

Real Time Location System for Tracking Assets in Hospitals

Interview with: *Neil Diener – CEO, Dan Cusick - VP, Customer Development*



Neil Diener - CEO

CEOCFO: Mr. Diener, what is the concept for Emanate Wireless today?

Mr. Diener: We are a new startup in the wireless health care space, and are introducing an innovative product into a market that is referred to as RTLS, real time location systems. In general, RTLS systems are used to track assets, staff, and patients in a hospital. In particular, our company is focused on the asset-tracking piece of it. One ROI of using RTLS for asset tracking is to help staff efficiency. Say you have a piece of equipment that moves around the hospital -- such as a pump, ventilator or heater. By putting a wireless tag on the equipment, it makes it easier for the staff to find it. For example, if you are a nurse or a clinical engineer, and you need to find a piece of equipment, you can go directly to where it is located instead of searching around for it. The second ROI of using an RTLS asset tracking system is that it helps reduce the total number of assets in the hospital -- because when equipment is easier to find you have less hoarding behavior, and less chance of shrinkage where equipment gets lost or stolen. RTLS systems have been in the market for a while, but there have been some drawbacks to the systems -- and we have introduced a new tag to try to address those.

CEOCFO: Are most hospitals using some system today or would they be starting from scratch with your system?

Mr. Diener: It is a little bit of both. The numbers we have seen show that maybe 20% to 25% of hospitals have deployed. Some hospitals on the very small end are less likely to deploy. It seems like the sweet spot is when you get to be about 200 beds or bigger. But even among the hospitals that are big enough, there is a percentage that deployed and a percentage that have not. We are targeting both of those markets. For those hospitals that have already deployed a system from one of the current vendors, our product can be viewed as an add-on enhanced tag that can work with their existing system but give them better functionality. If they have not deployed a system at all, our tag can be used together with one of the RTLS middleware vendors to provide a complete solution for someone who is starting with nothing.

CEOCFO: How does it work?

Mr. Diener: What is unique about our tag is that it is specially designed to work with AC powered assets. Essentially, the tag goes in line with the AC power cord. If you think of your old desktop computers that had a power cord plugged into the wall and then there was a receptacle to plug into the computer -- most pieces of medical gear such as pumps, ventilators and monitors, look exactly like that. They have a power cord that plugs into the wall and then plugs into a receptacle on the device. The way our tag works is it mounts in-line with that cord. Instead of where the cord would normally plug into the medical device, our tag has a little pigtail cord that plugs in, and then you take the cord that plugs into the wall and you plug it into the tag itself. That is what is fundamentally different about our tag -- it is in line on the AC power. Existing tags are just basically stuck on the device with tape, whereas ours is mounted as part of the AC power cord, and this results in some significant advantages.

CEOCFO: Might there be a tendency to unplug from the tag as opposed to actually unplugging from the wall?

Mr. Diener: What most hospitals do already is they attach power cords to the device so that they do not get lost or they do not pull out accidentally. The mechanism for this is that the receptacle that the cord plugs into has two screw holes next to it, and they use little shrouds or cages that plug around the cord and hold it in place, so you would really have to get in there with a screwdriver to unplug it. If you think of our tag as the exact same cord, you can use those existing shrouds or cages to make sure the tag does not get removed from the device -- and we believe almost all of our customers will do this. The same approach can also be used to make sure the cord does not get removed from the tag, since we have the same receptacle and same screws. Another layer of protection can be achieved by mounting the tag to the asset. Even though it is attached by the cord it can additionally be secured to a leg or surface of the device. We have

belt loops on the tag to support tie wraps. Customers we have spoken with are looking at both approaches – locking the cord, and also mounting the tag so it is further secured.

CEOCFO: *What are the advantages overall to this system?*

Mr. Diener: The number one benefit is that we remove the most significant maintenance cost and pain point of the current solutions -- which is battery maintenance. The typical tags I described have a non-rechargeable battery. Every year or so, someone needs to service the battery, and it actually adds up to quite a bit of work. You may have 5,000 to 6,000 assets tagged, and we have heard hospitals say they have one or more full-time people just changing the batteries on tags, so it is the number one pain point with the current systems. Because we are in line with the AC, we utilize a rechargeable lithium ion battery that is a lifetime battery. You can think about it this way, once you mount our tag on the asset, it never needs to be serviced! That is a big savings in terms of ongoing maintenance costs. It is also more functional because what happens with current tags is if you do not change the battery in time and it goes dead, the device actually becomes lost. With our tag, whenever the device is plugged in, our battery full recharges -- and you are never going to have an out of battery condition.

CEOCFO: *Where are you in the process of commercialization?*

Mr. Diener: We are about to go into our first pilot trial with a major hospital system in March. We will be in full production by the end of the second quarter.

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CEOCFO: *When you talk with people in the hospital community, do they understand immediately?*

Mr. Diener: When we explain our tag, there is a big “aha” moment. And there are really two pieces of it. I described the benefit of never needing to replace batteries. But there is also a second major benefit which is that because we are in line with the power cord, we measure how much power the device is drawing. Because of this, we get very accurate data on when the device is actually in use versus not in use. We can differentiate between unplugged, plugged in, idling, or actively in use. Remember, one of the big value points from RTLS is optimizing how much equipment you have and a key part of this is understanding if your equipment is mostly sitting there idle or that you are running the equipment on full utilization. Current solutions can give you information on where a device is located, but they really cannot tell you about the usage state. What the current systems do is they approximate utilization by saying if a device is in the hallway maybe it is not in use, but if it is in a patient room, it is in use. This approach is subject to error because the location accuracy is not perfect, and also because equipment can just sit in a patient room even though it is not being used. Between the battery and the very accurate measured utilization of info, we get a double “aha” from customers -- where people say it is exactly what they need. Some customers resonate more with one benefit or the other, but both of those combined provide a powerful motivation for customers to move to this kind of tag for their powered assets.

CEOCFO: *How do you cut through all the noise that hospitals are receiving from different vendors with new ideas for today’s challenges?*

Mr. Diener: That is a good question, and I think it is one that we are still learning about as we bring our product to market. We are looking at trusted channels -- a lot of hospitals already work with integrators that they trust to recommend different solutions. Our thought is to get to those trusted advisors who help make the recommendations to hospitals so we can be heard above all the people claiming to have something new or the best idea out there.

Mr. Cusick: Another aspect of this is RTLS or asset management in general has an accepted ROI with most health care providers. Most providers realize that asset management can benefit them in several ways. But the barriers to entry are costs to deploy, maintaining the system, and the complexities of operating it on their network. How we cut through that is by reducing the costs and complexity of deployment and maintenance. Once you mount our tag on an asset, it will last the life of the asset. Mount it and forget. Also our cloud-based server is easy to use and assigning tags to assets. Being cloud based, it does not require extra servers or time from IT organizations to maintain it. Those are a couple of key areas. Lowering the barrier of entry for RTLS is one of our main goals from Emanate’s perspective.

Mr. Diener: Back to your earlier question of how many hospitals have deployed, our observation has been that it is a well-accepted market, but there are people who have hesitated because of the upfront costs and complexity. We are trying to do what we can to remove those barriers and get everyone on-board.



CEOFO: Do your systems offer reporting features?

Mr. Diener: We provide a cloud management server, and one of the purposes is just for configuration and firmware updates of our tags. But the other function of that server is to collect data from the tags over time, aggregate it, and to provide useful reports. For example, our Utilization Report allows you to see when equipment is busy, is utilization trending up or down, are there all-busy conditions. Hospitals need to optimize how they divide up equipment between different departments or buildings. We have reports that can directly give the information needed to make those decisions. We are also able to integrate in with middleware partners such as CMMS or EMR that can combine utilization info with additional data. We also have reports to show how much energy is being used by different devices.

Mr. Cusick: The server also has APIs. So if a hospital has an existing system already in use for asset management, we can support integration with that system to incorporate our data into the existing reports that they are already familiar with.

CEOFO: Do you see a time where you might be working with equipment manufacturers to supply the device immediately at time of original purchase?

Mr. Diener: Yes. We have discussed that model from a couple angles -- one is working directly with equipment manufacturer, the other is potentially working with equipment leasing companies. To date, hospitals have been buying RTLS tracking systems as a separate system, so that it can be used to track assets from different manufacturers. A challenge becomes -- if every manufacturer has their own tracking system but it works for their device only, and then you suddenly have too many systems in the hospital. So, the current state of the art is separate system, but as it evolves over time it could be that certain players, for example manufacturers of beds or other common devices, would build in this kind of functionality or at least sell it as an add-on.

CEOFO: What have you learned from the time you thought of the concept until now? What is different and better about the device?

Mr. Diener: A third feature that I have not mentioned yet is Bluetooth Low Energy. Typically with RTLS systems, there are a number of different wireless technologies used. The most popular systems use Wi-Fi because there is already Wi-Fi infrastructure in the hospital. The tags will transmit Wi-Fi, and that is how they are located. Most systems also use a more localized radio to help with accuracy, because with just pure Wi-Fi, you only get around 25 feet accuracy. So on top of Wi-Fi, they usually add infrared, low frequency or ultrasound. The idea is that they put emitters in certain rooms to help with the accuracy of the location. Our tag supports all of these technologies -- we have a Wi-Fi radio, and we also have low-frequency ultrasound and IR. But in addition, we saw a technology trend for a new radio called Bluetooth Low Energy. It is an extension to Bluetooth that allows for a very low-power connection, and it is already supported in all the smartphones. If you are familiar with things like FitBit, iWatch and similar devices that connect to your smartphone, they use Bluetooth Low Energy to communicate. We saw this technology trend, and so we put a Bluetooth Low Energy radio into our tag. Our original thought was for a hybrid location model that works like this -- Imagine you are a nurse who is looking for a device that has one of our tags on it. You look at the RTLS system on the map and it says it is in a certain room. But when you go there, because the accuracy of Wi-Fi is only within 25 feet, you do not see the device. By having Bluetooth, the nurse or clinical engineer can take out their smartphone, and using the Bluetooth radio, they can ring and flash the tag. It is similar to the way you would find your phone if you lost it in your house -- you call it. This idea really resonated with customers. But what we found is that when people heard we have a Bluetooth radio, they also thought of a lot of other interesting use cases. For example, let us say I am a clinical engineer and I go in a storage room. I can now easily get an inventory list all the devices that are in that room. If I have to find a specific machine because it needs to be serviced, I can ring and flash that one in the storage room so I can find it very quickly, as opposed to looking at the serial numbers on each device. So customers started running with the Bluetooth idea and thinking of other interesting things they could do. On top of this, Apple is pushing iBeacons based on Bluetooth, which is all about Wayfinding. Wayfinding is like when you use your iPhone or Google phone and you use a map and GPS to help you drive where you want to drive. But once you go into a building, it does not work because GPS does not work indoors. People have been trying to solve that in a number of different ways, and one of the ways they are doing it now is by putting these Bluetooth beacons around the building. The phone, by hearing those beacons, can determine where it is. As long as it has a map, it can give you directions on how to get somewhere. If you are in the hospital, maybe you are trying to find the pharmacy or a specific doctor's office or waiting room. What we saw over the last year as we developed our product is that these Bluetooth beacons really started taking off. Cisco and Aruba Networks, which are the big Wi-Fi vendors, both announced support in some of their equipment for iBeacons. We saw more and more that iBeacons are going to be very predominant, and our tag is already prepared to take advantage of it because it already has the Bluetooth radio in there. It can see the iBeacons

and use this info to and help address that location accuracy problem. The Bluetooth piece is the trend that has really taken off as we watched over the last year.

CEOCFO: Are you funded for the steps you would like to take or will you be seeking partnerships or funding of any type?

Mr. Diener: We are angel funded, and we have sufficient funding for organic growth of the company. We are considering raising some additional funds in the second half of the year to accelerate growth in terms of filling out our product portfolio. Although we don't require additional funding, it is likely that we may look for some at the end of the year.

CEOCFO: What should be different a year from now?

Mr. Diener: From Emanate's perspective I think what you will see is that we continue to grow our solutions in this space. We have this first leading edge tag for AC powered devices, and we are looking at filling out that portfolio. For example, there are types of assets that do not plug into AC; so we are looking at innovative battery-powered solutions. People are also using RTLS systems for other things such as environmental monitoring, and that is something that we are considering on our road map. You will see a bigger portfolio and a broader solution set from Emanate as we launch with this innovative product and then we build out from there. We will be focused on solving problems people have with respect to making the hospital more efficient. Along with making products that really solve the pain points they were intended to fulfill.

CEOCFO: What should people remember about Emanate Wireless?

Mr. Diener: I think what they should see is we are an innovative, new entrant into the health care IT space. We are applying our broad background in wireless and product development to determine where we can use latest technologies to provide solutions that solve people's pain points. We want to provide solutions that really knock it out of the park. Our one-line mantra is we want to be Nest for health care.

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine



Emanate Wireless

**For more information visit:
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