

# Hospital digitization: panacea for an aging population



*When electronic health records (EHRs) fully integrate with mobile computing and point-of-care systems to produce “big data” that goes far beyond clinical interactions, the health-care industry will have the building blocks to truly leverage artificial intelligence (AI) and solve some the largest cultural and economic challenges facing the modern world.*



Medical professionals need technology that allows them to focus on the humanity that attracted them to medicine in the first place.

Despite advances in computing technology, AI, and communications, the world has barely even imagined — much less realized — the many ways that digital technology can make health care a more human-centric enterprise for caregivers and patients. And the need couldn't be more dire.

The World Health Organization (WHO) predicts that the number of people over age 65 will grow from 524 million in 2010 to 1.5 billion in 2050<sup>1</sup>. As a result, more people will have more chronic conditions, requiring more medical care than ever before. Growing demand will further aggravate today's shortage of medical personnel, a situation made worse by changing family structures that reduce the number of people available to care for family members at home.

Health-care — and more specifically hospital — digitization offers a way to improve the equation by simplifying operations, amplifying a caregiver's ability to make smart decisions based on a wealth of available data, boosting productivity, and reducing costs. While the U.S. and parts of Europe have helped lead the world toward the benefits of EHRs and hospital digitization, the global management consulting firm McKinsey still ranks the health-care industry below most other industries in digitization progress. Importantly, McKinsey says the answer goes beyond technology: medical professionals need technology that allows them to focus on the humanity that attracted them to medicine in the first place. Wireless data networks and portable solutions such as mobile devices with power sources that never die can help clinicians focus on what matters most: the health of the patient.



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## Data that improves patient outcomes

Data is critical for the future of health care. It is the “new oil” or “new gold” — an extremely valuable commodity that can potentially transform the way health care is created, studied, delivered, and funded. In the future, “smart hospitals” will use specially designed infrastructure to collect health data and share it among all departments, data management systems designed to help medical personnel quickly identify and access the most important data, and clinical processes specifically designed to take advantage of the new digital collaborative infrastructure.

The good news is that the technology to make all this happen — from EHRs to mobile PDAs and wearable monitors — is available today. The newest mobile devices offer now many cutting-edge benefits to health-care professionals, everything from additional screens on the edges of devices for assessing the severity of incoming alerts to larger screens for reviewing imaging and diagnostics. Even power systems have been redesigned, with the leading mobile solution offering the convenience of wireless inductive charging, hot-swappable batteries, and smart charging docks that lock devices from unauthorized access while charging the device and avoiding device failure from broken contacts. But despite the new technology available to hospital administrators, all regions of the world, including the U.S., still have a long way to go to realize the full potential of digitized health care.

To better understand the state of the technology and the road map to the digital hospital, it helps to look at the promise of digital health care compared against the realities of today. While improved patient outcomes, greater provider satisfaction, and reduced costs are the primary drivers of hospital digitization, the specific abilities of a digitized hospital practice provide a more detailed snapshot of the medical industry’s progress and remaining needs.

**Improved diagnosis.** Digital information sharing, including digital imaging and test results, helps a doctor reach the correct diagnosis in the least amount of time. As more data becomes available for analysis, made possible by pushing digital technology throughout the hospital and beyond to the patients themselves, increasingly powerful AI software will help filter, sort, and organize the massive amounts of information stored in EHRs, so that a patient’s most important health problem rises to the top. These analytical tools will also help physicians learn and become better at their jobs, since diagnoses and patient outcomes will be recorded and analyzed not just during treatment but after treatment as well, further improving hospital processes. More than \$5 billion has been invested in startup companies focused on big data and AI in health care. Few advances

will have a greater impact on patient outcomes than AI for both hospital diagnoses and remote care, but AI needs clinical data to be effective. Today's dual-SIM, dual-display PDAs with smart code readers are the perfect choice for collecting patient data in every environment and with maximum ease of use. Only by building data acquisition throughout the hospital and its operational processes will hospitals have enough data to fully realize the benefits of AI.

**Personalized care everywhere, all the time.** By combining real-time wearable medical technology and monitoring systems with information from a person's individual genetic profile, medical professionals will be able to deliver more effective treatments. For example, a genetic test could determine what genetic variations are present in a woman facing breast cancer, allowing the physician to prescribe a treatment that is specifically effective for that patient. But for personalized care to be a reality, real-time data acquisition needs to integrate with EHRs and other data sources at the digital hospital. Real-time access to a patient's data will improve continuity of care, especially for aging populations that increasingly require specialists in addition to primary care.

**Expediting drug discovery, clinical development.** Pharmaceutical research and development (R&D) programs are benefiting from machine learning that enables the virtual screening of millions of compounds to potentially treat ailments. Digital solutions such as clinical trial simulation, computer-assisted trial design, and model-informed drug discovery and development will also expedite the pace of new pharmaceutical development as well as provide data for improving medical procedures.

**Streamlined operations inside and outside the hospital.** Paperwork: No one likes it. The need to document patient outcomes regularly is cited as a primary reason for burnout among health-care providers. By employing digital devices with the most powerful processors, wireless communications, large displays for maximum user satisfaction at every step in patient care, a second display on the top of the device for quickly previewing messages and alarms, back-end systems can further automate record-keeping, freeing up health-care providers to focus on the humans in their care and not just insurance or regulatory compliance. Collaborative infrastructure such as this also simplifies communicating with external labs, work associates, and even customer referral sources, reducing costs across the medical enterprise.



Adapt to virtually any medical use by combining the latest wireless technology with advanced mobile computers.

## Overcoming the final challenge: us

Bureaucracy, hurdles to professional participation, outdated systems, and unstructured data are regularly cited as reasons why hospital digitization is not further along. At the core of each of these issues are humans, the people who either design systems for medical care or are called upon to help those in need.

According to the Healthcare Information and Management Systems Society (HIMSS), hospital digitization is progressing slowly, although the potential is tremendous. While health-care managers are aware of the many benefits offered by hospital digitization, the problem is still viewed mainly from a data record and data sharing point of view; there is less interest in fully defining the infrastructure that would connect all parts of the health-care experience.

Experts suggest that an important first step is to have staff on board from the start of the program. From sourcing portable devices to the visual composition of reporting screens to custom reports that will enable health-care providers to refocus on the humanity at the center of their jobs, it is critical to remember that the core of a digital hospital isn't ones and zeroes. Data is the digital representation of husbands, sisters, and sons. Ultimately, it's not about the data. It's about a better and healthier future for all. By combining the latest wireless technology with advanced mobile computers that can adapt to virtually any medical use — from bed care to hospital logistics and from diagnostics to staff communication — the digital hospital offers great promises. Smart administrators will develop the infrastructure they need today to realize the potential of AI tomorrow.

For more information about hospital digitization and how advanced mobile devices can help improve life for clinicians and patients alike, check out [www.datalogic.com](http://www.datalogic.com)

### Sources:

<sup>1</sup> <https://www.pharmacytimes.com/publications/issue/2016/January2016/The-Aging-Population-The-Increasing-Effects-on-Health-Care>





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