How Batteries Create Better Computers on Wheels

Power supply has been a major challenge when it comes to the computers-on-wheels that are rolled around hospitals and other healthcare settings.

It may seem strange, but batteries are taking a front row seat in the effort to improve point-of-care in hospitals, doctors' offices and other care facilities. Let me explain why.

Over the past few years, healthcare professionals have found that having data access at the point-of-care can dramatically improve the overall efficiency, quality of care and internal communication within care facilities. But doing so effectively requires continuous access to mobile computers that reach patients directly, creating a demand for both portability and continuous connectivity.

Unfortunately, using conventional COWs (computers-on-wheels) and WOWs (workstations-on-wheels) to gain point-of-care data access has been plagued by multiple issues—the majority of which relate to power supply.

Here are four traditional deficiencies when it comes to COWs in hospitals and other healthcare settings:

1. Out of Power

It is not uncommon for computer cart users to run out of power in the field. In order to make high powered computers mobile for more than a few hours, existing COWs and WOWs rely on extremely large, heavy and expensive batteries that require the computer to be shut down and plugged in for recharging, which can take hours and can cause delays in care. In some instances, healthcare personnel reported being distracted by alternating between caring for patients and monitoring their battery power. Such power constraints are insufficient for achieving the continuous reliability that is mandatory for quality, patient-centered care.

2. Changing Batteries

An extension of the power limitations of most COW batteries is the recurring need to shut down the device in order to exchange batteries. Depending on the particular use case and patient needs, powering down in order to continue computing is as disadvantageous as running out of power. In either case, healthcare providers are limited in their ability to both deliver care and to interact with patient data. Consequently, workers are forced to delay care that would almost certainly be more beneficial if delivered at once.

In addition, because care professionals were unable tell how much battery life remains in a COW, so many would forget to charge the batteries, which made the COWs highly unreliable for data access. Over time, many healthcare providers have opted to abandon unused COWs in areas that soon became known as "COW corrals."

3. Awkwardness

Most computer carts are inordinately cumbersome and heavy. The earliest versions contained large batteries that contributed to their substantial weight. Healthcare personnel can experience difficulty moving them around obstacles in close proximity to patients.

4. Total Cost of Ownership

Typical COW batteries substantially impact the total cost of ownership (TCO), which also factors into the ROI (return on investment) of these devices. Many of these batteries cost in excess of $1,000. When considering their power constraints and the limitations they impose on care practitioners, it is difficult to justify these hardware expenses that don't fulfill the basic necessities of mobile IT in such critical settings.

The Solution Is Hot-Swappable Batteries

Hot swappable batteries directly address each of the aforementioned pain points and power cutting-edge COWs that offer additional utility to computer cart users and the industry as a whole by eliminating data down-time in crucial life and death environments. The technological distinction between these batteries and their predecessors hinges on the fact that users can change batteries without having to power down their machines. Medical facilities can have multiple batteries that enable practitioners to charge one or more batteries while using a different one. The result is an uninterrupted availability of service worthy of the sort of care most health facilities strive for. Healthcare personnel are able to focus

more on their jobs and less on attending to the needs of their IT, which benefits their organizations and patients without delay.

Diminutive and Cost-Effective

The reduced cost of these batteries is attributed to numerous factors, especially when compared to the prices of the cart batteries for traditional COWs. Firstly, they are much lighter and smaller than the cart batteries. Consequently, they encompass less materials and reduce the overall load of COWs—which is key for maneuvering them in small spaces and adds to ease of use for staff. Also, the fact that there are more of these batteries than those in traditional COWs helps to keep their costs relatively low, since users inherently have options with them. Therefore, replacement of a single battery is less dire than it is with their counterparts. Typically, each battery consists of a lithium ion compound that weighs less than a pound. There is a lower TCO and greater degree of efficiency enabled by these batteries, which certainly justifies their expense and that of COWs in general.

Cordless Mobility Brings COWs Out of Corrals

Contemporary COWs deliver greater mobility based on their cordless nature. New COWs never require external power, which increases the number of places in which they can be deployed and, perhaps, the nature of use itself. This fact is important when incorporating telemetry data or other data sources generated from a device connected to a patient. These COWs are equipped with built-in Bluetooth for WLAN connectivity, which enables them to interact with an organization's overall network virtually anytime. Hot-swappable batteries built into the all-in-one computer are more convenient, portable, cost-effective, and dependable than other forms of power supply for computer carts. Utilizing them with modern COWs gives these machines, and their users, the sort of reliability necessary in sensitive healthcare environments.

Source: Daw Tsai, DT Research

Daw Tsai Sc.D., is president of DT Research (San Jose, CA), a designer and manufacturer of purpose-built computing solutions.

[Image courtesy of DT Research]

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