

RFID AND AIDC FOCUS

You may not be aware of it, but slowly the "Internet of Things" (IoT) is being built, or at least preparing to be built.

The Auto ID Institute at MIT - the organization that served as the catalyst behind the move to low cost RFID tags and what was to become the electronic product code (EPC) - is generally credited with coining the term "The Internet of Things."

What does this term mean? The concept involves an extension of the current web to embrace a wide - perhaps nearly ubiquitous - set of objects (people?) that can identify themselves and/or be identified electronically, and share increasing levels of intelligence about what they are and what they are doing.

A sort of real-time Twitter for objects and things: "Here's what I am doing right now."

While the concept was ballyhooed initially in the early days of EPC RFID, it has largely disappeared from the discussion in terms of RFID and the supply chain amid basic challenges and fits and starts in the adoption of RFID technology in that domain. However, the IoT concept has been slowly and quietly building momentum in other areas.

For example, in 2008 the French Government made facilitating the Internet of Things a priority for its turn with the Presidency of the EU. The European Commission published an Internet of the Future (what is in effect an Internet of Things) position statement in September, 2008. There have been several major reports out of the EU since then (see, for example: [Internet of Things: an early reality of the Future Internet](#)).

South Korea is creating an entire city, New Songdo, that fully utilizes IoT prin-



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ciples.

System Vendors also Active

Last month, HP Labs announced an ambitious system for the Internet of Things, which it calls "a "Central Nervous System for the Earth" (CeNSE).

HP says it is a "research and development program to build a planet-wide sensing network, using billions of tiny, cheap, tough and exquisitely sensitive detectors."

The technology behind this is based on nano-sensing research done by HP Labs. The sensors are similar to RFID chips, but in this case they are tiny accelerometers which detect motion and vibrations.

HP aims to "dramatically improve the state of the art in the cost, size, power efficiency, accuracy, and sensitivity of embedded sensors

and actuators," according to [its web site for the project](#).

"We're surrounded by technological assets that are deaf, blind, can't taste, can't smell and can't feel," says Stan Williams, an HP senior fellow.

"CeNSE is all about giving all this compute power the awareness of what's going on in the environment around it," adds Peter Hartwell, senior researcher and project team lead.

Hartwell envisions sensing nodes about the size of a pushpin stuck to bridges and buildings to warn of structural strains or weather conditions. They might be scattered along roadsides to monitor traffic, weather and road conditions. Embedded in everyday electronics, CeNSE nodes might track hospital equipment, sniff out pesticides and

pathogens in food, or even “recognize” the person using them and adapt.

Monitoring a bridge like the San Francisco Golden Gate might take 10,000 nodes, says Hartwell. Figure a million or so for a big business application, such as cargo shipping. To enervate the Earth, about a trillion should do the trick. At that rate, sensor nodes must cost next to nothing, yet measure everything.

Of course, these sensors have to be wireless connected to communicate that information – and determining how often they do that, how to make sense of all that data, and how much of it to actually store and when are almost as important as the new technology itself would be.

It seems like that ought to make some form of RFID quite affordable for basic supply chain applications.

FedEx has joined in the IoT bandwagon as well with a new offering called [SenseAware](#), which lets shippers track package conditions in real-time.

Initially targeted at life sciences companies for which temperature and other factors during transit are critical for product safety and shelf life, the FedEx system allows customers to know, for example, if a package has been opened or exposed to light, its exact location in the transportation process, and whether it has become too warm or too cold.

The service uses a re-usable RFID tag that contains a number of different types of sensors. Data from the tag and sensors is collected by FedEx during the

transport process, and delivered to users in a web application. Businesses can set up triggers, alerts and notices, such as using geo-sensors to alert themselves or others when a package arrives at a destination.

FedEx says it has been running trials of the service with several dozen companies, and expects it to become fully available in 2010.

The [readwriteweb.com](#) web site quotes Mark Hamm, head of innovation for FedEx, as saying this type of technology will start to be “mainstreaming over time as people become used to interacting

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with shipments.”

IBM and many other companies are aggressively developing similar types of systems and infrastructure.

We’re not yet completely sure where the Internet of Things and the supply chain are going to intersect, but as the FedEx application and HP’s thinking shows, its likely to be soon and profound – though concerns about privacy and “government control” must also be dealt with.