

Future-Proofing Hospitals

The information technology needs of health care institutions are rapidly expanding, which makes it critical that the communications infrastructure is planned strategically.

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Today, hospitals are facing a multitude of obstacles when it comes to managing the rapidly expanding area of information management and information technology (IMIT) services. They are under pressure to reduce costs and manage budget priorities; healthcare professionals are often reluctant to adopt new technologies, and there's a drive to have systems interoperable not only within the hospital but also with partnering organizations. While electronic information is critical to the day-to-day operations of hospitals, many IMIT departments struggle to maintain services on dated infrastructure.

Within this context, hospitals that undertake capital improvement and redevelopment projects have a unique opportunity to acquire IT infrastructure that will support the ever changing needs of healthcare technology. Properly planned investments in key technologies have the potential to provide significant efficiencies and cost savings. This planning ensures that hospitals will be able to improve the quality of care they provide, balance clinical needs with demands on their resources, and allow for scalability and future flexibility as new technologies emerge.

Applications, devices and infrastructure

Hospitals wishing to future-proof their technology investments should address the following three considerations as part of their strategic planning process:

- Impact of system interdependency.
- Overall industry and technology trends.
- The hospital's future vision and strategic priorities.

Generally, IMIT systems can be divided into three categories: applications, devices and infrastructure. Applications include software-based systems that support operations, such as Hospital Information Systems (HIS) that provide financial, registration and scheduling functions, or those systems that support patient care, such as Clinical Information Systems (CIS) with the capability for electronic documentation and Computerized Physician Order Entry (CPOE). Devices include physical items such as smartphones, computers, dashboard displays and videoconferencing equipment.

Infrastructure isn't typically as visible to end-users – unless it stops working. It supports the applications and devices through systems such as wired and wireless networks, nurse call, video surveillance and data warehousing. Of these categories, infrastructure (specifically network infrastructure) is typically the most

critical to get right the first time because its performance affects not only the system itself but also the functionality of multiple other applications and devices. At the same time, infrastructure is also the most difficult and costly to update, since many of the systems are part of the physical building itself.

Seeing into the Future

With infrastructure identified as a key priority, the subsequent strategic planning should not only identify the functionality of the applications and devices, as required by the end users, but also consider how these needs might change and impact the infrastructure requirements. Four key trends are helpful in identifying possible future requirements:

Mobility. Staff, physicians and patients expect to be able to securely access information, communicate with others, and collaborate with their team conveniently and from any location. The proliferation of wireless devices like smartphones, tablets and laptops is just the start of this trend; we can expect to see more adoption and higher bandwidth requirements of mobile devices in future.

Internet of Things. Connected “things” (including smartphones, sensors, lights, coffee makers and even cars) already outnumber the world’s population. Gartner, an American information technology research firm, predicts there will be over 26 billion connected devices by the year 2020. These devices will require data ports on the network, and infrastructure must be available to securely transfer, store and manage the increasing amounts of data.

Bandwidth. Not only will there be an increase in the quantity of devices, but those devices will be sending more information across the network. High-definition video streaming, videoconferencing and electronic imaging has already increased bandwidth requirements beyond what anyone expected a decade ago. We can easily expect these and other services to demand faster network speeds and better performance in the future.

Cloud Computing. The improvement in the availability and security of network services provides an opportunity to consolidate data storage and processing power in the cloud, reducing the need to host applications locally within the hospital. Cloud computing is already moving beyond individuals to change how organizations store and manage data.

Overlay Future Vision and Strategic Priorities

These trends should be viewed through the lens of the hospital’s future vision and corporate strategy. Many hospitals are targeting a paperless environment, closely following the Healthcare Information and Management Systems Society (HIMSS) Electronic Medical Record Adoption Model (EMRAM). Meanwhile others are focusing on establishing interoperability with partnering care providers in their community in order to align with provincial or regional initiatives. Strategic planning for IT infrastructure design might mean prioritizing robust security for the wireless network to support Bring Your Own Device (BYOD), or investing in a 40Gb backbone network to support the fastest connection speeds for high-bandwidth applications.

Ultimately, strategic planning should be seen not as a one-time event, but as a continuous effort and dynamic process that enables organizations to prioritize investments in emerging technologies. Hospitals may face challenges in adapting to the growth of information management and information technology, but by thoughtfully considering the impacts of future trends and integrating them in a strategic plan for technology investments, their systems will provide achieve value and performance for years to come.