

Carts vs. Tablets:

7 considerations when choosing a mobile computing platform for your healthcare facility



Cart-based laptops, thin clients and all-in-one computers have a long history in healthcare facilities. But tablets like the Apple iPad and Samsung Galaxy seem to be the devices everyone is talking about these days. In fact, analysts expect tablets to outsell laptops by 2016. So how are healthcare leaders to choose which devices to deploy in their facilities? Obviously, any technology decision must be based upon the intended use of the devices and the goals of the deployment. Healthcare providers, therefore, must understand the strengths and weaknesses of the competing devices as they assess the needs of their facilities. Here are seven points you should consider before making the decision to deploy Mobile Computer Carts or Tablets.

1. Identifying Deployment Goals

Although tablets and laptops may be used interchangeably, they have different primary functions. Tablets are designed primarily for media access, and laptops are designed primarily for data entry.

With this in mind, tablets hold great potential for graphic-intensive uses. For example, physicians use tablets successfully for remote medical records access, remote diagnosis, and remote patient monitoring, and as patient assessment tools for mobility-related tasks. Tablets also may be used to deliver continuing medical education and patient education, allowing just-in-time training and widespread mobility.

Laptops, thin clients and all-in-one computers are designed for entering data. Updating medical records and preparing reports are accomplished easily on devices with traditional keyboards and navigation features, helping facilities comply with meaningful use requirements of Electronic Health Record (EHR), Computerized Physician Order Entry (CPOE), as well as other technologies. The initial benefits found from entering data at the point-of-care have helped to improve

patient safety by reducing medical and medication errors while future improvements are expected with enhanced efficiency in care delivery and improved quality of care.

With “Patient Satisfaction Scores” now determining 30% of a hospital’s incentive payments from Medicare under the Hospital Value-Based Purchasing Program, hospitals are continuing to look for ways to enhance the patient experience. To that end, because mobile cart technology provides access to computers and medication enabling nurses to perform numerous tasks at the point-of-care, hospitals have reduced the distances nurses walk each day by 50% to 80% during a 12-hour shift. This positive impact on workflow has not only helped to make the caregiver more efficient but also increased the amount of face time spent with the patient, thus improving patient satisfaction.

2. Determining Ergonomic Needs of the End User

Computer related injuries are increasing with the explosion of computer technology in the workplace. Poor posture, improper body positioning, repetitive motions, eye strain and etc., can be the cause of many work related injuries.



Carefully consider the needs and limitations of end users and enforce proper ergonomic guidelines for a safe computing environment.

For instance, according to the most recent National Sample Survey of Registered Nurses¹, the average age of the RN population in 2008 was 46 years of age. That average age is expected to continue to increase through 2020. Many end users in this age range may prefer full-sized monitors and keyboards (rather than touch screens). In addition, users evaluating tablets for healthcare use often say the process of scrolling from page to page on a tablet is annoying when entering or searching through large quantities of data. And, because most hospital patients are new, the amount of data to be entered is substantial.

Laptops, thin clients and all-in-one computers, which are deployed on carts, offer full-sized peripherals like keyboards, monitors and mice, making it easier for healthcare providers to read and enter data accurately. Because the height of carts is adjustable, users can type comfortably whether sitting or standing, without the neck strain associated with looking down for long periods of time.

A Harvard University study in 2011 found neck and shoulder strain was greater for tablet users, because of the tendency to place tablets on their laps. Specifically, “Flexion angles during tablet use were greater, in general, than angles previously reported for desktop and notebook computing.”² In contrast, when used to view media, tablets may have the advantage. Because they rely on touch screens, they are more easily accessible than keyboards for those with limited dexterity.

Anecdotally, physicians in the UK are treating repetitive stress injury in tablet users. Dubbed “iPad hand,” users complain of aches in the hand that holds the device and in the fingers after typing or swiping the screen. Arm and neck problems (attributed to poor posture while using the tablets) and eyestrain and dry eyes (similar to frequent LCD use), also were reported.

3. Determining the Degree of Mobility

In a healthcare setting, tablets and computing carts are equally mobile. Tablets have the advantage of being

lightweight and having a small form factor which make them very desirable from a convenience and portability standpoint. However, those very same qualities also put them at a high risk, as they are easily stolen or misplaced. As the number of tablets increase, the potential losses to the hospital also increase. The alternative is to mount tablets in each room, reducing their mobility and increasing costs, or to mount them to mobile carts.

Laptops, thin clients or all-in-one computers deployed on carts clearly belong to the facility. They move easily throughout hospitals and clinics, serving many patient rooms. Moreover, as the requirements for electronic documentation continue to increase at the point of care and the need for a more efficient way of dispensing medicine to patients, mobile carts outfitted with drawers, barcode scanners, printers, and etc., are the best solutions.

4. Assessing Power Capabilities, Requirements, and Constraints

The power requirements of a device under consideration are often overlooked when the computing decision is made. This includes computer run time, recharge time, battery capacity, battery size, battery type, battery memory effect and cost of replacement batteries. Therefore, before making a commitment, make certain that a devices’ power capability is in line with the clinical workflow demand.

Where the devices may be recharged also should be considered. If tablets are deployed, will there be designated and secure charging areas, and are sufficient outlets available? If cart-mounted computers are used, are their components designed to conserve power usage? Carts have their own battery power, but because they are used on nursing floors, removed from wall outlets, they also need periodic (though less-frequent) charging.

Improvements in battery chemistries and charging capabilities are allowing users to complete a shift without charging a device. The CompuCaddy® PowerStream power system used in their Fusion Series Laptop cart solution, for example, provides computer run time of up to 24 hours and a recharge time (if completely discharged) of 4 to 6 hours. CompuCaddy’s® Stealth Power option, offers 26 hours of computing time and 2 to 3 hours recharge time. The lithium



phosphate batteries used for those models have greater resiliency, so they can be charged intermittently or fully drained without damaging the battery.

However, when maximum runtime is not crucial to the application, tablets certainly offer a sufficient amount of runtime. Apple says the iPad's lithium-polymer batteries offer 10 continuous hours of runtime and according to industry reviewers, the Samsung Galaxy Tab 2 10.1, provides slightly more than 6 hours of battery life.

5. Considering Ruggedness

Whether you're using a rolling cart or carrying a tablet through a hospital, that device still requires a certain degree of ruggedness. Cart-based computers must withstand vibrations as they roll over floors and into elevators. Such vibrations may damage hard drives as the drive's head skips off the surface. Tablets are the least susceptible to this type of damage, followed by laptops. Because tablets are handheld, however, they are subject to being dropped.

Ease of disinfection also must be considered. Carts are sealed and can be cleaned with standard hospital cleaning solutions. Medical-grade laptops and all-in-one computers are available that can be disinfected. As yet, however, tablets lack that capability and may be harmed by the strong agents needed to ensure proper disinfection. Work with your hardware vendor to select ruggedized devices capable of withstanding the rigors of mobile use in a healthcare setting.

6. Assuring Backwards Compatibility

Currently, most software applications running in healthcare facilities were written for the Windows operating systems. Cloud-based data management systems using a web interface are removing some of the barriers imposed by computing platforms. Tablets still face the constraints imposed by their smaller screen size, which limits the data that may be displayed.

While tablets sometimes have applications that access healthcare information management systems, those systems do not run natively. Recent research indicates that iPad and Android users prefer using dedicated apps written specifically for their computing platform, stating that the

app quality is better than using a web browser, according to the McKinsey & Company report, "Cyber boom: Why Tablet Domination Has Only Just Begun".

Cart-based computing systems, in contrast, can access the databases directly, without requiring special apps. Additionally, they can accommodate the complete software application, thus reducing IT development time. Consequently, users' options are not limited by screen size or concerns regarding the size of the database they're accessing.

When considering tablets, be aware that the new Windows 8 operating system by Microsoft is not backward compatible for tablets. It was released October 2012 to work with touch screens and with desktop systems. Desktop systems that are upgraded to Windows 8 will be able to access files from earlier Microsoft operating systems (like Vista and Windows 7). The Tablet version of Windows 8, however, lacks that capability. Therefore, tablets running Windows 8 can only open files that were created using the Windows 8 operating system. This constraint severely limits its utility.

7. Assessing Security

Enterprise-level data security best practices are evolving from protecting the device to protecting the data. That strategy ensures that data resides on the server and is never downloaded to a device. It also ensures that as data moves throughout the system, each host server has the appropriate security in place to ensure HIPAA compliance. In such an environment, tablets and cart-based systems are equally secure. However, each of these computer types may contain sensitive information in its cache. At that point, mobility becomes a disadvantage. Because tablets are portable and ubiquitous, they can easily leave the healthcare facility and the cache can be accessed, thus compromising patient confidentiality. Although this is possible with laptops, too, removing them from the cart would likely attract unwanted attention.

Making the Decision

Ultimately, the decision to deploy tablets, carts or a combination of both depends upon the application. Before committing to a strategy, consider piloting both options.



Talk with the IT administrator and with end users about their needs and about the ramifications of each type of implementation. Ask:

- What is the goal in deploying bedside computing?
- How do uses differ among departments and type of users?
- What repetitive strains are reported by your staff during technology pilots?
- Is full access to existing hospital applications available on tablets and laptops?
- If not, what are the tradeoffs?
- Will any applications need to be rewritten or scaled down to accommodate tablets?
- How will security be maintained?
- How do the two options figure into IT's hardware refresh plans and IT strategy?

If the intended application is allowed to govern the choice of tablet or laptop, healthcare leaders may find a blended environment that leverages the best features of each device is most effective. Therefore, laptops, thin clients and all-in-one computers may be deployed for data-entry uses, and tablets may be used for media viewing (patient education, for example). Mobile computer carts and tablets each have noticeably different strengths and can be productive additions to healthcare facilities. Ultimately, the best computing platform depends upon its intended use and the willingness of users to adapt to it. ●

About CompuCaddy

Unlike many of its competitors, CompuCaddy focuses solely on meeting the point-of-care needs of healthcare providers. The company specializes in manufacturing Mobile Computer Carts, Workstations, Mobile Power Systems and Wall Mount Solutions for healthcare facilities throughout the U.S., Canada, and Puerto Rico. CompuCaddy's products are proudly made in the USA, and the company has built a reputation for building innovative, high-quality point-of-care solutions customized to fit the needs of any healthcare environment. Learn more about our products and services including Fusion and Cynergy mobile computer carts, OmniCenter workstations, wall mounts and the full line of innovative power systems by visiting www.compucaddy.com.