

HP Kicks Off U.S. RFID Demo Center

Hewlett-Packard debuted its U.S. RFID Demo Center, where the company has set up prototype applications that combine RFID sensing and location and temperature sensing to create multimodal sensor networks.

By Mary Catherine O'Connor

Oct. 28, 2004—At HP Labs in Palo Alto, Calif., computer products and services firm Hewlett-Packard opened the doors to its U.S. RFID Demo Center. Like the RFID Demo Center HP unveiled in Taiwan in April, and the ones the company plans to open in Singapore, Geneva and the U.K. later this year and into 2005, the U.S. center is designed to show customers some of the present and future applications of RFID technology, from basic tagging and reading in a distribution center to sensor networks for use in advanced item tracking and maintenance. Through videoconferencing monitors in the Demo Center, customers will be able to watch demonstrations taken place at other centers, which might feature different technology applications, or at an HP facility in Memphis, Tenn., that is integrating RFID into the manufacturing process.

The Palo Alto Demo Center occupies a modest, roughly 1,200-square-foot area within the HP Labs. Posters describing the prototypes line the walls above the demonstration areas. A few handheld readers and tags surround computer monitors and a row of large metal server cabinets. From the ceiling hang video cameras and ultrasonic transceiver beacons.

The Demo Center includes demonstrations that incorporate thermal sensors, videocameras and ultrasonic positioning beacons to create advanced item-tracking applications that are anywhere from months to years from being commercially viable.

The Palo Alto Demo Center was created by Salil Pradhan, chief technologist for HP's RFID program, who says HP's research and development efforts in RFID are geared heavily toward integrating RFID with other types of sensors, such as videocameras or thermal sensors, into what he calls multimodal sensor networks. Multimodal sensor networks use more than one type, or mode, of sensing to monitor something. (Think of using the human sense of touch to gauge temperature and vision to see its shape or size.) Pradhan sees this direction in research as moving toward more intelligence-based, rather than identity-based applications of RFID, combining it with other technologies to not only identify an object, but to also track its movements, its status or its surrounding environment.

One of the demonstrated research prototypes, dubbed smartLOCUS by the HP team, merges an indoor positioning system with an RFID system to pinpoint the location of items within a facility. In the current prototype, a handful of ultrasound beacons are mounted to the ceiling around the demonstration area. These beacons function in the same way satellites do in a global positioning system: Each beacon sends and receives signals and has a unique identifier. By adding one of these beacons to any mobile reader device, the smartLOCUS application can associate the information from a tagged item with the location of the mobile reader within the indoor positioning system. Using this, a worker with a mobile reader could identify a tagged item and also, by querying the smartLOCUS database through the handheld device, view data on what tagged item was previously in that location.

Pradhan says this application is likely a couple years from being commercially viable. He also said that the HP team will be moving to ultra-wideband frequencies (3.1 GHz to 10.6 GHz) for the location sensors because they work well indoors and do not pose interference problems with other RF devices.

Another prototype application, dubbed Smart Rack, uses thermal sensors and high-frequency RFID readers to identify and monitor the temperature of servers sitting in large metal server cabinets. One reader is mounted on each server cabinet and 14 different antennas are configured on the server door to read the 13.56 MHz tag attached to each of the servers in the cabinet. There are also five to six thermal sensors wired to the cabinet door and linked to the reader. These sensors monitor the temperature of the servers sitting in the cabinet.

The readers are networked and the collected data is converted into two-dimensional graphics, viewed through a monitor that shows, in real time, an inventory of the cabinets and temperature profile of each cabinet. This application could be valuable to companies that maintain large numbers of servers in a large area or within many remote server rooms. When networked with portal readers and contactless employee badge cards, the application could also indicate when a server is removed from the server area and by which employee. Abnormally high temperature readings can alert the IT staff and direct them to problems with specific servers, as well.

Pradhan says the Smart Rack application would likely be the first of the RFID research projects under development at HP Labs to become a commercial product, possibly within the next few months to a year. If that happened, the Smart Rack application would likely be offered within HP's OpenView, a suite of data management applications that are used by IT staff to track equipment and service records in a data center.

Frank Lanza, worldwide director of RFID for HP Services, was also on hand during the demo center opening to provide an overview of HP's use of RFID within its own supply chain. Worldwide, HP now has 28 RFID-enabled warehouse and product completion facilities. According to Lanza, this is the largest commercial implementation of the technology in the private sector. Since April, HP has been tagging at the case level three printer products being sent to Wal-Mart's distribution centers near Dallas. The company anticipates meeting and exceeding the Wal-Mart RFID mandates set for this coming January, as it currently has the capability to RFID tag at the case and pallet level all 65 HP consumer products destined for Wal-Mart stores. But the company did not specify the exact number of tagged products it plans to ship starting in January.

Lanza also gave highlights of the RFID technology infrastructure and software management consulting solutions that HP is offering (see [HP Debuts Service](#)). He says that HP is concentrating on helping companies reap the benefits of integrating RFID throughout their supply chains in the long term. Currently, though, all of HP's RFID systems integration clients are ramping up to meet Wal-Mart's deadline by using a slap-and-ship approach to tagging, wherein the RFID tag would be attached to the case or pallet right before it was sent to Wal-Mart's distribution center. Lanza also described HP's partnerships with Bearing Point and OATSystems, announced at the EPCglobal U.S. conference in Baltimore last month (see [HP Announces RFID Partnerships](#)).

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