Continuing Education: The Myths and Truths in Hearing Loops

By Richard McKinley of Contacta Inc.

continuing education

In the last ten years, the number of venues and locations with loop systems has grown dramatically in the United States. Today we find hearing loops at drive through windows, train stations, basketball stadiums, worship centers, boardrooms, ticket counters, cinemas, and theaters.

Richard McKinley *has a background in audio engineering and his audio contracting firm in Holland, MI was responsible for installing the first loop systems stemming from Dr. David Myers' "Let's Loop America" hearing loop initiative back in 2001. Since then he has been involved in the sales, engineering, and design of hundreds of systems throughout the US, including venues that seat thousands of people. After selling his installation company (which he co-owned with his wife) a few years ago, McKinley recognized the value of a hearing loop manufacturer that would design, build and support hearing loop products in the US. After traveling throughout the UK and Europe, he partnered with two companies with proven designs and started Contacta Inc. Richard is also one of the technical advisors to the "Get in the Loop," an initiative undertaken by the Hearing Loss Association of America (HLAA) and the American Academy of Audiology(AAA). He currently writes articles for several professional audio magazines and is a strong supporter of local hearing assist efforts across the US.* ■

My passion for hearing assistance started several years ago when David Myers, PhD, MA, hearing assistance advocate, told me of his vision for the future—a future where everyone who wore hearing aids could hear comfortably at theaters, worship centers, ticket counters, banks, pharmacies, and other venues. It did not take long for me to realize the joy that people experience, when, for the first time since hearing loss, they could understand every spoken word and enjoy attending the theatre and musical performances. Although other types of assistive listening devices exist, hearing loops are the only universal and economically beneficial system where people can use their own hearing instruments as the receiver.

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systems has grown dramatically in the United States. Today we find hearing loops at drive through windows, train stations, basketball stadiums, worship centers, boardrooms, ticket counters, cinemas, and theaters. These are all common places where hearing aids fail to sort out the spoken word from other background noises. With the rapid expansion of looping in the community, it is important to educate yourself and your clients on this life-enhancing technology. There are many myths and truths related to the use and implementation of hearing loop systems. A few of those are discussed below. At the end of this article I will present a loop benefit cycle, which I believe is evident of the direction we are going in today.

Truth - *Simply because one can hear that someone is speaking does not mean that the words are understood, even with the use of hearing aids*. Distance from a presenter causes the desired sound level to be low and random room sounds such as echoes result in confusion. This can happen in auditoriums or worship centers with the finest of sound systems. Often I hear comments like, "Just turn the volume up a bit and they will be able to hear better" when in most cases that would actually decrease intelligibility.

Myth - *People with hearing loss don't need assistive listening devices at this venue because we already have assistive listening receivers that they can wear around their neck with headsets but they never use them*. I hear this statement quite often. Sadly, it's like putting square tires on the car and expecting an enjoyable ride. Assistive listening units that hang around one's neck are not widely-used because they are often ineffective, uncomfortable and people don't want to wear them. They truly would like to go to the theater, to the movie, and to worship but, because they don't have access to reasonable accommodations to the program, they stay home. Hearing loss is called the invisible disability. Over 10 times more people are denied access to events because of hearing loss than they are due to lack of wheelchair accessibility. It is sad that many consider hearing loss a nuisance rather than a disability.

Truth - *Loop systems need to be properly designed, adjusted, and installed in order for them to work well*. In most cases a hearing loop design requires more than placing a hearing loop wire around the periphery of a room. An international standard exists that defines the major parameters of proper loop system design. These include: uniformity, so that the same signal level is heard at an even level throughout the space; frequency response, so all the letters in the words are comprehended; and background noise level, so electromagnetic interference in the room does not negate the benefit of the loop system. The International Electrotechnical Commission (IEC) standard ensures that hearing loops are properly configured and work well with the hearing instrument.

Additionally, spillover, interference with other electronic equipment, and head tilt are other considerations when designing a hearing loop system. In many installations spillover needs to be considered because audio from a hearing loop may need to be contained within a room, such as in movie theaters and classrooms. Special designs allow the audio from the hearing loop system to be contained within the desired space so listeners

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Loop Concourse at the Grand Rapids, Michigan International Airport

Process and Cost of Installation

The actual process of installation usually takes a few days. The process involves a trained person measuring the facility, checking for background noise, checking the configurations and running a test loop. From that a preliminary design and budgetary proposal are assembled. Upon an approval, the process is usually 2 weeks to get equipment and install the system. The average cost is typically in the $4,000-$8,000 range but it is all dependent upon the floor coverings, number of seats and about twenty other environmental factors.

Contacta was the provider of looping services for the 2012 Annual IHS Convention and Expo in Glendale, AZ.

Penn Station customer service window in New York City, NY

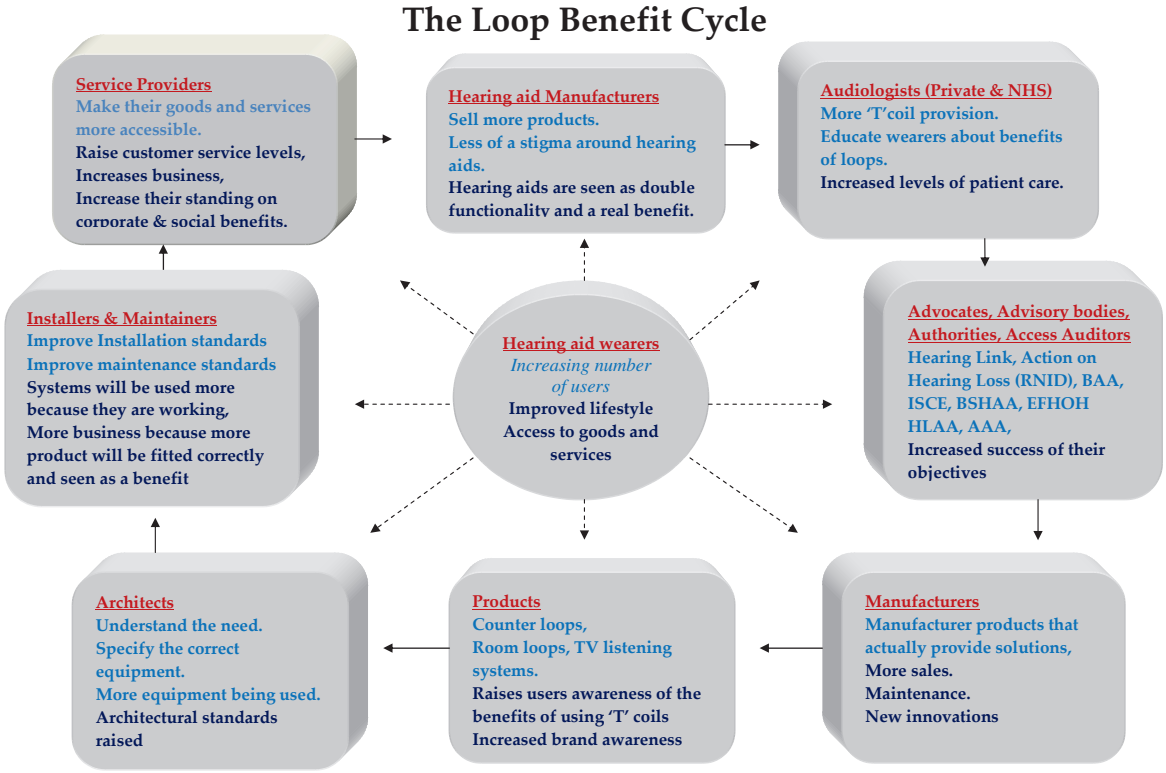
photograph by Albert Chen of the NYC Loop Committee, part of the Hearing Loss Association of America's Manhattan Chapter.

hear the audio signal from the room they are in and not from adjacent rooms. Another consideration in design is electrical interference. On occasion, we have encountered interference between hearing loops and AV equipment such as video projectors and recording cameras. It is recommended that all AV equipment be evaluated when a hearing loop system is designed so that interference with AV equipment be minimized or avoided completely. Lastly, the orientation of a listener's head or head tilt must be considered before installing a hearing loop system. For example, in California we are designing a hearing loop system for a seating area that requires the audience to tilt their head 90 degrees to view three stages in the front of the room. A 90-degree head tilt can result in a significant change in the audio signal picked up by the hearing aid without a special loop design. The same holds true for worship centers where people kneel or bow their heads.

Myth - *Any amount of electro magnetic interference (EMI) is too much for the hearing aid user.* Although EMI can be an issue, the IEC standard sets guidelines that must be taken into consideration before installing a hearing loop system. When a hearing loop system is properly installed, adjusted, and checked, the user of the hearing aid will have a minimum of 20 dB signal-to-noise ratio, which is an excellent ratio. Therefore, it is still possible to hear some EMI with personal hearing loop receivers that are worn by individuals without hearing instruments, but this does not reduce the benefit of the hearing loop system. If EMI exists it must be considered and resolved before a loop is installed. On occasion a complaint of excessive background noise is reported when a hearing loop amplifier is not strong enough to produce the desired auditory signal in the hearing instrument. A low loop signal level means the minimum 20 dB signal to noise ratio is not achieved. In most cases the source of the EMI can be identified. EMI is generally not caused by a light bulb, a dimmer, or equipment in the next room. It is usually generated by an imbalance in the power to, or within, the room. EMI from an imbalance in power can be traced down and corrected.

Truth - *You can install a loop system almost anywhere*. This is true unless there is an excessive amount of EMI. I have seen systems installed in ticket windows, telephones, airports, court rooms, city halls, interview rooms, train stations, bus stations, on buses and trains, in taxis and elevators, boats, drive-thru windows, and even under a bed. They can be installed almost anywhere audio communication is essential.

Myth - *The Americans with Disabilities Act (ADA) will protect us and make sure there is hearing assistance wherever we need it; besides hearing loops are expensive*. If the ADA would ensure hearing assistance, some manner of hearing assistance would be in all of the aforementioned environments. While the ADA is an excellent act and supports the need for hearing assistance, there is no enforcement mechanism to confirm that the systems are in place and installed properly. For example, local building inspectors check for wheelchair accessibility but most give



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little or no thought to the functionality and need for hearing assistance.

Stories abound of facilities that have purchased numerous FM and IR receivers but never see them used. One facility reported an increase from 8 users per month with the FM system to over 400 users per month with the loop system. Looking at the cost per user, the true way to assess the cost of hearing assistance, loop systems cost far less and require less maintenance.

Truth - *All audio systems and the source of sound for the hearing loop are not created equal*. This is very true. The audio signal going into the loop must be considered when designing and specifying a hearing loop system. The audio signal is a factor no matter what type of assistive listening system is used and is a critical part of the design and installation of all hearing assistance systems. The audio source should be clean, clear and free of any background noises within the room.

The Loop Benefit Cycle - A hearing loop system is a win-win for everyone involved. Andrew Thomas of Contacta UK developed the chart above that shows the benefits provided to each stakeholder in the hearing loop process when a co-operative environment exists. The ultimate winners are people with hearing loss. In this way induction loop manufacturers and suppliers will sell more products, architects and consultants will become more respected, installers will receive more work and the service providers will raise customer service levels, both obtaining and retaining more customers. People with hearing loss will have a more positive experience in public places leading to more sales for hearing instrument manufacturers and improved patient care for hearing aid providers. Ultimately co-operation will lead to greater levels of understanding among stakeholders and to a greater appreciation of the long term benefits of both hearing instruments and induction loops.

As Dr. David Myers (hearing assist advocate) likes to say, "effective loop systems double the use of my hearing aids." How can that not be great for everyone one involved? Check the chart and look at the benefits you, and those you connect with, gain from hearing loops. If there are no losers then we all must be winners. One hearing loop user said it best: "For the first time in many, many years I could hear every note, understand every word and I felt NORMAL."

For more information on hearing loops in the United States, check out Dr. Myers web site www.hearingloop.org or feel free to email any questions you might have to richard@contactainc.com.

See page 42 to take the Quiz for 1 CE Credit.

IHS Continuing Education Test

1. **Hearing loops are usually ineffective at the following venues:**
   a. train stations
   b. ticket counters
   c. drive through windows
   d. none of the above

2. **In looping, the source of sound or audio signal:**
   a. should be free of background noise
   b. does not need consideration
   c. is a critical part of the design
   d. a and c

3. **The group of people who benefit from proper looping are:**
   a. hearing aid dispensers
   b. looping equipment manufacturers
   c. architects
   d. all of the above

4. **Number of people denied access to events because of hearing loss is:**
   a. the same as those without wheelchair access
   b. ten times greater than those without wheelchair access
   c. twice as great as those without wheelchair access
   d. half as many as those without wheelchair access

5. **Group which sets the standard by which hearing loops are properly configured:**
   a. IHS
   b. OEC
   c. IEC
   d. AAA

6. **Facilities which switch from using an FM system to looping system typically:**
   a. experience a cost savings when looking at cost per user
   b. experience an increase in users
   c. will require less maintenance of the system
   d. all of the above

7. **Electro magnetic interference is generally caused by:**
   a. an imbalance of power to or within the room
   b. a light bulb
   c. equipment in a nearby room
   d. a dimmer

8. **The average cost of looping a facility is:**
   a. $300-600
   b. $1000-2000
   c. $4,000-$8,000
   d. $10,000-$20,000

9. **A hearing loop at a bank teller or pharmacy window increases confidentiality because:**
   a. good counter loops fall off in signal level in 24 to 30 inches
   b. the customer service agent does not need to speak loudly
   c. the customer hears and comprehends the information
   d. all of the above

10. **It is possible to have some electro-magnetic background noise and still give the hearing instrument wearer and excellent experience.**
    a. true
    b. false

For continuing education credit, complete this test and send the answer section at the bottom of the page to:

International Hearing Society
16880 Middlebelt Rd., Ste. 4
Livonia, MI 48154

- After your test has been graded, you will receive a certificate of completion.
- All questions regarding the examination must be in writing and directed to IHS.
- Credit: IHS designates this professional development activity for one (1) continuing education credit.
- Fees: $29.00 IHS member
  $59.00 non-member
  (Payment in U.S. funds only)

HEARING LOOPS

Name _____

Address _____

City _____ State/Province _____ Zip/Postal Code _____

Email _____

Office Telephone _____

Last Four Digits of SS/SI# _____

Professional and/or Academic Credentials _____

Please check one: ❑ $29.00 (IHS member ❑ $59.00 (non-member)

Payment: ❑ Check Enclosed (payable to IHS)

Charge to: ❑ American Express ❑ Visa ❑ MasterCard ❑ Discover

(PHOTOCOPY THIS FORM AS NEEDED)

Card Holder Name _____

Card Number _____ Exp Date _____

Signature _____

ANSWER SECTION

(Circle the correct response from the test questions above.)

1.	a	b	c	d	6.	a	b	c	d
2.	a	b	c	d	7.	a	b	c	d
3.	a	b	c	d	8.	a	b	c	d
4.	a	b	c	d	9.	a	b	c	d
5.	a	b	c	d	10.	a	b		