Making the Right Hardware Choices

WITH MORE HARDWARE OPTIONS TO CHOOSE FROM, CIOs STRIVE TO BALANCE WORKFLOW, BUDGETARY, AND INFRASTRUCTURE ISSUES

BY JOHN DEGASPARI

EXECUTIVE SUMMARY:
A rapid expansion of computing hardware options is paving the way to better patient engagement and increased productivity. For that to happen, CIOs must balance their choices against workflow issues, infrastructure requirements, and budgetary constraints.

Without a doubt, this is an exciting time when it comes to computer hardware selection, with a rapid growth in options available to doctors and nurses making their daily routines. The choices being made by CIOs are, in a very real sense, transforming the vision of healthcare reform and policy decisions into care delivery reality.

New choices of mobile devices such as tablets and smartphones are providing clinicians with far more flexibility as they make their daily rounds, while wall-mounted flat-screen monitors in patient rooms are proving to be powerful education tools for patients who are being given the information they need to take a more active role in their own care. When added to the more traditional com-
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Putting inventory of workstations on wheels (WOWs), PCs, and laptops, there seems to be something for everyone when it comes to meeting clinician preferences. Meanwhile, some vendors are beginning to develop software products that support these new hardware tools.

These potential benefits come with their own set of challenges. Most of all, developing a robust IT infrastructure, and introducing these tools in a way that meshes with clinician workflows and enhances productivity, at a time of significant budgetary constraints for hospitals, is a combination of factors that is proving daunting for many healthcare IT leaders. Added to all this is the need to meet meaningful use deadlines at the same time. And in trying to meet those challenges, CIOs are finding that there is no such thing as one-size-fits all.

As noted by Curt Kwak, CIO of the western region of Providence Health and Services, Renton, Wash., “Everybody has the same requirement: make data available, and make data easy to access and use; and the devices need to be very functional. It’s the differences in preferences that we are trying to corral and standardize across the enterprise. And that is going to take a little bit to do.”

‘WORKHORSE’ STAYING POWER

Preferences are often tied to workflow and the task at hand. Larry Funk is the former CEO of Laguna Honda Hospital and Rehabilitation Center, a post-acute care facility in San Francisco, who now runs a healthcare consultancy in the San Francisco Bay area. He maintains that nurses do see the value of having a charting device near the bedside, which many hospitals have sought to provide with wall-mounted computers in the patient room or WOWs, but he adds that clinicians still need some degree of privacy and separation during charting. Some hospitals have sought to satisfy both demands by positioning fixed computers outside patient rooms, which allows patients to be observed but also provides a level of privacy for charting activities.

Jim Venturella, CIO of the University of Pittsburgh Medical Center (UPMC) health system’s Hospital and Community Services Division, agrees. After testing the model of having computers in patient rooms, “We moved away from that model,” he says. “Clinicians want to be away [from patient rooms] when they are doing documentation or orders,” he says.

In Venturella’s view, part of the continuing demand for WOWs involves their versatility. He describes the carts as a sort of go-between model that can be moved in and out of rooms as needed, to accommodate various workflow needs. WOWs are still the workhorse at UPMC, he says. They can be wheeled where needed, and also serve as a workspace. UPMC has just gone through a process of streamlining its carts for medication delivery and specimen collection, he says.

Chuck Podesta, senior vice president and CIO of Fletcher Allen Health Care, Burlington, Vt., who has embraced many of the new hardware choices, maintains a healthy respect for carts. “The issue with nurses is that they always have something in their hands,” he says. “With the cart, they can take all of that stuff with them.” He advises caution when deciding to implement new computing tools. “People need to study workflow before they say we’ll just have a bunch of iPads at nursing stations that they can just grab and run. Eventually we will get there, but we are not there yet,” he says.

Roland Garcia, senior vice president and CIO of Baptist Health, Jacksonville, Fla., says choices are influenced by real-estate constraints and the environment of care. At his hospital, the ICU and ED have computing devices by the bedside; while med-surg units have a complement of workstations, WOWs, and mobile devices.
Nonetheless, the winds of change are clearly blowing in the direction of smaller, lighter, and more mobile. One of the proponents of this view is Podesta, who says that mobile computing in its various forms is on the rise. He sees the iPad, and to a lesser extent, the iPhone, as game changers. He says that vendors have begun to take notice, by launching applications for mobile devices. Fletcher Allen, for example, is getting ready to implement Canto, a read-only EMR developed by Verona, Wis.-based Epic Corp. for the iPad. (Haiku, a counterpart program for the iPhone, has also been developed by Epic.)

UPMC’s Venturella notes that the rapid expansion of mobile computing devices in the consumer market has begun to be felt in hospitals. How well the devices have taken hold largely depends on how well the devices meet the needs of the particular user, he says. The iPad, for example, has been embraced by some physicians, although less so by nurses. "Physicians are there for a shorter period of time, in the general med-surg area. They are in and out, just doing their rounds."

He adds that UPMC has tested many tablets with physicians, and many times they have handed them back, because they didn’t meet their needs. "They need to be able to go in, sit down with the patient and walk back out and around," he says. "But they still want a full keyboard and a desktop, and to be able to sit in front of a larger screen while they are viewing PACS images." He believes that iPads and like devices will have a place in physician workflow, but will probably not replace more conventional devices.

Venturella says there is a mix of hospital-owned and personal mobile devices in use at the hospital. UPMC supplies small numbers of iPads and smartphones. As the hospital moves into the next phase, it has had discussions focused on controlling or managing the devices. During the last nine months, UPMC has been reviewing the infrastructure for mobile device management, and security and privacy teams have been evaluating whether the right tools are in place to manage that. In addition, the IT support team has to expand its skills as devices from a variety of manufacturers are introduced, he says.

The key, he says, is to have applications that are built for particular devices. Venturella says UPMC is beginning to build an infrastructure to pilot a set of mobile applications from Kansas City-based Cerner Corp., the provider’s EMR vendor. The initial stage will be to review laboratory, medications, orders, and documents.

In addition, UPMC is in the process of upgrading its wireless infrastructure. "People have become far more reliant on these devices, and what you built five or six years ago doesn’t necessarily have the right coverage or strength to support the number of devices you have tying in now," Venturella says. UPMC has its wireless network segmented into one for patients and the other for clinicians. It is considering creating a separate wireless network for personal wireless devices brought in by physicians.

While acknowledging the impact of mobile devices in the healthcare setting, Kwak of Providence expresses some skepticism. "I don’t see them as enterprise-wide ready, because they are a consumer product versus an enterprise product," he says. "From an IT perspective of someone who has worked in enterprise, they are just not there." The caveats, in his view, are that they cannot be encrypted like traditional laptops and tablets, and they are fragile. Traditional PCs and laptops have the necessary infrastructure for support in an enterprise environment, can be encrypted, and are physically rugged, he adds.

Podesta also says that maintenance and security of an increasingly diverse set of products is significant, adding that the Department of Health and Human Services Office of the Inspector General and the Office of Civil Rights “are focused on starting security audits this year, and the first thing I heard they are going to start auditing are mobile devices, including laptops.” He notes that some vendors are offering solutions that can manage a mixed mobile environment from a security standpoint, which he sees as a growing need in the future.
Despite the significant challenges, Kwak says he understands the appeal of small mobile devices: they are sleek, relatively inexpensive, and easy to use. In a nod to the preferences of some of the hospital’s clinicians, Providence is testing small mobile devices such as iPhones and Blackberrys for Microsoft Office type applications; it has not yet tested them in clinical applications.

RISE OF THE THIN CLIENT
The virtual desktop is becoming a more important factor in the healthcare environment as CIOs seek to offset hardware costs. Potential cost savings are significant, Podesta says: “Virtual desktops are going to be a game changer, because it allows you to go with a thin client into your nursing areas and your clinical areas. It gives you the ability to buy a $300 device with no C drive, lock it down and manage an image from the profile in the server, versus the PC.”

Garcia notes that thin clients reduce the costs of ownership, not only the initial cost of the device, but the cost of maintaining the device. Although Baptist Health has not widely deployed thin clients, Garcia says the hospital is working toward expanding thin client deployment. One limiting factor, he notes, is that some legacy applications prevent the deployment of thin client technology across the board. Hopefully, applications will evolve to be supported in a thin client environment, he says.

Both Providence and Fletcher Allen are currently testing the virtual desktop on the iPad. “You are really using these devices as a portal to an application, versus an application actually residing on the device, which mitigates that encryption risk factor,” Kwak says. In his view, using mobile devices as thin devices with no data residing on them is a prudent way to go. “This would allow manufacturers to lower the cost of computing devices. They won’t have to concentrate on things like encryption, because the virtual desktop will take care of that piece,” he says, adding that the cloud can be leveraged to accommodate thin devices, which would reduce the hospital’s infrastructure costs.

“From a PHI perspective, once you do that, everything is on the server level,” Podesta says. “They are interacting with, in our case, with the Epic system through the virtual desktop, so you don’t have to worry about if they misplace their iPad, or it gets stolen, because there is no PHI stored on it.”

Podesta says Fletcher Allen currently has a mixed environment of PCs and thin clients, but he says that at some point the hospital will convert to thin clients completely. He adds that the virtual desktop offers benefits over Citrix, both from an IS perspective and a user perspective, because it requires less maintenance and is easier to log on. The virtual desktop allows roaming profiles, a benefit in a busy environment when clinicians may be using different types of devices during their rounds, he adds.

DUAL USE: EDUCATION AND ENTERTAINMENT
Not all of the hardware innovations are in the mobile arena. Some hospitals are using flat-screen mon-
itors in patient rooms for patient care, as well as entertainment. Dual use of the television in the patient room can expand the concept of patient engagement in their own care, while freeing up the nursing staff for other tasks, according to Podesta.

Fletcher Allen, for example, is currently running a test program with Boston-based Aceso, in which wall-mounted flat-screen televisions in patient rooms push out care information to patients. “If you have had a hip replacement, but also have diabetes, that is going to be on your problem list in Epic,” Podesta explains. “The system knows that, and can push out the appropriate information without having the nurse do that.” The system can also be used in the discharge process, and update the discharge summary to verify that the patient has gone through the education process, Podesta says.

The advantage of this approach is that it is an efficient way to engage the patient and family in the care management process, he says. The patient education information can be made available in the patient’s home after discharge as well, Podesta says.

Explaining the move, Oriol says that going with Linux is both more secure and less expensive. “In these clinical workstations, we don’t need Word or Excel and other Microsoft Office tools. Because these are clinical devices, the applications can be accessed with Citrix and a web browser,” he says. The conversion to Linux has saved significant costs in license fees, and also discourages users from downloading harmful software, he says. Regarding Citrix, he calls hardware costs a wash because of added server costs; but he adds that the value for the IS部门 is better control, because devices are managed centrally.

Keeping up with technology
By all accounts, staying up-to-date with all hardware releases is a demanding job. Several months ago Fletcher Allen created a position for a full-time “enterprise architect,” whose sole responsibility is to look at technology trends and put promising products through their paces to see if they fit in the hospital’s architecture.

At Providence, Kwak, who supervises three hospitals and more than 100 clinics and long-term care facilities in the Washington-Montana region, characterizes technology reviews as a constant process. “We meet with hospital executives once a quarter, and I have analysts and managers out and about every day looking at usability issues and struggles,” he says. In addition, a Technology Leadership Council meets once a month to discuss technological feasibility.

Each approach is an attempt to make informed decisions about the onslaught of new technology, and to make sure that whatever choice is made is a good fit for the clinician’s needs.