

# What Is RFID and How Does It Work?

By Steve Shatsoff

**Y**ou have hundreds of exhibitors, thousands of attendees and dozens of speakers at your event. How do the attendees spend their time? Do they attend your sessions? What information can you give to your exhibitors to entice them to exhibit again?

As a show organizer, you have probably faced all of these questions and more. They have plagued association meeting planners and show managers for decades. You have probably spent many hours developing and utilizing different methodologies to capture this data, because this information is the key to your ability to build successful events year after year. Using your registration data, you may be able to tell who attended your events, but are you able to ascertain their habits? Emerging technologies are making this data easier to capture and more accurate.

The first technologies to appear in this arena were the bar code and magnetic stripes on attendee badges. This allowed you to electronically capture real data in a more accurate and expeditious manner. Now, there is RFID. Radio Frequency Identification (RFID) uses radio waves, which are stored on a microchip, to automatically identify people or products through use of a reader.

## How Does RFID Work?

Integrating this technology into your registration package allows the reader to convert data into a digital format. Badge stock can be everything from credit card to paper badges with the chip embedded in the stock. The key advantage in functionality is traffic flow and ease of reporting. There is no requirement to stop people as they move about the floor or enter a breakout session in an attempt to scan their badge. You can utilize a "touch" technology (three to four inches) or a long-range technology (three to four feet) via a portal to capture the information. This data can then be transferred through a download or real-time.

While this technology is not new, it has recently been introduced to the meetings and events arena. Firms such as Wal-Mart are incorporating RFID technology into its inventory management system. Another common application of RFID technology already in use is the EZ-Pass. The EZ-Pass utilizes an active technology; the tags contain an internal power source, longer range, larger memory, and the readers are constantly transmitting a signal. Passive tags, which are being introduced into the world of association trade shows, have no power source, have lower range and are considerably less expensive.

RFID tags are disposable and quick to produce, encode and distribute. Antennas used to capture information are easily transported, installed and dismantled within a reasonable amount of time. The technology does not interfere with any fire marshal communication or privacy regulations, and no specific changes of behavior are required from meeting attendees.

## Attendee and Session Tracking

RFID technology enables true understanding of attendee interests, trends, attendance and traffic patterns, so association meeting planners and conference managers can better meet the needs of their attendees.

RFID allows show organizers to collect more data than ever before, determining how many people attend each session, and more importantly, exactly who their attendees are. As meeting attendees pass through portals, badges are automatically read. Some systems will allow you to monitor entrances, which set off alerts much like department store portals.

## RFID in Use

One of the world's leading providers of research and analysis about the global information technology industry holds regular conferences across the globe. The organization spends significant dollars for travel and meal expenses and, therefore, requires attendance at various breakout sessions. These requirements are monitored through the use of RFID technology, capturing not only the identity of the attendee but the date and time he or she attended the event, which can then be reported after the conference. This data is then shared with the exhibiting companies and, more importantly, with significant sponsors. Future attendance is predicated on fulfilling the attendee obligation. When used in the exhibit hall, RFID-collected data can determine a general traffic pattern down to the very times and places through which attendees pass. When correlated to the agenda, RFID-collected data provides behavior, subject interest and demographics, which allow meeting planners to improve future programs.

## Exhibit Halls

An international trade show and event management firm has used the RFID tracking technology to record aisle traffic



Photos courtesy of Arnie Roberts, SMART-reg

patterns, thus allowing them to prove which aisles realize higher traffic and subsequently to charge higher fees to the exhibitors in those more traveled aisles. It also allows them to attract more exhibitors, since many want the exposure by exhibiting at a meeting, and are willing to pay less for less traveled areas of the exhibit hall though they can't foot the bill for a premium booth space.

The collection of this data allows adjustments to be made for future events, such as where and when to place the catering, the cyber café, the breakout sessions and the layout of the show floor to make the most effective utilization of both time and space.

Did the some attendees go to the educational sessions and but not walk the show floor? This is important information for those exhibiting. Using RFID tracking removes the anecdotal and replaces it with factual statistics. This information is gold when trying to sell exhibit space. Exhibitors can utilize the RFID technology in their booth to quickly capture the data with the simple touch of the tag.

### Things to Consider

One of the current drawbacks to this passive technology is the accuracy of the long-range reader. If the attendees are entering a venue or moving down aisles en masse, simple things like covering the badge, lack of a direct line of sight or even body fluid can cause absorption or distortion of the signal, which can prevent the badge from being read. Current collection rates for long-range readers are in about the 85% accuracy range. Obviously, in a situation where the attendees are receiving CEU credits, 100% accuracy is tantamount. For this type of scenario, one should consider the touch method. This still allows traffic to flow more smoothly through the venue but accurately record the data.

Privacy concerns may be a fundamental concern of attendees. There is

no opt-out option available where the attendee has the power to turn off the tag. Meeting planners must consider what information is on the badge, how the information will be used, and where can the badge be read? European countries are extremely strict on the use of RFID. U.S.-based meetings and conferences that attract international attendees should be careful to disclose that RFID tracking is being utilized, as notification is expected. Currently there are no international standards for RFID.

### Cost

As with any new technology, initial costs are significantly higher than some of the more traditional technologies in use today. As the technology is perfected and the manufacturing process improves, these costs will come down. But for now there is a cost associated, which must be weighed against the power and value of the data.

### Future Uses

In the future, the integration of RFID tracking technology into association trade shows, meetings and conferences and events will be used to help on-site registration and check-in, message centers, cyber cafés, course and workshop admittance verification, concession stands, bookstores, as well as other customized services.

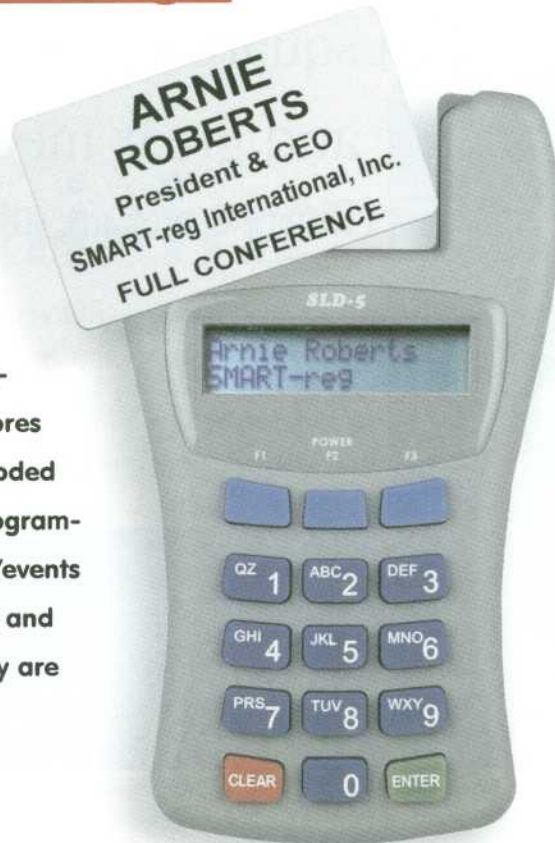
There is no doubt that the proper use of technology at trade shows and conventions will help propel associations into the next generation. Like everything else, however, one size does not fit all. Meeting planners must balance their requirements with the technology that is appropriate for their circumstances. Use technology wisely and keep your eye on your ROI. **AE**

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SMART-reg International's RFID Technology

# It's All in the Badge™

With a quick tap of a Badge, this SLD unit will authenticate using the proper password to read data from the RFID module embedded in the badge. The unit stores both RFID and magstripe encoded data. The unit can also be programmed to authenticate sessions/events that attendees are entitled to and "marks-off" the events as they are used by the attendee.



## SLD-5 Badge Reader

- Handheld RFID and magcard reader
- Can re-write information in the RFID badge
- Exhibitor lead capture
- Attendee verification
- Attendee authentication
- Attendee session tracking
- Battery operated

## What is RFID?

Radio Frequency Identification, RFID, is a technology that uses radio-frequency waves to transfer data between a reader and an RFID tag/module. MIFARE® by Philips is the industry standard for contactless cards, fully compliant with ISO 14443A, and used by our RFID badges. With an immense worldwide installed base, it is a well-proven secure RF communication technology for transmitting data between a card and a reader device.



Transparent badge exposing laminated RF antenna loop & microchip

MIFARE® RFID is Growing.  
Adopted by the US financial services industry.  
Over 5 million card readers worldwide.  
Over 600 million cards issued.  
Over 7 billion transactions.

## All in the Badge™\* Features

- Holds up to 1,000 characters of information
- Can be encoded with attendee entitlements (banquets, seminars, events, etc.)
- Secure technology incorporating ridged authentication eliminating attendees' badges from being surreptitiously read
- As attendees check-in for a particular event, that event information is "marked-off" in the badge, preventing use by another individual
- Eliminates the need for tickets, stickers, etc.  
It's All in the Badge™

\*Patent Pending

## Providing Fail-Safe Registration & Lead Capture Solutions with Passionate Customer Service

SMART-reg International, Inc. (SRI) provides registration and lead retrieval services to trade shows and meetings in the US and abroad. Our services, technological innovations, and various registration solutions make SRI a SMART choice. Since 1983, trade show organizers and meeting planners have trusted SRI with their registration needs.

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INTERNATIONAL, INC.

# 'I Don't Have to Show You No Stinking Badges'

## Tips on picking the best technology for your show, Pros and cons of common technologies

### Barcode badges

Barcodes of the 2-D variety are easy to produce for your lead-retrieval needs. They essentially hold enough to store key contact information. Exhibitors can scan the code with a reader and collect a database of contacts.

- Pros: This technology is the least expensive.
- Cons: If the barcode is damaged, it can't be read. At sessions, it requires attendees to cooperate to scan their badges to gain an accurate record of attendance. Updating information encoded in the barcode requires printing a new badge. Reading problems are common due to hall lighting reflecting on badge holders.

### MagCard Badges

This technology used by more than 55% of all shows has the longest track record. While they are slightly more expensive than barcode badges, costs can be recouped by selling sponsorships on the badges. SMART-reg International can provide equipment so badges can be printed on site.

- Pros: It's a proven technology familiar to everyone with a credit card.
- Cons: The magnetic strip can get demagnetized. Stores less data than an RFID badge.

### RFID Badges

RFID technology offers many features the more traditional badges can't. Currently, there are two types of RFID technology

being used in the Trade Show business — long range and short range. SMART-reg chose to use the short-range technology (which can be read at three inches) that utilizes the world-wide MIFARE standard, because it provides the most security.

- Pros: Able to carry much more data than the alternatives. Exhibitors can easily collect information beyond just a name and phone number, if show management permits. Data is password protected. Can be used to replace tickets or verify attendance at continuing education classes. The SMART-reg All in the Badge™ RFID badges can even be encoded with a cash value that attendees can use for show services or at the show bookstore. The SLD-5 reader from SMART-reg can be used for exhibitor lead capture in addition to attendee authentication for events etc.
- Cons: Attendees may have false perceptions about "big brother" watching their every move. Long Range RFID badges hold much less information and can't be used to replace tickets; cash value and lead retrieval capability is limited.

### Determining Your Needs

Ask yourself these questions before selecting a lead-retrieval technology:

- How important is direct cost? Would you be able to sell a sponsorship to make up the expense?
- How will attendees use their badges? Would it be helpful to use badges to

verify attendance at sessions or for-credit continuing education events? Would you like to be able to eliminate tickets for special events?

- What do exhibitors prefer?
- What do attendees prefer? Will they be put off by someone pointing a laser at their chest to read the badge?
- Is it important to track attendee movement?

### Cost Considerations

RFID is more expensive than other badges and lead capture technology. RFID badges cost an average of 60 cents each, compared to 14 cents for a magcard badge or a few cents to print a barcode badge. However, show organizers should look at these prices in relation to total expenses and how the technology could be used. Arnie Roberts of SMART-reg says, "RFID can be more expensive on the face of it, but you can get an instant ROI. Your actual costs might be minus 20 cents to minus \$1.20 per badge. For many of our clients it can reduce expenses immediately by eliminating the need for tickets, special badge holders, and some extra form of lead capture medium."

For example, one SMART-reg client was dismayed at a food-and-beverage bill that was \$100,000 more than expected. Attendees had loaned each other their badges to allow friends to get access to a free meal, running up costs to much more than had been planned. Had RFID badges been utilized, this would not have happened. ♦

To learn more visit: [www.smart-reg.com](http://www.smart-reg.com).