

Construction Site Solution Pairs RFID and Video Triax is teaming up with EarthCam to employ the latter's video-capture technology at construction site entrance points, thereby creating an automated link between a worker's ID number and video of that individual, with the goal of boosting safety and security.

November 19, 2019 - Claire Swedberg

Construction camera technology company EarthCam and worker safety technology firm Triax have partnered to offer a solution that combines RFID-based data regarding workers and camera-based video to provide builders and building owners with an automated view into what happens at a work site entrance. The solution combines Spot-r worker safety technology to identify individuals accessing a site, integrated with locking turnstiles, along with EarthCam's video-verification system.

The combined solution is now in use at a New York City construction site managed by Lettire Construction. With the technology in place, Lettire can manage its entrance gates based on RFID data, says Mike Fraser, Triax's VP of business development, and monitor what is taking place by viewing camera footage based on a specific RFID tag read. Lettire has already been employing Triax's Spot-R worker safety system for several years (see [New York Builder Brings Safety With Visibility via RFID](#)), and it recently had been seeking a way to include visual data at an entry turnstile.

The Spot-r Worker Safety system includes active RFID sensors and readers, as well as cloud-based software that enables construction companies to identify employees wearing Spot-r IoT sensors, and to locate and connect with workers and management onsite in the event of an emergency. EarthCam, a provider of construction camera technology, offers live streaming video, gigapixel panoramas, 360-degree virtual-reality site tours and AI-generated, time-lapse videos to its customers so they can monitor, document and promote their construction projects in real time. It offers what it calls "360 Reality" capture of hundreds of photos in 360 degrees.

The firm's customers include builders around the world, for such projects as civil, commercial, government and residential construction, according to Brian Cury, EarthCam's CEO and founder. "Our company is focused on better lives through visual information," he explains, "so we are always looking for other data that can subsidize or support that effort." Triax and EarthCam recently identified an opportunity to combine their technologies to allow a clear view into who enters and leaves a construction site, linked to automated RFID data.

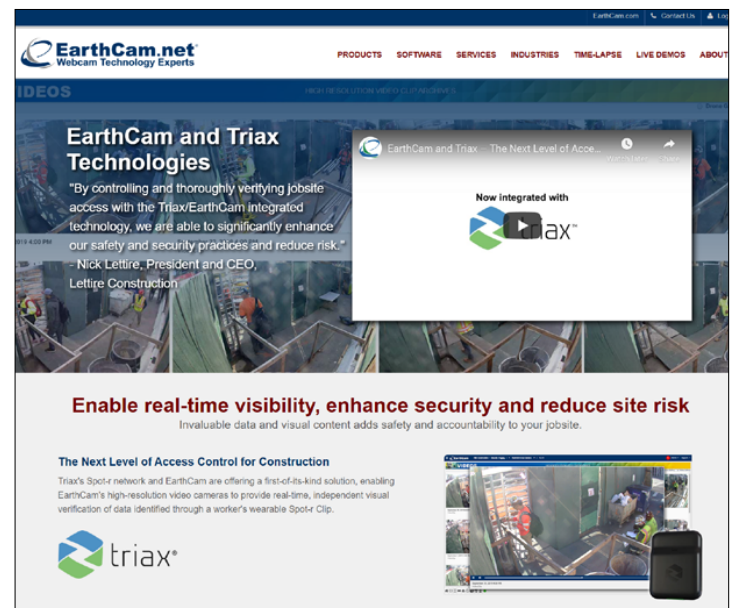
"Managing the movement of contractors on a complex job site is a difficult task," Fraser states. Automated turnstiles offer one way to limit who comes onsite. With RFID linked to those turnstiles, builders can better control which individuals enter automatically. Sometimes, however, construction managers need more than an ID. In some cases, they require a picture. "Our clients have increasingly asked for better access control," Fraser says. "They need to make sure everyone who is onsite is permitted to be there."

With Spot-r technology, builders can control the time and date on which individuals or contracting companies can be permitted onsite. If a worker arrives on a date or at a time at which he or she is not allowed, the turnstile will not grant that person entry and an alert can be prompted. With the EarthCam partnership, users can link that information to video or still photos, Fraser says, and thus have multiple tools on hand to help prevent safety incidents or security problems.

Spot-r consists of 900 MHz active proprietary RFID sensors about the size of a traditional beeper, as well as receivers known as nodes. The sensor devices, each of which comes with a built-in rechargeable lithium battery, can be worn by a worker, with the unique ID number encoded in the device linked to that individual's identification in the software. The sensors also come with altimeters, an accelerometer and a gyroscope to identify a person's movements, direction and impact in case of a fall. Each device contains an infrared sensor as well, to confirm that it is being worn.

The nodes, which are installed around a worksite or at the entrance gate, are about half the size of a typical lunchbox. They can receive transmissions from sensors at a distance of up to 1,000 feet in an open environment or 200 feet in a dense, indoor environment. The nodes operate in a mesh network, with some using a cellular connection to forward data to Triax's cloud-based server and dashboard, where software can integrate that information with a company's project-management software.

Typically, each sensor is set to beacon every 12 seconds. Its transmission is then received by up to four of the closest receivers. By integrating with EarthCam's video data, Fraser notes, the technology now provides visualization. One or more EarthCam cameras are



installed at the worksite entrance gate, constantly collecting video, which is stored on EarthCam's cloud-based server.

When a worker wearing a sensor arrives onsite, the Triax nodes capture that data and track the individual as he or she passes through the gate. In the event that an irregularity occurs, such as the same employee's Spot-r sensor going through the gate repeatedly, an alert can be issued to management. At any time, managers or other authorized parties can view data about a specific event and access camera footage from EarthCam's video software, taken while the worker's tag was being read.

In a scenario in which the same staff member's sensor repeatedly passed through a gate, a manager could view images to identify whether or not the person wearing that sensor was the party authorized to do so, or if perhaps multiple workers were sharing a sensor, which would indicate a problem. Managers can use the Spot-r dashboard to locate where a particular sensor is on a worksite, then approach that worker and discuss the problem. A QR code on the Spot-r clip enables management to scan the front of the sensor and access details about any given employee, as well as view his or her picture, thereby confirming that person's identity. Other scenarios at the gate could include a jammed turnstile or a worker arriving without proper OSHA certification. Being able to capture video content to confirm an employee's identity provides a security feature that was difficult to come by without such technology, Fraser says. "From a security standpoint," he states, "if you ever have to go back to view details about a worker or incident, you can do so at the click of a button on the Spot-r dashboard."

For EarthCam, Cury says, the partnership provides risk mitigation and ultimately saves money for builders by making sure they offer a safer and more secure job site. "That's what excited us about this partnership," he recalls. The solution can also help builders secure contracts with their customers, Cury adds, by promising enhanced security and safety. Lettire is the first builder to deploy the combined solution, though Triax and EarthCam are currently in discussions with other companies for future installations.

In addition to its partnership with EarthCam, Triax has been adding new products to its platform since it was launched in 2017, to improve construction site management. One such feature is its EquipTag, which monitors equipment usage and location with an active RFID sensor tag attached to a tool or vehicle. Triax is also providing more granular data about the movements of individuals and tools on a work site.

To accomplish this goal, the company offers what it calls Point of Interest beacons. These devices transmit a signal to worker or equipment sensors located within the immediate vicinity. The sensor receives that beacon signal and forwards its ID, along with the sensor's own information, to the cloud-based server through nodes mounted around the site. In this way, the system can identify not only the general vicinity in which a particular worker is located, but also a more specific zone based on that beacon's readings.