerner Millennium* EHR for a match with the study requirements.

The network is compliant with patient privacy regulations, including HIPAA, and is designed to protect sponsor and site confidentiality. By matching research protocols with the appropriate sites, the Cerner Research Network makes physician and patient participation in clinical trials easier and ultimately helps new medications and treatments reach patients faster.

Interoperability: A giant step toward our original goal

In 1979, Cerner began with a vision of dramatically improving the effectiveness, safety and financial soundness of our healthcare system. For many years, we've known our job would not be complete until we had helped achieve a fully-connected system that made quality healthcare available to everyone. Interoperability is clearly a fundamental requirement in achieving that objective. That's why Cerner will continue to lead the collaboration that will bring us closer to that goal. Meanwhile, for healthcare organizations seeking a long-term interoperability partner, it's worth considering a company with the kind of stability, experience, and commitment to healthcare technology that began more than 30 years ago.

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