



Zeroing In: UWB Technology Offers Greater Accuracy for Real-Time Location Services

By Luc Darmon

The launch of the world's first commercially available ultra wideband (UWB) wireless transceiver in November 2013 creates new opportunities for 'location-based' healthcare services, such as RTLS systems, patient monitoring, and critical equipment and personnel tracking, in U.S. hospitals.

Up to now, the services offered to hospitals and other care facilities have been restricted to 'zonal' or, at best, 'room-level' precision due to the limited accuracy of current technologies such as WiFi or Bluetooth in a range between 5 and 7 meters. However, ultra wideband (UWB) technologies that offer reliable accuracy below 10cm are now commercially available. And with this new found reliability and accuracy, a whole raft of new tracking, monitoring, identification, and mapping services can now be offered.

The healthcare industry in particular has been an 'early adopter' of RTLS technology, and applications of indoor location technology have already proven valuable in many areas. This includes the ability to track the movements of patients while in the care of the hospital – such as newborns or infirm elderly, for example – either for their own safety and security or simply to track their care. Another is asset tracking; monitoring the locations of movable critical – and costly – equipment so that it can be found quickly when it's needed. A third is tracking personnel, so that the nearest appropriate staff member can be summoned for any need that arises. All these services will be enhanced with greater accuracy - knowing in which *room*, rather than on which floor or zone critical cardiac equipment or emergency personnel are located for example, might prove the difference for a more successful patient outcome.

Other uses of indoor location technology are also tailored to the needs of the healthcare industry. Monitoring which staff members are near various patients might ensure that each patient is checked on a regular basis, and as a means of auditing who was near a patient if a question arises about the treatments that were given. Equally, monitoring when staff members use hand-washing stations will ensure that sanitary procedures and policies are followed. Access to supply rooms or medicine cabinets, particularly for restricted drugs can be more accurately monitored and logged.

In all of these examples, an accuracy of 7 meters is simply not sufficient, even if one wants to know what room something or someone is in. For example, if a patient or staff member needs to be urgently located, a precision of 7 meters may not be accurate enough, especially when there may be four rooms spread over two floors within that range.

Moreover, if the goal is to know which patient's bed the nurse is standing by, or which medicine cabinet in the supply room a medical technician is opening, then still higher accuracy is needed. Most hospital beds are within 2 to 3 meters of each other, and many hospital supply rooms have the cabinet with sensitive and risky medicines only a meter or two from the cabinet with the gauze and iodine.

Finally there are other, more general services, which could usefully be applied to hospital life: indoor mapping for example. Where is St Thomas' ward? Where is the florist? Where is the hospital bookstore or café? Already shopping malls and department stores are gearing up for indoor mapping and associated services to become a reality, and hospitals and other major public buildings will not be far behind.

If indoor location technology is going to be used for location, monitoring access, and logging medical checks, or any other policy maintenance, then a solution is needed that will deliver very high accuracy, all of the time. Only ultra wideband can deliver that precision.

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