

America's Getting in the Hearing Loop

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Chair: Advisory Committee for Hearing Loss Awareness in New Mexico

Co-Chair: Committee for Communication Access in New Mexico


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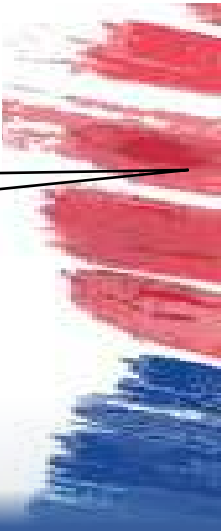
Freelance Writer



GETTING YOU IN THE LOOP

- Some facts about hearing loss
 - What's an assistive listening system?
 - The story of electromagnetic induction
 - What's a hearing loop?
 - What's a telecoil?
 - Hearing loops are happening in America
 - Hearing loops abroad
- 

About questions...



Some facts about hearing loss

There are 48 million in US with a measurable hearing loss

65% of people with hearing loss are under age 65.

20% of school age children have a hearing loss.



Some facts about hearing loss

Cause of Hearing Loss	Percent Due to Cause
At birth	4.4%
Ear Infection	12.2%
Ear Injury.....	4.9%
Loud brief noise.....	10.3%
Other Noise.....	23.4%
Getting Older.....	28.0%
Other.....	16.8%


Source: Ntnl. Center for health statistics, data from the National Health Interview Survey Series 10, Number 188, Table 16, 1994.

When you can't hear in a
"place of assembly"
what's the solution?

An assistive listening system (ALS)
may resolve the problem



The ADA defines an Assistive Listening System as "an amplification system utilizing transmitters, receivers, and coupling devices to bypass the acoustical space between a sound source and a listener by means of induction loop, radio frequency, infrared, or direct wired equipment."



Types of large venue assistive listening systems

✓ RF - radio frequency aka FM

Requires borrowing a receiver and headset/neckloop

✓ Infra Red - AKA IR uses light beams to transmit sound

Requires borrowing a receiver and headset/neckloop

✓ AFILS - audio frequency induction loop system (hearing loop)

No receiver needed for users with telecoils

✓ Wi-Fi - signal is transmitted using radio waves and digital signal processing (DSP)

No headset needed for users with a receiver or smart phone and app using Bluetooth® or a neckloop

Why is an ALS needed

Sound level of speech

Speech to noise ratio

Ambient noise

Reverberation

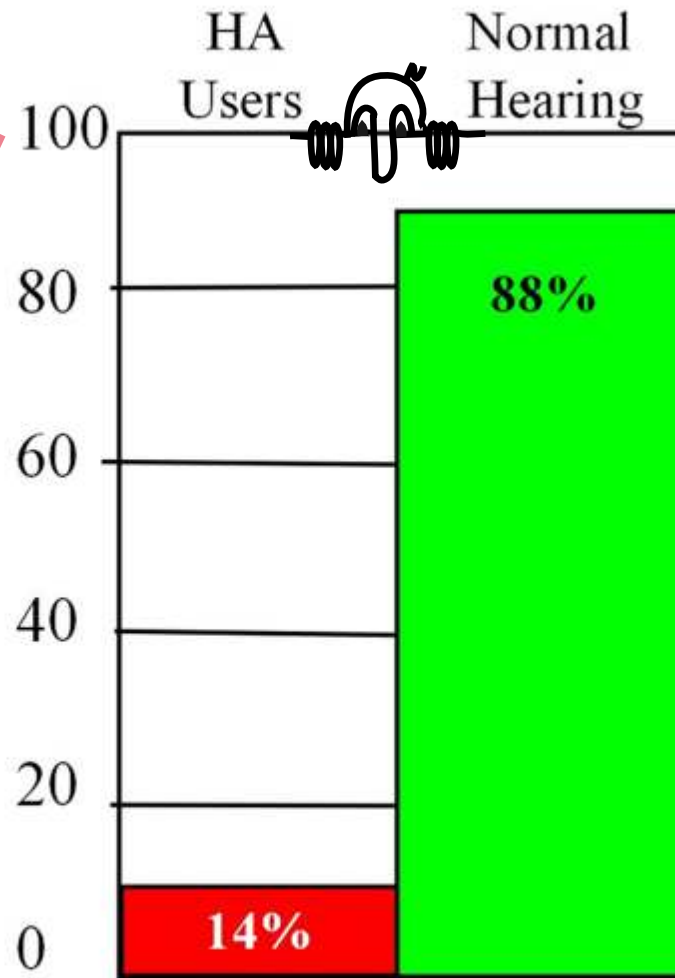
Unfriendly PA system

Covid 19 mask



Sound level of speech

Percent of words
identified correctly



Average scores for hearing aid users
and normal hearing listeners under
identical conditions

Sound level of speech

Normal speech is 60-65 decibels

Most HA mics only effective 6 to 8 feet out

Distance decreases sound level

Sound pressure level decreases 6 dB every time distance is doubled.

High pitch sounds have less strength

Consonant sounds needed to understand speech are high pitched



Speech to Noise Ratio

Normal hearing 10 dB difference OK

Speech 70 dB - noise 60 dB (Window AC)

70 dB perceived as twice as loud as 60 dB

Some HOH 20 TO 25 dB needed

70 dB - noise 45-50 dB (3 ft. From running refrigerator)



Issue of Ambient Noise

Ambient Noise (also known as background noise) can be caused by variety of sources such as others coughing or talking, papers rustling, footsteps, children fussing...

These sounds "cover" the voice of the speaker.

People talking

Fussy child

coughing

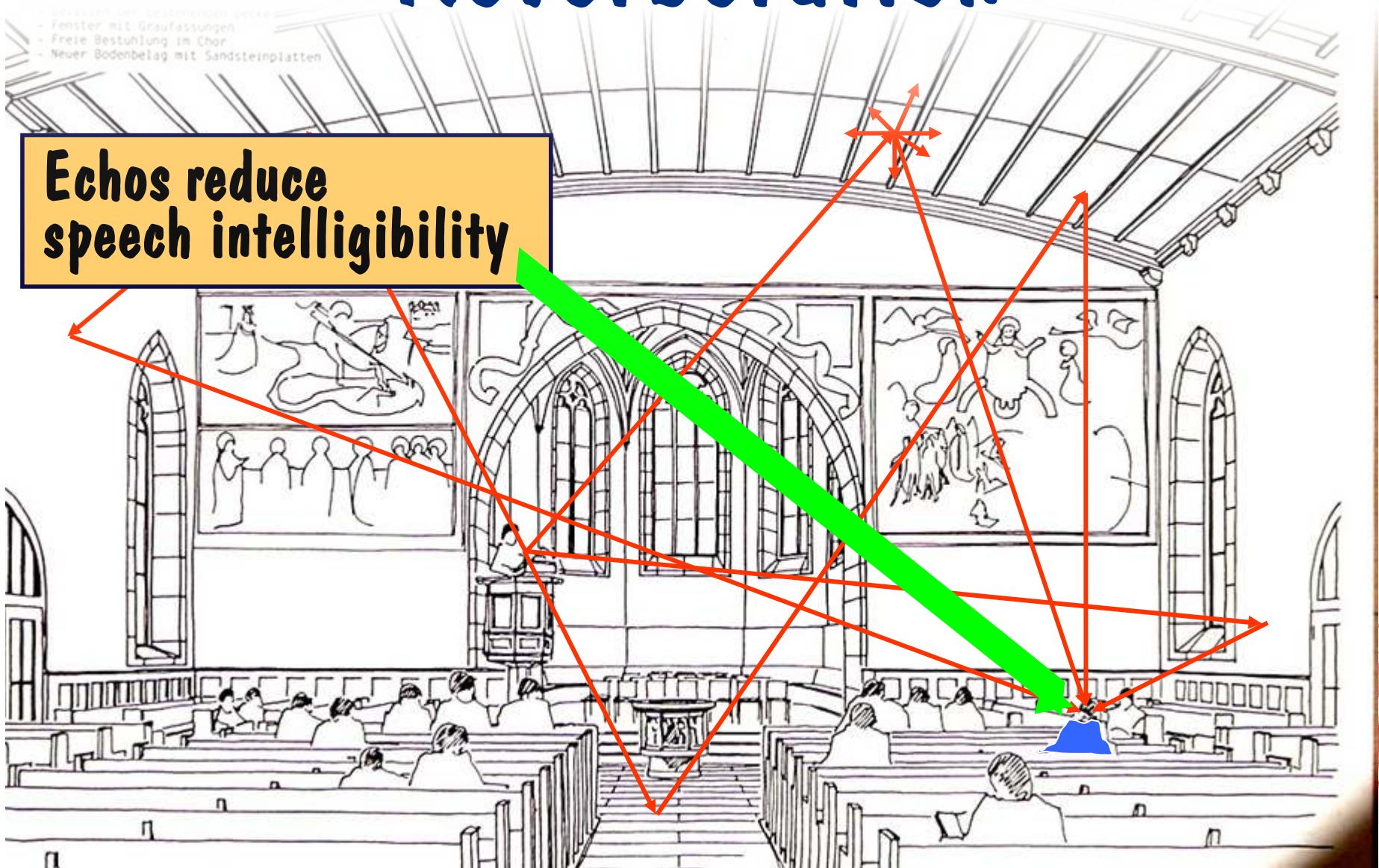
People talking

Hum from ventilation system running.

Reverberation

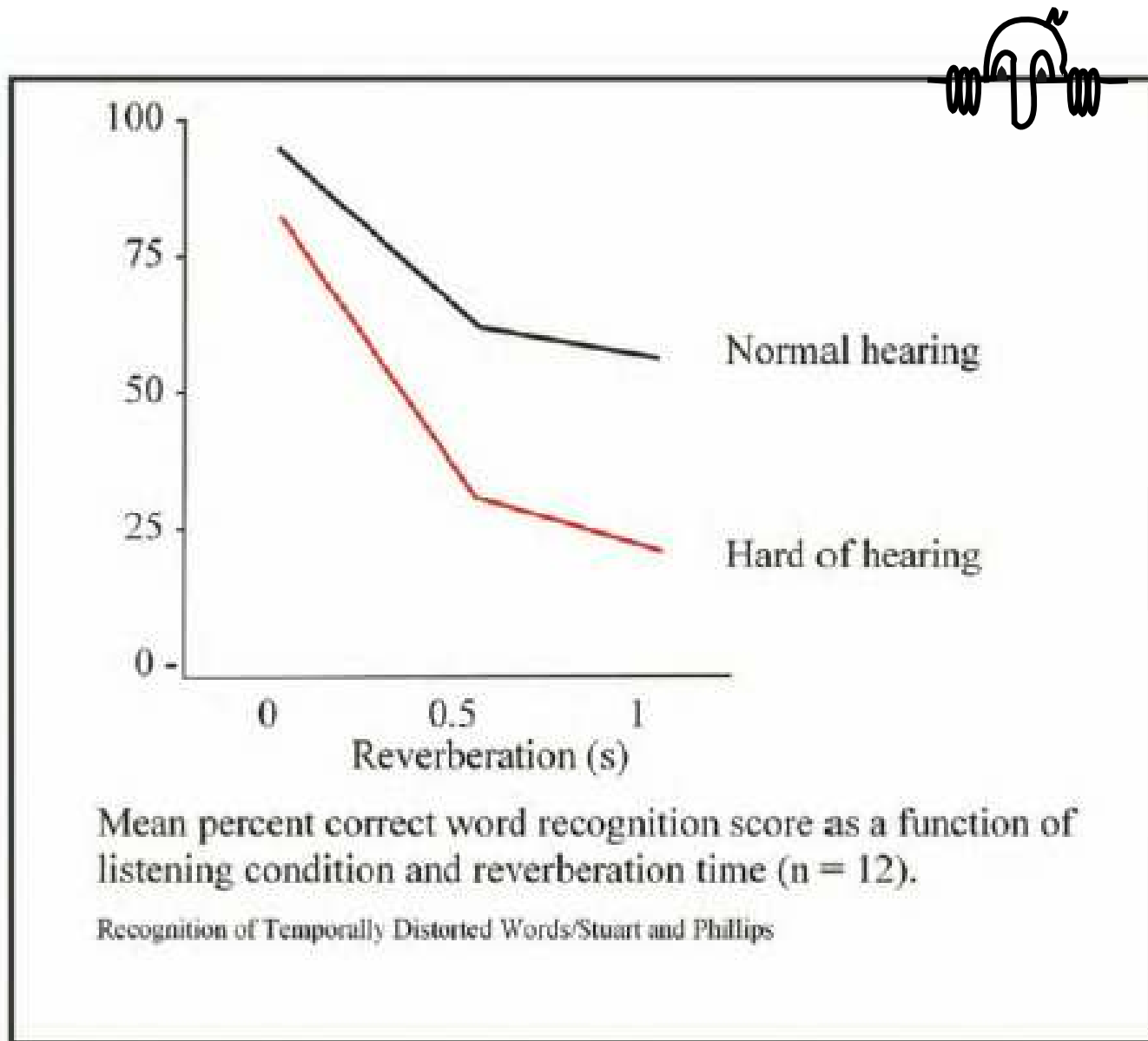
- Fenster mit Graufassungen
- Freie Bestuhlung im Chor
- Neuer Bodenbelag mit Sandsteinplatten

**Echos reduce
speech intelligibility**



Unaided or hearing aid assisted sound in such settings is problematic.

Reverberation

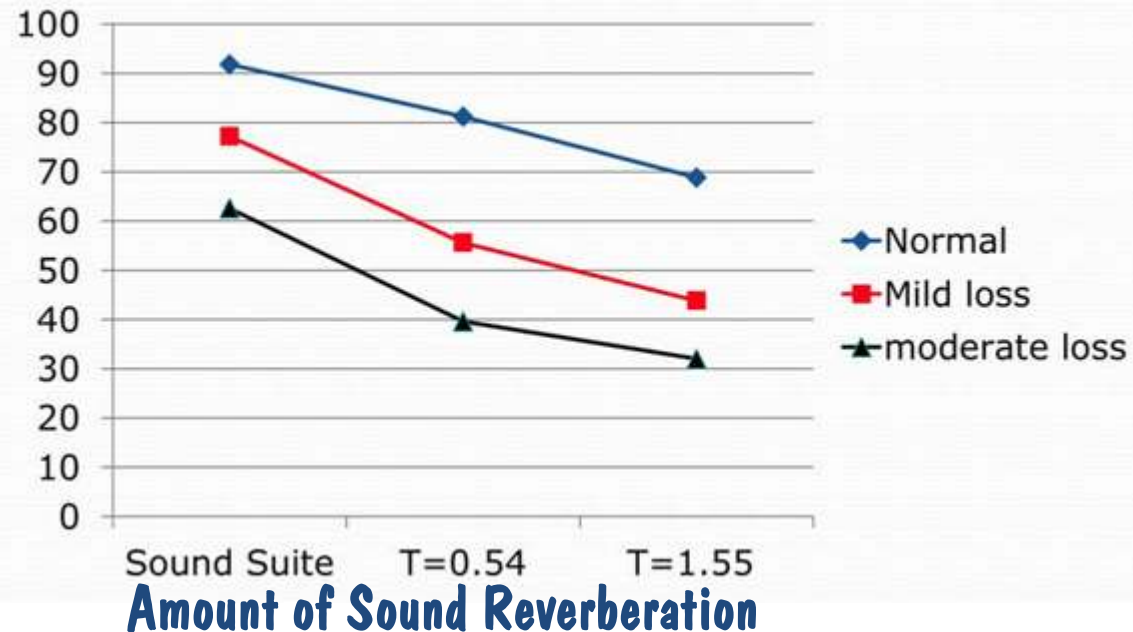


Reverberation plus ambient sound

Speech recognition by degree of loss with reverberation plus background noise
(+10dB SNR)

(R. Harris & D. Swenson 1990)

Percentage of words
understood



Source: R Harris & D. Swenson 1990

Unfriendly PA system

Too much bass

Too little treble

www.sofnabq.com

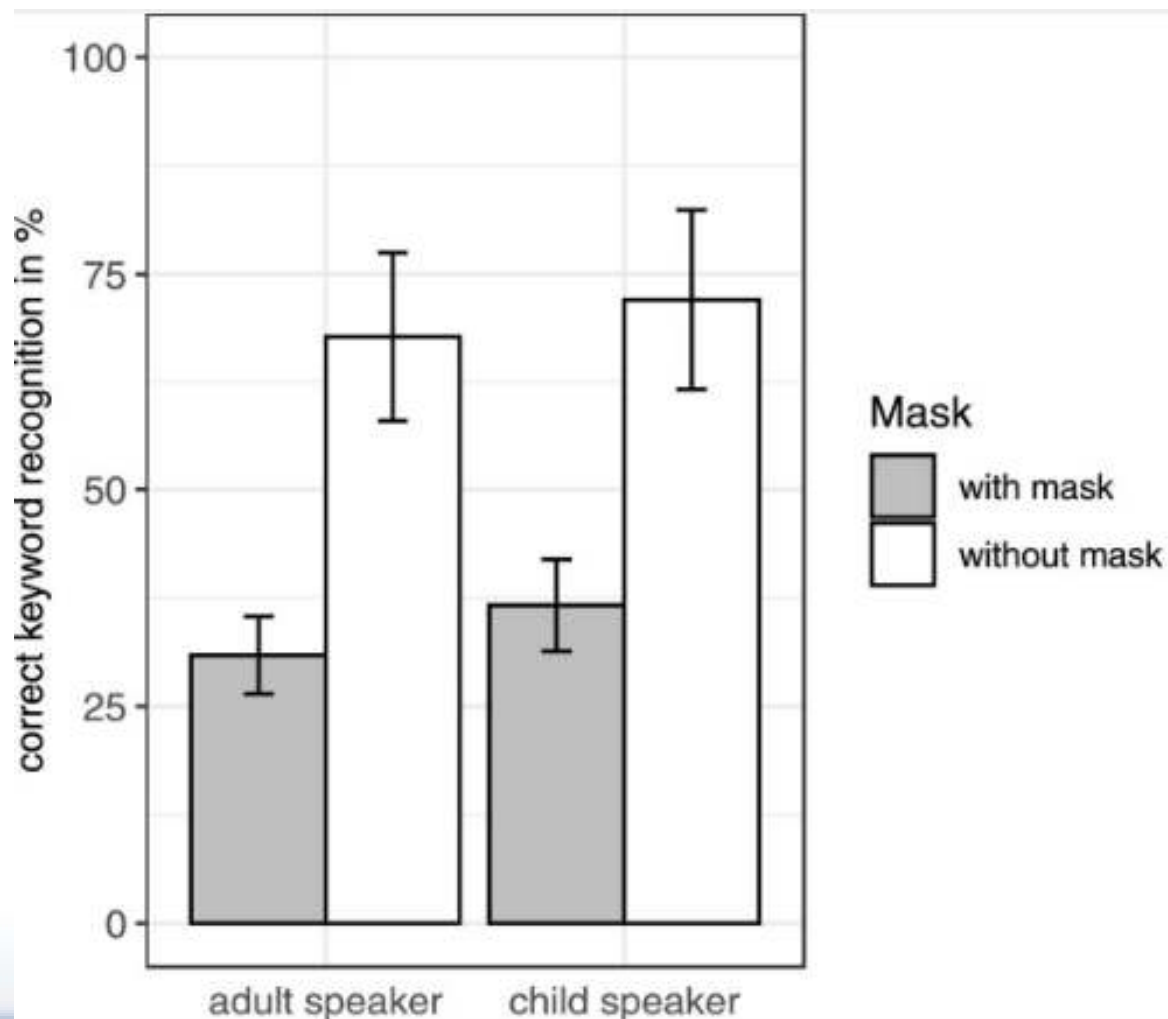
"Louder Isn't Necessarily Better"
Sound and Communications



Face Masks

Reduce sound level by up to 10 dB

10 dB perceived by human ear is half as loud



Why a hearing loop?

Serves 1 or 100

Discrete

Simple touch of a button

No borrowed equipment

No hygienic concerns

No last minute rush

No dead batteries

Survey - 3 times more likely to be used



“Loops and telecoils are old technology...”

Well, so what?



The wrist watch



Electric cars



The Telephone



The beginning

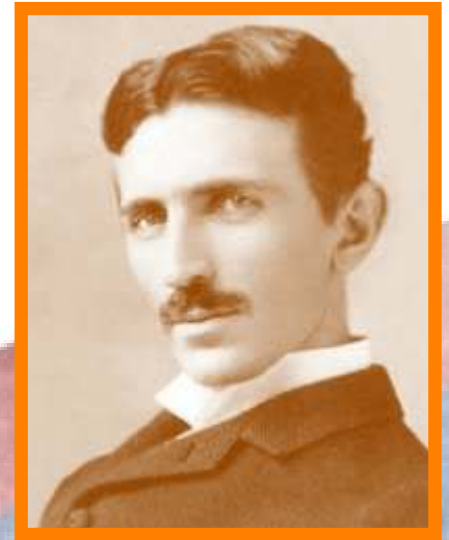


1831 British scientist
Michael Faraday discovers
electromagnetic induction that,
as time passed, came to be
used in electrical components
such as transformers, generators, electric
motors and...induction (hearing) loops.

The beginning

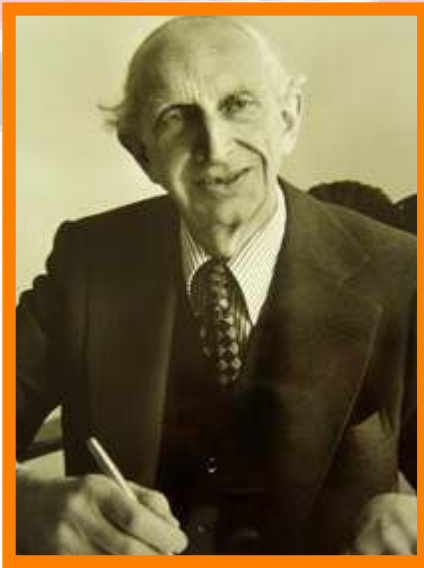


1885 - Italian Galileo Ferraris invents the first electromagnetic induction motor and



then Serbian American Nikola Tesla re-invents it in 1888. Old technology that's still in use.

The beginning



1937 - The electromagnetic induction loop system was invented by Russian born British telephone and sound engineer

Joseph Poliakov, the founder of Multitone Electric Company in Great Britain.

The beginning

The first wearable hearing aid that worked with a hearing loop was worn in a chest pocket.



It was made by the
Multitone Electric Co.
in England in 1938.

Not surprisingly, telecoils and hearing loops are a primary assistive listening technology in the UK.

“Over the last 30 years induction loops/hearing loops have become the default assistive listening solution in Europe, Scandinavia and Australasia, and are now becoming increasingly prevalent in America.”

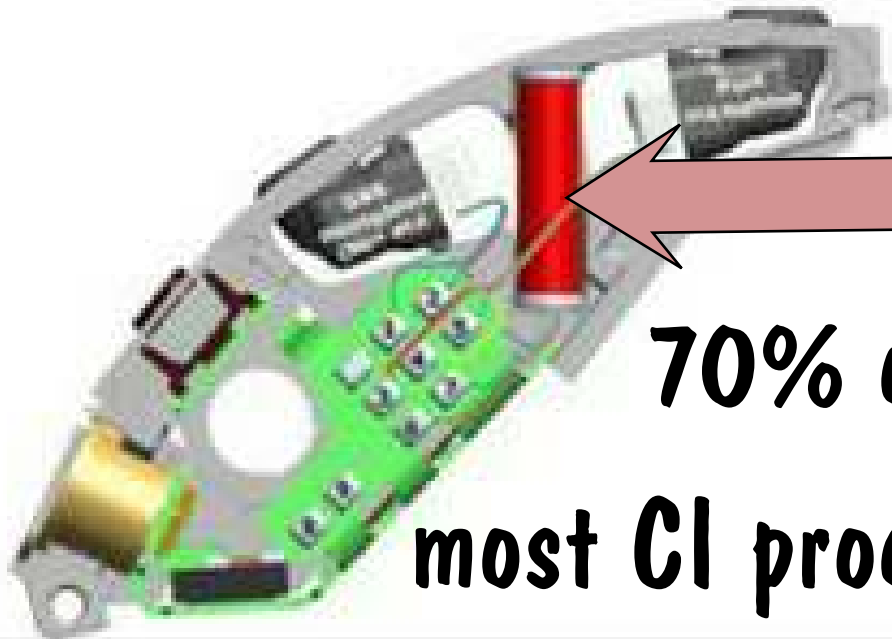
Ampetronic

What's a Telecoil?



Telecoils are tiny copper receivers for sound transmitted as an electromagnetic signal.

Telecoils in the UK



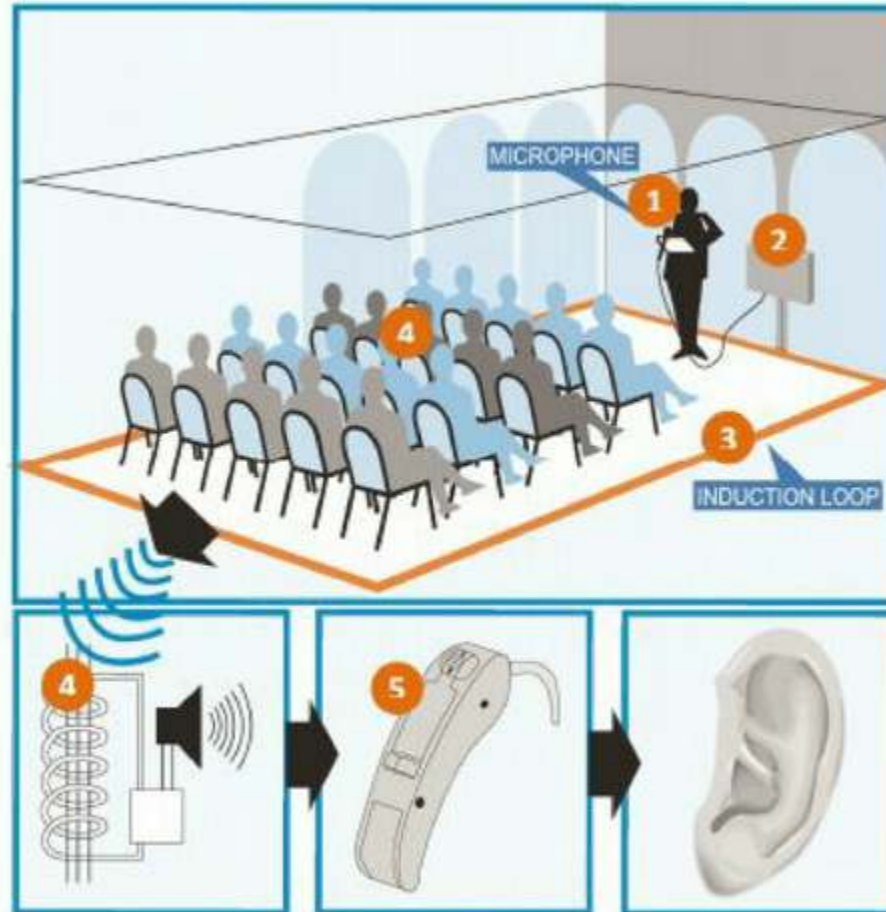
T-coil

70% of all HA models

most CI processors

95% of HAs in England

What's a Hearing Loop?



Perimeter Loop

Why Not Bluetooth?

Does not serve 1 or 100

Why Not FM or IR?

- **Must borrow a receiver and return it.**
- **May need to remove hearing aids to use earphones or ear buds.**
 - **Sound not customized to match audiogram pattern**

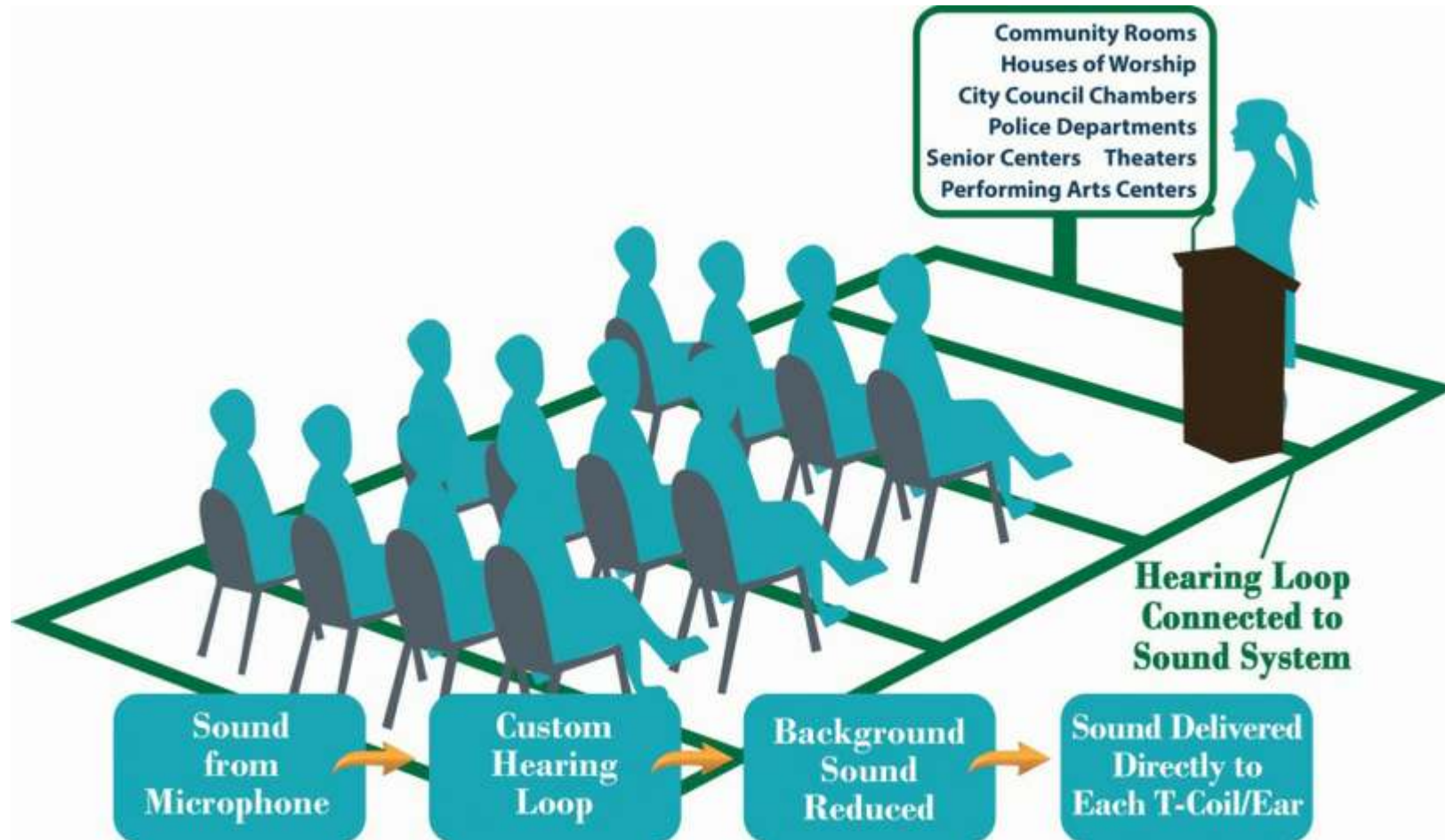
Many types of loops

- ✓ Perimeter room loops
- ✓ Phased array loops
- ✓ Portable loops
- ✓ Neckloops
- ✓ More...

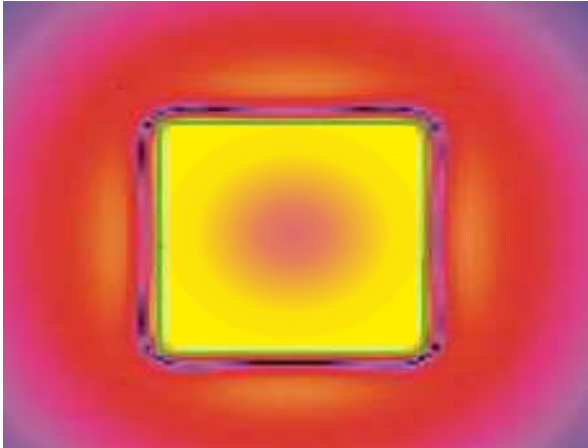


Let's look at some of them...

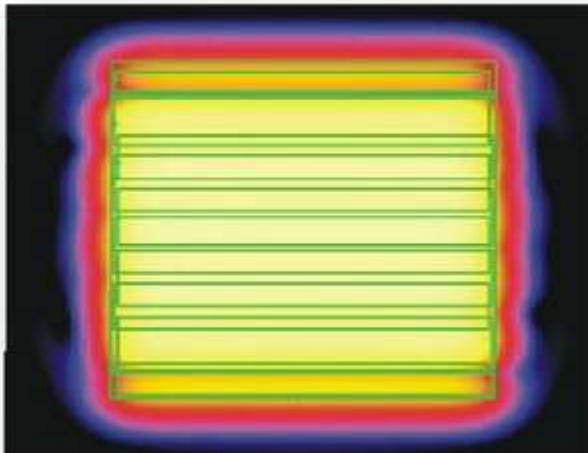
The Phased Array Loop



Benefits of a phased array



Perimeter loop has spillover and weak center.




Phased array contains signal and consistent strength.

Both must meet IEC 60118-4 standard.

IEC 60118-4

International Electrotechnical Commission

This standard specifies requirements for the field strength of hearing loops for hearing aid purposes, which will give adequate signal-to-noise ratio without overloading the hearing aid. The standard also specifies the minimum frequency response requirements for acceptable intelligibility. Methods for measuring using a magnetic field strength meter are specified.



Trained Installers

Questions to ask:

Where/how was installer trained?

**What loop systems has he/she
designed and installed?**

**Will installer provide Certificate of Conformity
to IEC 60118-4?**

See "Best practices" sheet at HLAA/GITHL



What else is a Hearing Loop?

Counter Loop



What else is a Hearing Loop?



Portable Loop

What else is a Hearing Loop?



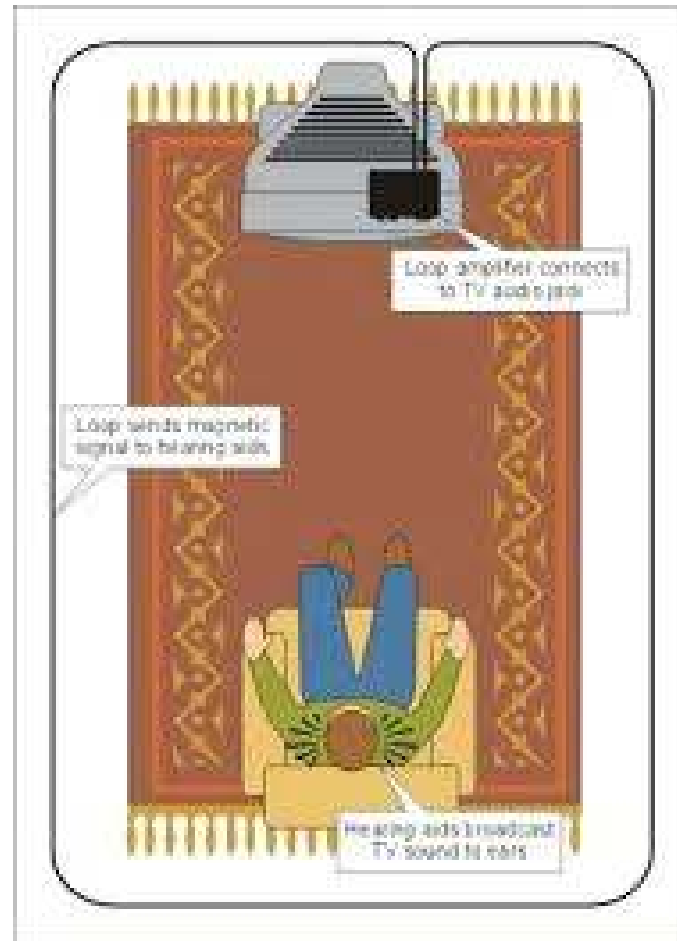
Window Intercom with built in loop

What else is a Hearing Loop?



Loop Mat

What else is a Hearing Loop?



Home TV Loop

What else is a Hearing Loop?



- Amplifier plugged into TV just like a room loop with a wire discreetly strung to TV viewing chair and hooked to loop pad that goes under the chair's cushion (can also be used under the mattress in a bed).

Chair Loop

What else is a Hearing Loop?



Microphones

Looped card table

What else is a Hearing Loop?

Looped clipboard

Think of it as a personal amplifier
for use on the job...



What else is a Hearing Loop?

Looped cars

Some people have actually had their car looped in order to hear conversations while traveling...



Tesla Model S



What else is a Hearing Loop?



Amplified with
microphone



Unamplified

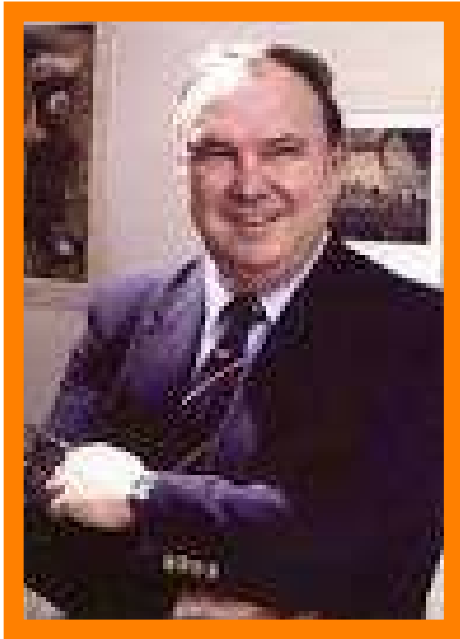
Neck Loop
Think of it as a headset

A few of the uses of the neckloop...

- ✓ Stereo and Surround Sound systems
- ✓ Computers or tablets
- ✓ Phones (Cell and home)
- ✓ MP3 Players
- ✓ On a TV equipped treadmill at the gym
- ✓ On your TV at home or while traveling



Loops in America-the beginning




Rocky Stone, retired CIA agent and founder of HLAA (then known as SHHH - Self Help for Hard of Hearing People) first introduced hearing loops to SHHH chapter leaders in the early 1980's.

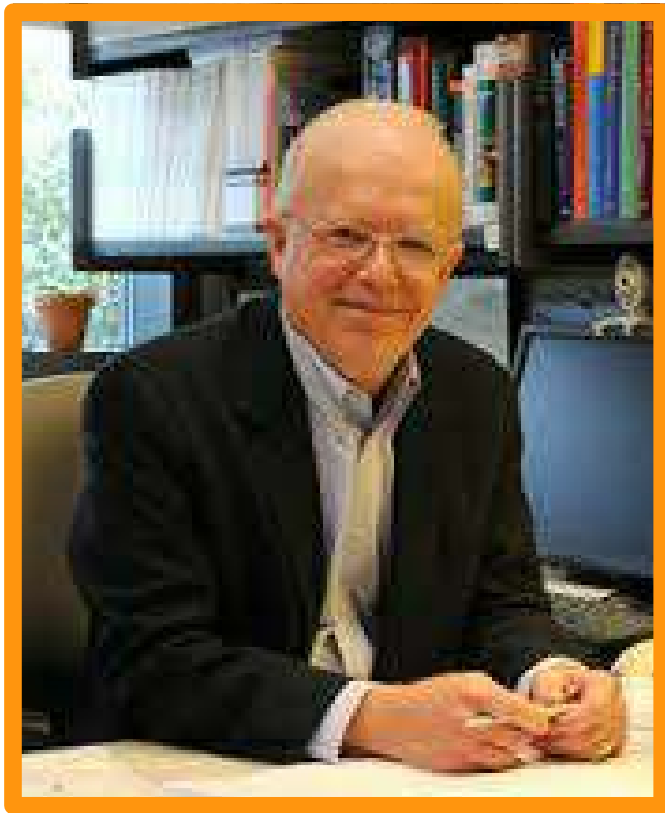
The beginning

The Albuquerque SHHH chapter acquired a loop in the early 1990's and used it for well over a decade, setting it up and taking it down each month.

Christ United Methodist Church, looped shortly thereafter, was the only other known loop in operation in Abq. for many years.



The beginning



Prof. David G. Myers

Professor of Psychology at
Hope College in Holland, Michigan.

Author of 17 books, including popular textbooks entitled *Psychology*, *Exploring Psychology*, *Social Psychology* and of books dealing with such issues as scientific psychology, Christian faith and hearing loss.

Iona Abbey, Scotland

FACTS: SEPTEMBER 0942-1000
OCTOBER 042725 0942-1000
JUNDAVE 1030-1430 & 1630-1730
At other times on Sunday
entry is free unless stated

The Dean and Chapter request that occasionally
the Canons or parts of it may be closed to visitors
without prior notice.

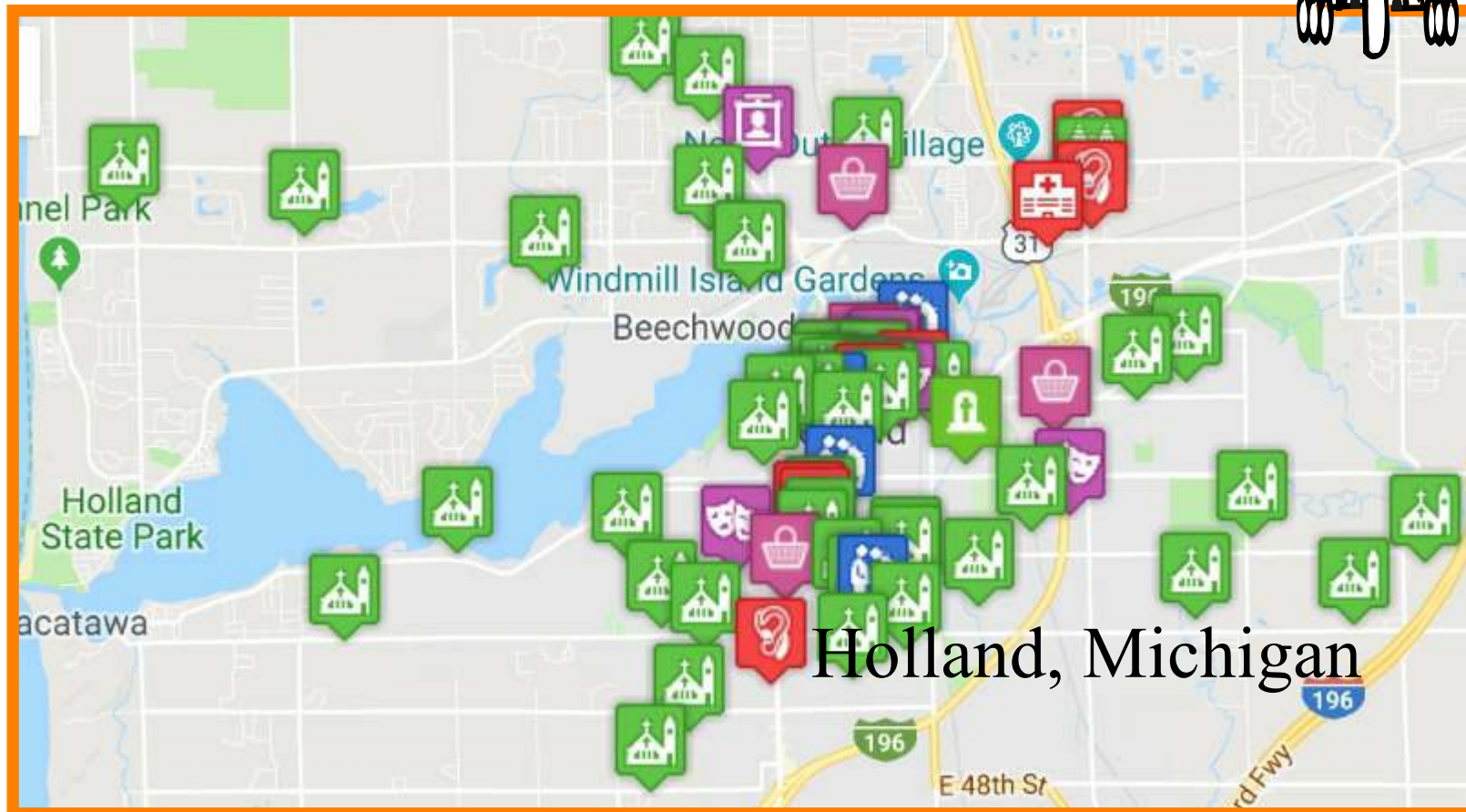
  

The Cathedral Welcome Centre
(opposite the Cathedral entrance)
For all information



The looping of Michigan



Now Over 900

Loops in America-the beginning

Another Looping Pioneer

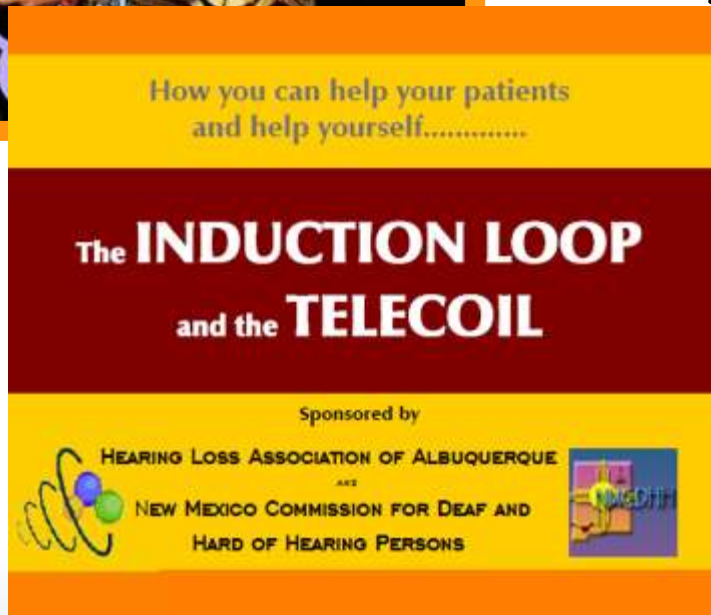
Dr. Bill Diles, Santa Rosa, CA bundles small home hearing loops with each pair of HAs sold. He has looped more than 3000 homes, dozens of churches, and 9 movie theaters.

In 2006 he presented at all day Loop NM loop/telecoil workshop for providers in the state at his own expense.

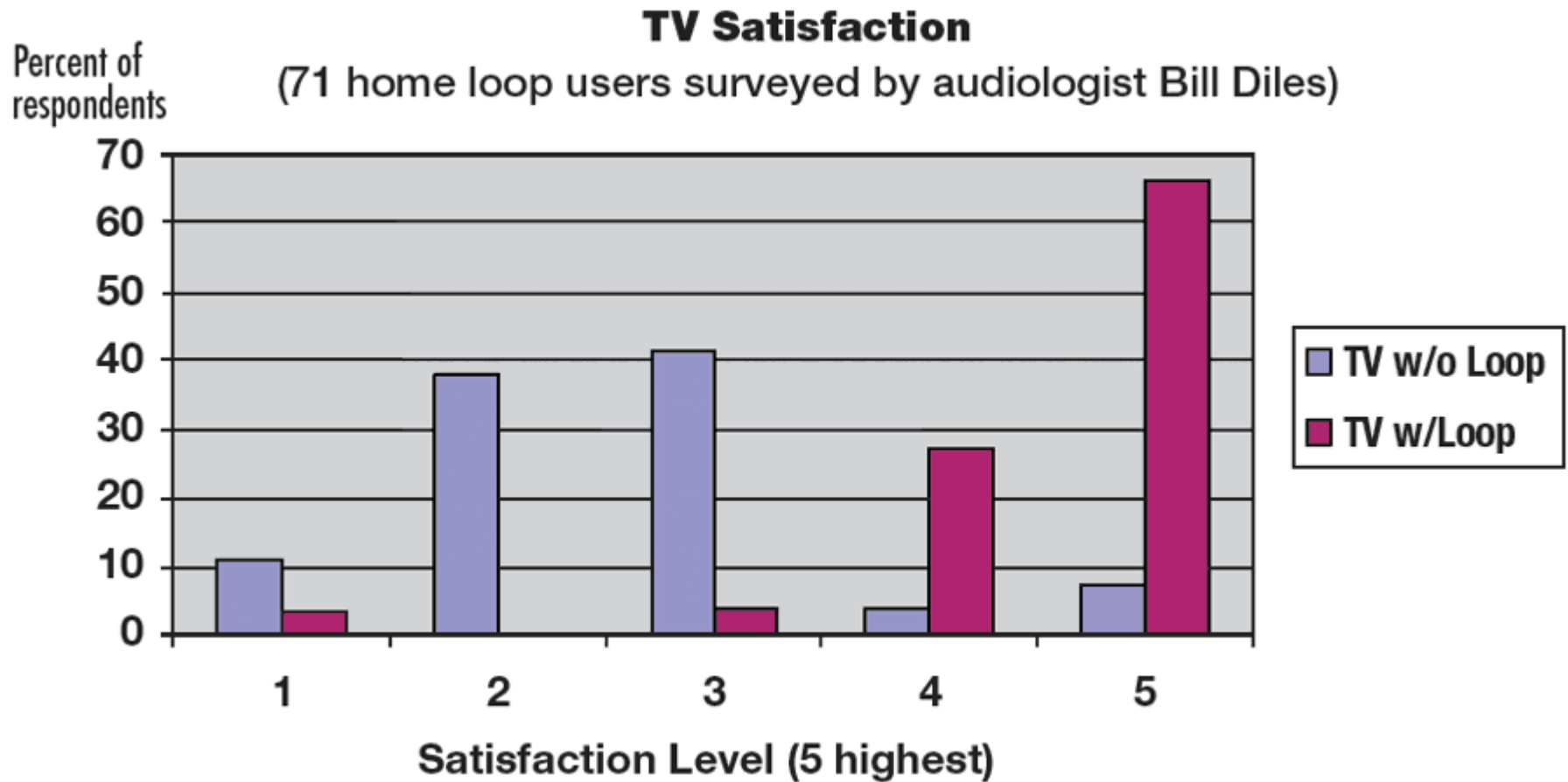
Was US distributor for Danish HA maker's Phonic Ear® Field Teleloop System



Receiving award for community service from the Academy of Doctors of Audiology



Diles' 2008 Client Satisfaction Survey as reported in Hearing Journal.



Loop New Mexico Formed

An initiative of Albuquerque SHHH



Created 2005 by Jim Ogle
Los Alamos Engineer, HLAAbq member

Let's Loop Tucson Formed



An initiative of the Adult Loss of Hearing Association that has, since then, become

Let's Loop Arizona



Loop Wisconsin Formed

In 2008 Audiologist Juliette Sterkens attends hearing loss expo and hears Dr. Myers tell about the looping of Western Michigan.



2010 -

A watershed year for looping

The ADA

The Americans with Disabilities Act

GITHL

Get In the Hearing Loop



In 2010

The ADA Revisions

- 👍 **Assistive Listening Systems Required**
- 👍 **Hearing Aid Compatible Required**
(Defined as must work with telecoils)
- 👍 **Neckloops Required**
- 👍 **Adequate Signage**

In 2010

Get in the Hearing Loop

Proud supporter of

**Get in the
Hearing Loop**

A Joint Project of the
Hearing Loss Association
of America and the
American Academy
of Audiology



In 2011



**HLAA hosted 2nd International
Looping Conference in Washington, DC**

In 2011

Looping campaigns started up all
over the U.S.....



Today

Over 3 dozen HLAA Chapter/State campaigns

Arizona

Delaware

California

Colorado

Florida

Michigan

New Mexico

New Jersey

New York

North Carolina

Oregon

Rhode Island

Washington

Wisconsin

Utah



Today

Other Looping Campaigns



Today

Individual advocates



Dr. Richard Meidinger
Lawrence, KS



Prof. Carol Lomicky
Kearney, NE

Hearing Care Providers



State and city governments

**9 states mandate telecoil counseling
plus efforts in CA, CO, IO, WI**

NYC mandates loops in city buildings

**Minnesota mandates loops in state buildings
Maryland and Indiana pending**

Where will you find loops?

Places of worship

Room Loops and Neckloops



Where will you find loops?

Movie Theaters



Where will you find loops?

Performance Spaces



Oshkosh Grand Opera House



Albuquerque Little Theater was the first of 6 local theaters to loop their auditorium



**Van Wezel
Auditorium
Sarasota**

HLAA has compiled a list of over 300 performing arts venues known to have loops and many more feature neckloops.

Where will you find loops?

Offices and waiting rooms



Where will you find loops?

Banks and retail stores



Where will you find loops?

A growing number of drug and grocery stores



Wegmans Food Markets has begun installing induction hearing loop stations at pharmacy counters and check out lanes in all 88 of their stores in the Northeast.

Each of the 101 Kinney Drug store locations have been equipped with a counter-top or point of service hearing loop and a specifically designed directional microphone that eliminates back ground noise.



Where will you find loops?

Transportation hubs



Gerald Ford Airport



Union Station, Washington D.C.



Milwaukee Intermodal Station

Where will you find loops?

Airports



A concourse at Gerald Ford airport, Grand Rapids, MI



Delta Airlines gate at Detroit Metropolitan Wayne County



Information counter at Hartsfield-Jackson Atlanta

Where will you find loops?

Airports



This is a departure gate marked for the installation of a loop at the Rochester, NY airport.

Where will you find loops?

Airports



**This is a portable loop at a counter in the
Seattle/Tacoma, WA airport.**

Where will you find loops?

Airports



Here's a counter loop built into the car rental counter
at the Eugene, OR airport.

20 US Airports

Atlanta, GA .

Austin , TX

Charlotte, NC

Detroit, MI

Eugene, OR

Ft. Wayne, IN

Grand Rapids, MI

Kalamazoo/Battle Creek, MI

Los Angeles, CA (LAX)

Memphis, TN

Minneapolis/St. Paul, MN

Muskegan, MI

New York City, NY (LaGuardia)

Oshkosh, WI

Phoenix, AZ

Rochester, NY

Sarasota/Bradenton, FL-

Seattle, WA

South Bend, IN

Syracuse, NY



Where will you find loops?

Neckloops and airplanes



Virgin Atlantic now offers their international travel passengers a choice of ear buds or a **NECKLOOP**.

Neckloops and airplanes



**No need for bad sound from poor quality earbuds,
your own neckloop will work on many airliners.**

Where will you find loops?

San Francisco BART



#1 of 45 possible looped stations



1,081 new train cars,

Where will you find loops?

Unexpected places



Tour boat



Disneyland



City council chamber



Bart station

Where will you find loops?

Unexpected places



FIRST IN THE NATION

Breslin Center at Michigan State University

Where will you find loops?

Unexpected
places



New York City - In the loop



**All new/renovated city financed
assembly areas to be looped.**

Broadway Theaters



New York City Taxi Cabs



By law...all new NYC taxis must be hearing loop equipped like this "Taxi of Tomorrow".

Grand Central Station - NYC



With help from the NYC Human Rights Commission loops have been installed at some ticket windows.

Lincoln Center for the Performing Arts



Mitzi Newhouse and Vivian Beaumont Theaters

Geffen Hall (Avery Fischer hall) promises loops as part of current complete renovation.

Madison Square Garden



**Hearing loops are installed at the box office
and guest services.**

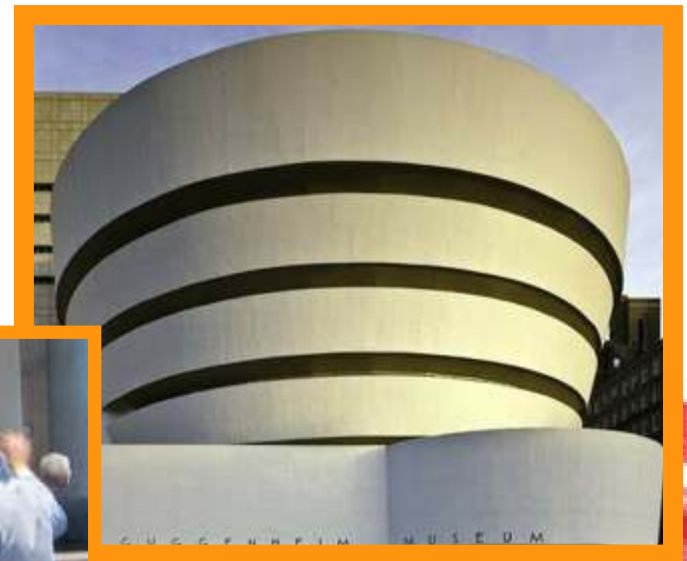
Other New York City looped venues

**Penn Station
information booth**



**Bronx Botanical
Gardens**

**Metropolitan
Museum**



**Guggenheim
Museum**

New York City subway



**Over 600 NYC subway fair/information booths looped,
emergency help point on platform.**



New York City MTA

1000 looped
subway cars



Testing on buses

LaGuardia Airport New Delta Airlines Terminal

All gates looped





NEW Accessibility Requirements

All new or significantly renovated airport terminals must have hearing loops at departure gates and at information counters.



Information counters at all bus, train and ferry terminals



Amtrak



**83 "trainsets" (500 cars) on order with
option for 800 more cars - all with loops**

More examples of hearing loops in transportation



**Seattle city bus terminal
information counter.**

**Entire fleet of Indian Trails
buses looped.**

Loops abroad...

Loop technology in England



Heathrow Express Sign:
"For users of hearing
aids, we've fitted our on
board PA system with an
induction loop."



Heathrow waiting area



Newcastle airport in England

Loops abroad...

Train travel in England



Looped waiting room in a
London suburban station



Loop on train platform



Looped emergency
help point in
parking

Loops abroad...

Looped buses in England



London Metroline buses
with hearing loop and text
to speech digital signage
technology.

Loops abroad...

Looped taxicabs in England



Red Light Indicates
Your Voice May Be
Heard By The Driver



Hearing Loop
Switch Hearing Aid To T-Position

Loops abroad...

The London Underground



Loops abroad...

Westminster Abbey



~The very first sentence in the program for the 50th anniversary celebration of Queen Elizabeth's coronation in 2003~

The whole of the church is served by a hearing loop. Users should turn their hearing aid to the setting marked "I."

Loops abroad...

Loop technology in England



Canterbury Cathedral



Bank teller



Ticket window

Loops abroad...

Loop technology in England



Ticket window at the Tower of London



Hearing loop at Marks & Spencer - it reads, "To use the induction loop facility, switch your hearing aid to "T" and stand here."

Loops abroad...

Unusual loop installations in the UK



Iona Abbey, Scotland



The Lord Nelson

Loops abroad...

Loop technology in France



The Louvre



Notre Dame



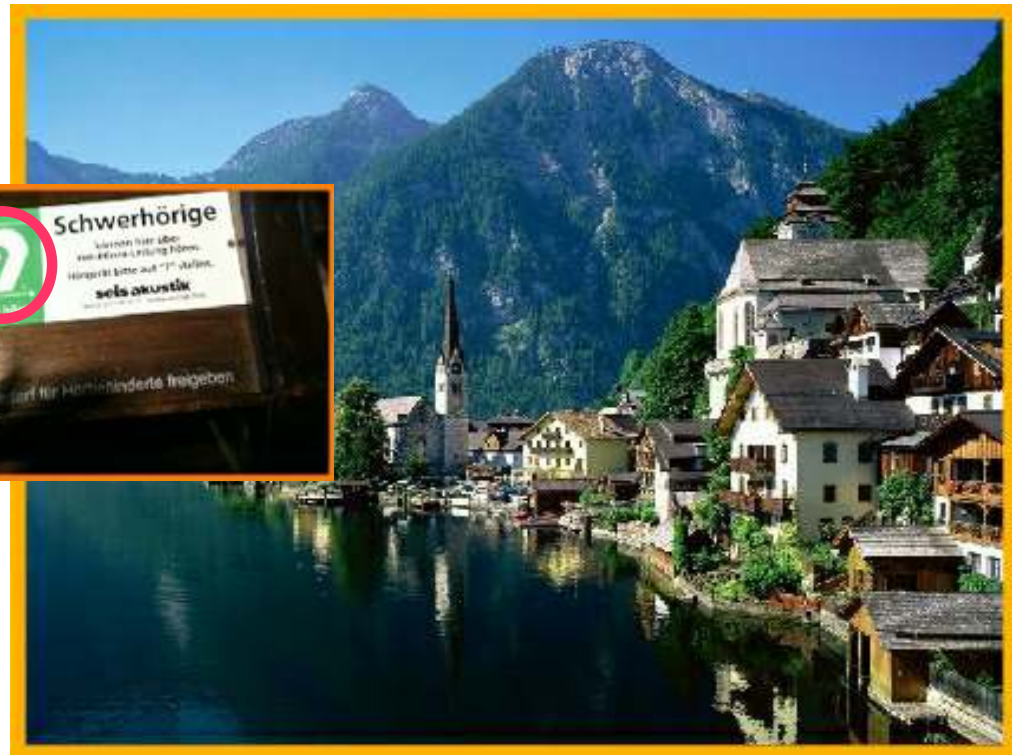
Les Eyzies

Loops abroad...

Loop technology in Germany and Austria



Der Kölner Dom, Cologne



The Danube boat tours

Loops abroad... Foreign airports



Domodedovo airport, Moscow



Stockholm-Arlanda
Airport



Suvarnabhumi Airport, Bangkok



Christchurch, New Zealand Airport



Dublin airport in Ireland

Loops abroad... Foreign airports



Incheon Airport, Seoul, South Korea

Loops abroad...

Loop technology in Australia



All major airports feature hearing loop technology



Melbourne train platforms

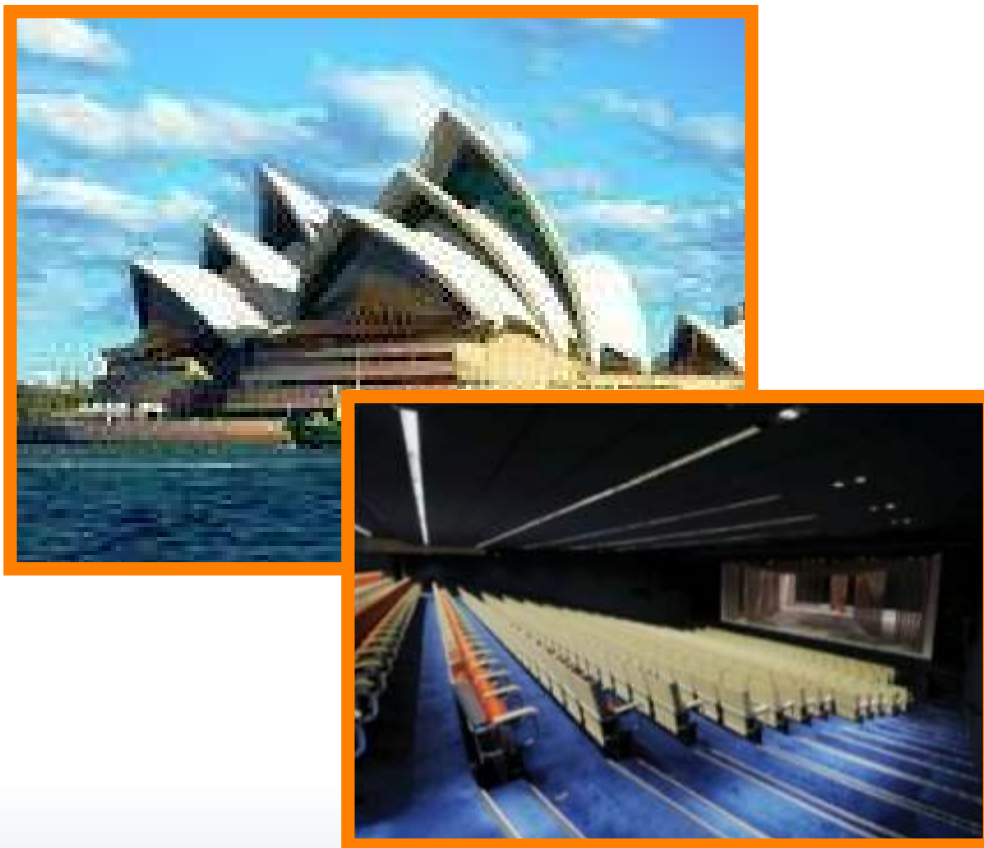


Sydney commuter trains were recently looped.

Loops abroad...

Loop technology in Australia

Sydney Opera House



Sydney Observatory



Loops abroad...

Loop technology in Australia






Bus stop totem with route schedule plus announcements via loudspeaker and hearing loop.



Loops abroad...

Loop technology in Australia

A sampling of other installations

-  **Australian Taxation Offices – various sites**
-  **Melbourne Cricket Ground (Melbourne)**
-  **Brisbane City Council Town Hall (Brisbane)**
-  **La Trobe University – Bendigo Campus, Victoria**
-  **Cochlear Global Headquarters (Sydney)**



**How can you find loops
when you're traveling?**

www.time2loopamerica.com/loop-locator/

www.aldlocator.com

Europe:

www.letshear.ihlma.org/

GOOGLE ???

Where will you find
INFORMATION AND ADVOCACY MATERIAL
FOR LOOPS?

[www.hearingloss.org/programs-events/
get-hearing-loop/](http://www.hearingloss.org/programs-events/get-hearing-loop/)



MORE RESOURCES FOR INFORMATION

www.hearingloop.org

www.sofnabq.com

www.loopnm.com

www.ampetronic.com

www.contactainc.com



In case you thought I was never going to stop...

[

QUESTIONS?





**Time's up... thanks for
attending this presentation
on hearing loops.**

Unanswered Questions?

Send them to me at:

CCAnm@juno.com

