

INTELLIGUARD® SOLUTION FOR MEDICATION MANAGEMENT



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Founded in 2006 and headquartered in Carlsbad, Calif., MEPS® Real-Time, Inc. (mepsrealtime.com) is now a leading provider of Radio Frequency Identification (RFID) solutions for the pharmaceutical and healthcare industries. Its suite of Intelliguard® Management Systems offer healthcare providers unprecedented real-time visibility of medical and pharmaceutical inventory to reduce supply chain costs, improve patient safety, increase efficiency of pharmacy and nursing staff, and eliminate human error.

Paul Elizondo, Director of Engineering and R&D at MEPS, shared his insights into the use of RFID in the healthcare market and his thoughts on ThingMagic's embedded RFID technology and development tools.

Q. MEPS products are positioned as “RFID Solutions for Critical Inventory.” What types of inventory do your products manage? What value does RFID-enabling your products provide your customers?

Our solutions are focused on high-value, critical dose, controlled drugs and processes. This is the value proposition for our hospital customers. When you have a drug that costs hundreds or thousands of dollars per dose, there is an obvious value to reduce inventory levels and manage expiration dates.

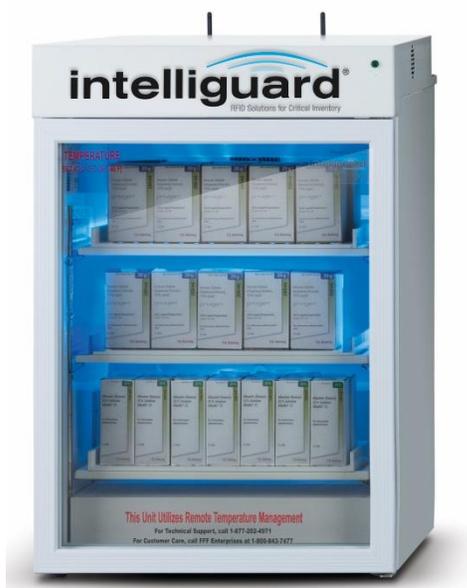
Reducing inventory of high-value drugs can mean hundreds of thousands of dollars freed up for the hospital. But the drugs must always be available when required for a patient. Our systems provide real-time visibility of inventory and immediate notification of minimum PAR levels; therefore, they are a perfect solution for a vendor-managed inventory program.

These high-value drugs can also be an expiration risk. Typically, inventory is manually rotated by pharmacy personnel as new inventory arrives, so that the first to expire is the first to be utilized. But, that doesn't always occur. Additionally, inventory can be stored in multiple locations throughout a hospital. Our solutions provide real-time visibility to expiration dates and provide alerts when a drug becomes short-dated, so pharmacy personnel can take appropriate action.

Another key value proposition is critical processes within the pharmacy where time-consuming tasks are performed. One of these critical processes is the replenishment of pharmacy kits, trays, and boxes distributed throughout the hospital. Once used on a procedure (surgical or emergency), it is returned to the pharmacy. Some trays contain more than 150 drugs. The missing and used items must be identified

and replaced with the first-to-expire drug. It is a process filled with human error potential and can take upwards of 30 minutes. Our solution reduces the time to three to five minutes with 100% accuracy.

Our Intelliguard® Solutions include:



- Intelliguard Medication Management, featuring an Automated Dispensing Cabinet (ADC) that provides real-time, item-level visibility of pharmaceuticals with single and double-drawer options, including Cold (2° - 8°C) storage.
- Intelliguard Inventory Management, which features Controlled Temperature Cabinets that enable continuous temperature monitoring and real-time inventory visibility of high-value, critical-care medications. Cabinets have preset temperature settings for Cold (2° - 8°C) or Controlled Room (20° - 25°C) storage. Available sizes are from small under-counter to large-capacity models.
- Intelliguard Kit and Tray Management Systems, with countertop unit or an all-in-one cart to automate tray inventory, replenishment, and approval processes while significantly reducing required labor. Leveraging advanced RFID technology, the system enables scans of more than 150 medications in high-density trays, multi-layer tackle boxes and overlapping kit labels in a matter of seconds.

Q. Throughout its history, MEPS products have supported various RFID frequencies, including 13.56 MHz high-frequency and 2.45 GHz passive, before settling on EPC Gen 2/ISO 18000-6c UHF. What lessons were learned with each technology? What are the advantages Gen2 UHF?

In 1999, we employed 13.56 MHz RFID technology in our first attempt to track medication in small enclosures. The complexity of the read antenna systems, resulting from the inductive coupling nature of

the 13.56 MHz frequency, along with the non-deterministic, multi-tag read algorithm made it difficult to develop an accurate, repeatable and cost-effective system.

In 2003, MEPS decided to change frequencies and replace 13.56 MHz RFID technology with the recently developed 2.45 GHz RFID technology. This frequency offered the advantage of small read antennas, small RFID tags, high data rates, and a deterministic multi-tag read algorithm. While MEPS was able to develop and successfully deploy a refrigerated medication tracking product, reliability issues associated with the new technology and the lack of a worldwide standards made it difficult to move forward with commercial products.

In 2008, MEPS began the process of developing medication tracking solutions based on the newly ratified EPC Gen2 / ISO 18000-6c UHF RFID standard. The new air protocol standard offered high data rates, reliable RF communication, deterministic multi-tag read algorithm, noise mitigation, control of modulation type, and control of other parameters for customizing the RFID identification process for challenging applications. In addition, this world standard at the UHF frequency has benefited integrators and end users by creating competition around a single air protocol resulting in higher performing tags and readers while reducing cost of ownership.

MEPS Real-Time has developed a large portfolio of intellectual property, including trademarks, patents and patents pending.

Q. The adoption of UHF RFID in healthcare seems to be growing. What is MEPS experience and expectations for the future of UHF in this industry?

The business is experiencing huge growth and interest in our Intelliguard RFID Solutions. We believe this is because technology is quickly being identified as one of the only ways to reduce healthcare cost, improve quality of care, help prevent medication errors, and increase staff efficiency. These are the key drivers in healthcare today.

We believe UHF RFID is an excellent enabling technology for many solutions in the hospital.

Today customers are able to identify and purchase solutions instead of technology. As other RFID/Wireless solutions are successfully implemented with a positive ROI, such as RTLS/asset tracking solutions, customers consider additional opportunities to expand the benefits.

Research shows this trend continuing at a more rapid pace. New regulations, such as the Drug Quality and Security Act (DQSA), will increase demand. Costs will be reduced and capabilities will increase for UHF readers, antennas, inlays and smart labels because of the adoption in retail and healthcare. This will open up more opportunities with pharmaceutical manufacturers to selectively use RFID where there is a need for greater visibility of inventory.

Q. What do you see as the greatest barriers to integrating RFID into products and solutions?

Barriers that were there several years ago are no longer there. UHF has all of the capabilities of HF and greater long-term opportunities to expand and develop. It is a great solution for supply chain, and MEPS has demonstrated that in all of our technology solutions as well as with our business partners.

The hardware, database and inlay/tag solutions are available. The biggest barrier is overcoming the inertia of hospitals, medical clinics, etc. continuing to operate in the same historical manner. The challenge is not so much in getting the “tag cost lower,” which has been a barrier in the past, but in demonstrating the value-added and cost savings of employing true tracking and inventory systems.

Q. ThingMagic recently released our Mercury xPRESS Platform to simplify the integration of UHF RFID into products and solutions. As an early adopter of the Platform, what was MEPS’ experience and which features will assist your development efforts the most?

MEPS is developing several enclosure solutions for tracking medication in the healthcare market. These solutions require a small or headless computer system that can be configured for connection to a database wirelessly, by Ethernet or USB interface. The Mercury xPress Platform provides this flexibility, as well as allowing the use of either the M6e or M6e Micro readers, depending on the application. In addition, the Mercury xPRESS platform delivers an array of digital inputs and outputs for process control.

Q. A key feature of the xPRESS Platform is its extensible architecture, giving developers the flexibility to design for the future using a single platform. How will this support the development of RFID products in general and benefit MEPS®’ future development?

MEPS is developing RF-enabled enclosures for tracking medication in both stationary and mobile applications. As these solutions expand to address new tracking applications, the flexibility of the xPRESS Platform will facilitate the reconfiguration of products for new RF antenna systems, user interfaces, and control systems.

ABOUT JADAK:

JADAK, a business unit of Novanta, is a market leader in machine vision, RFID, barcode, printing, and color and light measurement products and services for original equipment manufacturers. The company designs and manufactures embedded detection and analysis solutions that help customers solve unique inspection, tracking, scanning and documenting challenges. The company is ISO 9001 and ISO 13485 registered.

Novanta is a trusted technology partner to OEMs in the medical and advanced industrial technology markets, with deep proprietary expertise in photonics, vision and precision motion technologies.

ThingMagic is JADAK’s RFID line of products and services.

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