

Unified RFID for EMS



Radio frequency identification(RFID) enabled *Asset Tracking and Inventory Management* solutions from FALKEN Secure Networks helps EMS organizations monitor the location and status of not only personnel, equipment and supplies, but also disaster victims. Also, its *Onsite ERT™* system facilitates a coordinated response with *Personnel Tracking* among different participating first responder organizations at the scene.

Unified RFID systems from FSN offer 3 key improvements for EMS:

Real-Time Asset and Inventory Management

RFID-Enabled Triage Tags for Patients and Disaster Victims

Incident Command Management and Personnel Tracking at the scene

Real-Time Asset and Inventory Management

First responders face a broad array of situations daily, from massive natural disasters to minor medical incidents and from widespread theaters of operation to local community incidents. Often events require on-site rapid response and decision making in hectic environments, in which pre-planning and preparedness dictate the successful outcome and results of responder actions. These situations extend beyond the defense of property to lifesaving.



Having a full accounting for assets, inventory and equipment, before and after events, is paramount to preparation for the next event. Establishing and executing service and maintenance schedules, examining equipment condition and replenishing consumed or expired inventory, and replacing missing equipment, are all critical to effective preparedness, operational efficiency and improved performance.

A priority for first responders is being fully prepared and equipped to react at any time to an emergency. One aspect of preparedness lies with ensuring that the necessary supplies, medicine and equipment are available at all times and are in good condition, as and when needed. Common problems frequently identified by EMS organizations are concerned with equipment and inventory supply and record keeping. These problems relate to re-ordering and re-stocking consumable inventory such as medical supplies, and to replacing damaged equipment and/or conducting repairs. The primary areas of concern were tied to the following logistic issues and activities:



Medicine bottle with RFID label

- ⌚ maintaining a central distribution center and optimizing equipment and inventory distribution
- ⌚ keeping outlying EMS stations appropriately supplied
- ⌚ maintaining appropriate levels of crucial supplies for emergency redistribution, such as medicines and disposable bio-medical items
- ⌚ ensuring that departments did not overstock inventory and subsequently overspend on non-essential items
- ⌚ ensuring that the useful shelf life of such items as medicine were identified and the items replaced as necessary

RFID systems are comprised of tags, readers – to identify and communicate with the tags, RFID Middleware - to collect and filter the data from the readers, and application software and integration components for backend systems and for management reports and required screen displays. Due to the large volume of items, the key to the solution is to use low-cost passive RFID tags. These can be placed on equipment and inventory to track their location and levels of consumption. The tags

are read by electronic sensors placed at strategic locations (termed



Infusion Pump



Defibrillator

'RFID chokepoints') in facilities, or by using portable readers. The embedded information on tags can then be transmitted either through USB or wirelessly to central databases for item identification, location verification and to automatically trigger predetermined actions in response to the collected information. EPC-based RFID solutions provide a low cost tracking and visibility solution that enables the tracking of inventory and assets as they move through pre-defined RFID Chokepoints within a facility or a vehicle. The Anaheim Fire Dept. has thus begun affixing EPC Gen 2 tags to medical supplies stored at the 12 fire stations so firefighters can automatically order new supplies when needed.



Motorola MC9090G RFID Handheld Reader

The RFID tags will cover all supplies, from Band-Aids to IV drugs, used by emergency medical technicians (EMTs) and paramedics when they respond to calls. The supplies are stored in individual bins, which are currently being tagged with the EPC Gen 2 labels. Personnel will employ the same handhelds used for the triage tags to scan each bin tag, then enter into the device the amount that needs to be ordered. The reader can then be docked, and the data from the order transmitted back to the department's headquarters as soon as network becomes available. Every time an ambulance is restocked, that information will be sent over as well, and a weekly order will then be built.

Next year, the Anaheim Fire Department plans to add active 433 MHz RFID tags to such high-dollar assets as rescue tools, cardiac monitors and automatic external defibrillators (AEDs). These tags will store in-service dates, maintenance schedules and other information. The goal is to have the tags remind services section managers of all required repairs and calibration checks.

First Responders can then see what's in their ambulances, and when things were last serviced. A quick scan with a mobile handheld reader and they can make sure the assigned equipment is in their vehicles. This is especially important on seldom-used items and reserve apparatus. This information is then tracked via a RFID reader within the ambulance walls which to correlate the equipment on each ambulance and integrated with the backend asset management system.

Business Benefits

- Decrease turn-around time of ambulances.
- Improved the efficiency of overall asset management and control of valuable assets.
- Establish an electronic record of which specific asset was on which ambulance at what time.

Triage Tags for Patients and Disaster Victims

MCI's or Mass Casualty Incidents require rapid and efficient triage, location, treatment and transportation of victims from the scene

to area hospitals and are a significant challenge to first responders, such as firefighters, police, and emergency medical technicians.



Standard Paper-based Triage Tag

Currently first responder communities rely on paper triage tags, clipboards of notes, and voice communications to share information during mass casualty incidents. Most often, they mark the patient's triage status and record limited information on injuries and treatments administered in the field.

This workflow has proven to be successful, but labor intensive, time consuming, and prone to human error. Many existing 'paper-based' triage tags require that first responders and medical personnel place tags on patients, then tear off the appropriate color-coded portion of each tag matching that particular patient's condition. The color codes are green, signifying minor injuries; yellow, for non-life-threatening conditions; red, for life-threatening injuries; and black, for deceased.

The torn-off portions are then compiled and used to determine the quantity and status of patients at the scene, and—if there's time to write down the information—when, and to which hospital, the patient is being transported. The paper tags are effective, but the process of collecting them and consolidating their information is time-consuming and prone to error.

The failure to adequately track the victims of Hurricane Katrina has revealed a major weakness in current national and local disaster preparedness plans. It made governments and private industries aware that existing paper-based tracking systems are incapable of managing information during a large-scale disaster.

In response to this challenge, RFID technology has been used in the development of next generation triage system to improve the effectiveness of emergency response. The RFID solution is able to capture data from the tags as they are scanned at every step of the way, from initial check-in by a medic to transport to the hospital, thus allowing for the seamless hand-off of patients. The



RFID Triage Colour-Coded Wristband

ability to quickly know the number of patients, as well as their types of injuries and disposition, is a huge step forward in the handling of mass-casualty incidents and will eliminate lost tags or missed information. This enables patients to be quickly reunited with their families.

The RFID-enabled system, consists of EPC Gen 2 tags embedded in the triage tags, which are affixed to patients via a lanyard or RFID-enabled, triage color-coded wrist bracelets for identifying patients. First responders and medical personnel are equipped with a handheld device containing a built-in RFID reader they can use to capture the tags' unique ID numbers. A display screen on the device guides a medic through a series of prompts requesting such basic information as the patient's approximate age, sex and condition.

The tags can be scanned once more when the patient is loaded onto an ambulance, at which time the hospital to which that person will be taken can be entered into the system. All of the data can then be transmitted to a back-end system that the commander in charge of the incident can access in order to better understand the situation and the fire department's response, as well as learn the quantity of patients and the individual status of each.

The benefits of RFID can be substantial in terms of the "seven rights": give the right medication to the right patient with the right dosage through the right route at the right time, and ensure that victims receive the right care at a mass casualty incident.

RFID offers significant improvements to triage mass casualty victims, track them from the incident to the area hospitals, and rapidly establish their injury and treatment file in the hospital information system. Not only does RFID technology help the first responders to classify and transport the victims effectively, but the proposed method allows family members to quickly determine to which hospital their injured relative was sent. From patient wristbands to tracking pharmaceutical inventories, RFID technology offers tremendous potential to improve patient safety, asset visibility, information security and operating efficiency for both healthcare organizations and first responders.

Incident Command Management and Personnel Tracking at the scene

For coordinated responses with other first responder departments, Onsite ERT™ gives incident commanders a complete, real time view of a fire or disaster scene. When lives are at stake, save critical time, reduce risk and danger, and improve decision making with ONSite ERT™.



OnSite ERT™ from FALKEN Secure Networks is a rapidly deployable system using state-of-the-art wireless sensors for **Real-Time** tracking of personnel and equipment automatically at emergency events, improving safety for responders and public. The system uses a combination of inexpensive, lightweight ID tags, portable, rugged Drop Readers, and streamlined Incident Command software to provide a complete view of the operating theater in real time.

The command laptop gets the signal strength readings off tags and GPS coordinates for boxes. Then, the GUI displays zone and firefighter locations.

The drop readers create an ad hoc mesh network. If additional boxes show up — regardless of which public-safety agencies deploy them — they'll join the network already in progress and relay information point to point. If there is a large-scale event and personnel from another department provide mutual aid (such as another Fire Dept or EMS), they can be added to the network.



(For more detail, also see FSN Application Brochure for Firefighters)

FALKEN Secure Networks(FSN)—Your partner for RFID automation

If you choose to pursue RFID implementation in your organization, here is the FALKEN Secure Networks commitment to you:

- FSN will provide solution architects to work with you to define system requirements for your particular installation. Multiple locations can be networked together for a central and real-time view and centralized management.
- FSN will do a RFID site survey to validate radio frequencies, tag types, system design and performance
- FSN will provide all necessary hardware and software to make the system work for you
- FSN will integrate the system with your existing enterprise management software
- FSN will provide documentation for the system, including operating procedures
- FSN will train your people
- FSN will provide warranty and continued system support

Contact Us



FALKEN Secure Networks (FSN) is the leading Canadian System Integrator and Solution Architect for advanced Active/Passive Unified RFID systems that leverage standards-based technologies. FSN integrates RF technologies for asset visibility, using EPC global standard RFID, Wi-Fi and Real-Time Location Systems (RTLS) for cost-effective design, and turn-key project implementation.

Contact FSN at 905-880-4044 or sales@falkensecurenetworks.com



Motorola/Symbol

PartnerSelect

Authorized Value-Added Reseller



CERTIFIED Partner

Authorized Value-Added Reseller



Authorized Value-Added Reseller



Authorized Value-Added Reseller



Authorized Value-Added Reseller



Authorized Mikoh Partner



Authorized FileTrail Partner



Authorized INSYNC Partner



CERTIFIED Partner

Authorized Value-Added Reseller



Authorized Value-Added Reseller



Authorized Value-Added Reseller



Authorized Value-Added Reseller



Authorized Value-Added Reseller