

A night-time photograph of the Singapore skyline, featuring the Marina Bay Sands hotel with its iconic skybridge, the Esplanade - Theatres on the Bay, and other illuminated skyscrapers reflected in the water.

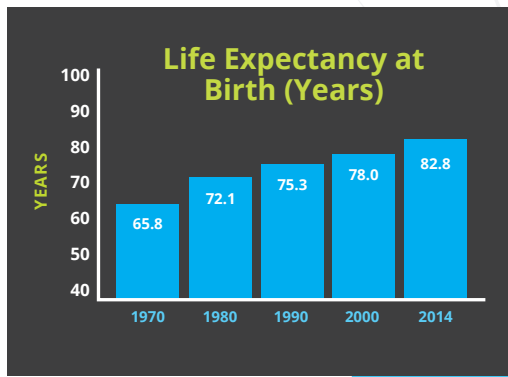
INTRODUCTION TO  
HEARING ENHANCEMENT IN SINGAPORE

**LISTEN**  
TECHNOLOGIES 

[www.listentech.com](http://www.listentech.com)

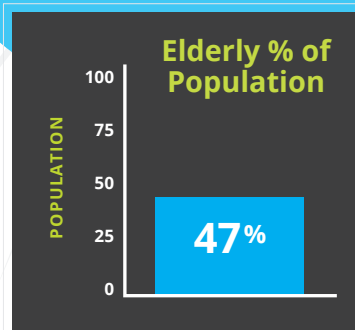
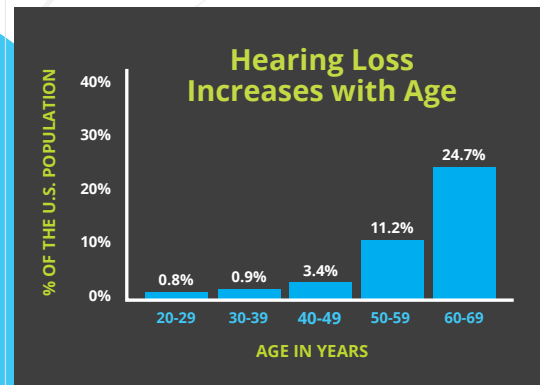
## Hearing Loss in Singapore

### Singaporeans are living longer



An estimated 422,000 adults in Singapore suffer from hearing loss. With an increasing life expectancy, these numbers will more than double by 2050.

### Hearing deteriorates with age



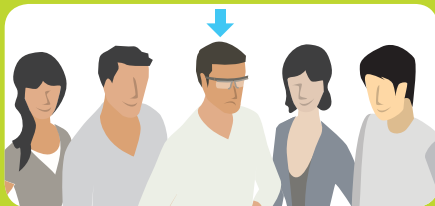
By 2050 almost half of Singapore's population will be elderly

\*Source: <http://www.annals.edu.sg/cpdmay05.html>

## Hearing Loss and Quality of Life

Without Hearing Enhancement in public buildings, aging Singaporeans become increasingly isolated from public life. "We want the new Code to support Government's efforts in building an inclusive society... BCA's goal is to make (public spaces) accessible for as many groups of persons with diverse needs as possible. Improved accessibility will offer a better quality of life."

**DR. JOHN KEUNG, SINGAPORE BUILDING AND CONSTRUCTION AUTHORITY (BCA)  
CHIEF EXECUTIVE OFFICER**



One in 5 Singaporeans will suffer from hearing loss by 2030.



Hearing Enhancement in a Performance Space enables everyone to enjoy the same performance.



Hearing loss is the "invisible disability". A simple public interaction becomes a frustrating and isolating experience.



The BCA Code of Accessibility requires Hearing Enhancement at Information Counters.



A building evacuation can be a frightening experience if you do not understand what is happening.



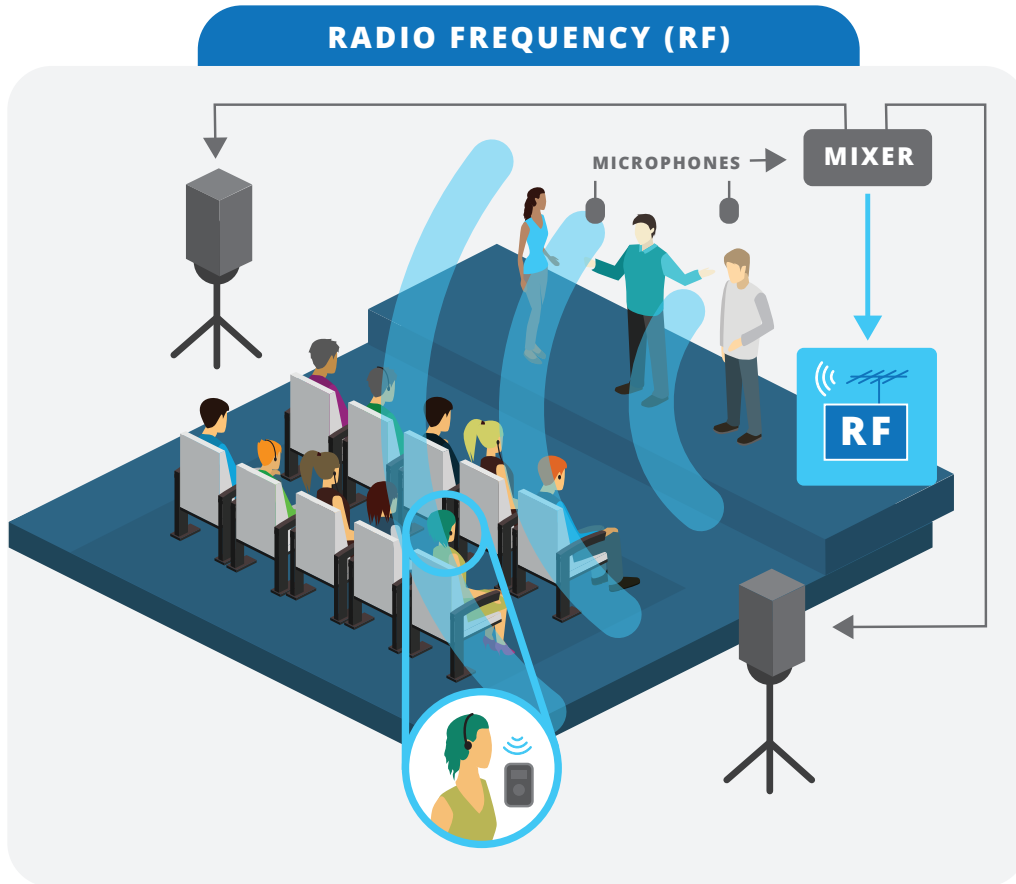
When a Hearing Enhancement system is connected to the public address system, evacuation instructions are clearly understood by those with hearing loss.

**Hearing Enhancement is one of the solutions adopted within the 2013 BCA Code of Accessibility.**



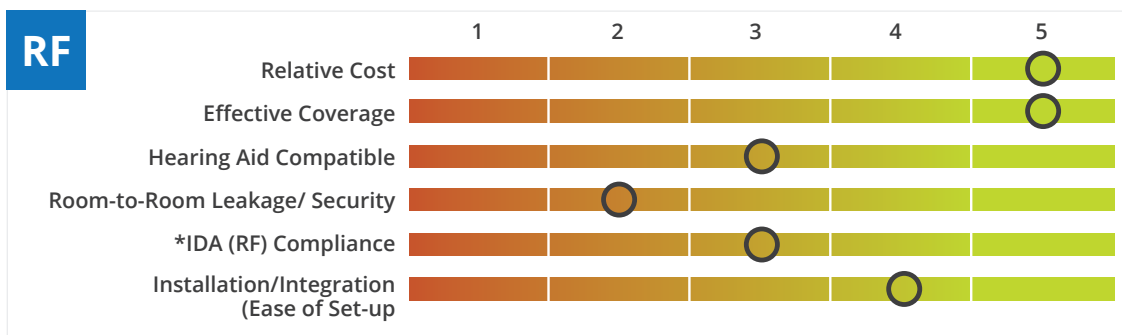
# Hearing Enhancement Solutions

There are four types of Hearing Enhancement technologies: Radio Frequency (RF), Infrared (IR), Wi-Fi, and Induction Loop. Each uses different technology to transmit sound wirelessly to a personal receiver, a personal smart phone or directly to a compatible hearing aid.

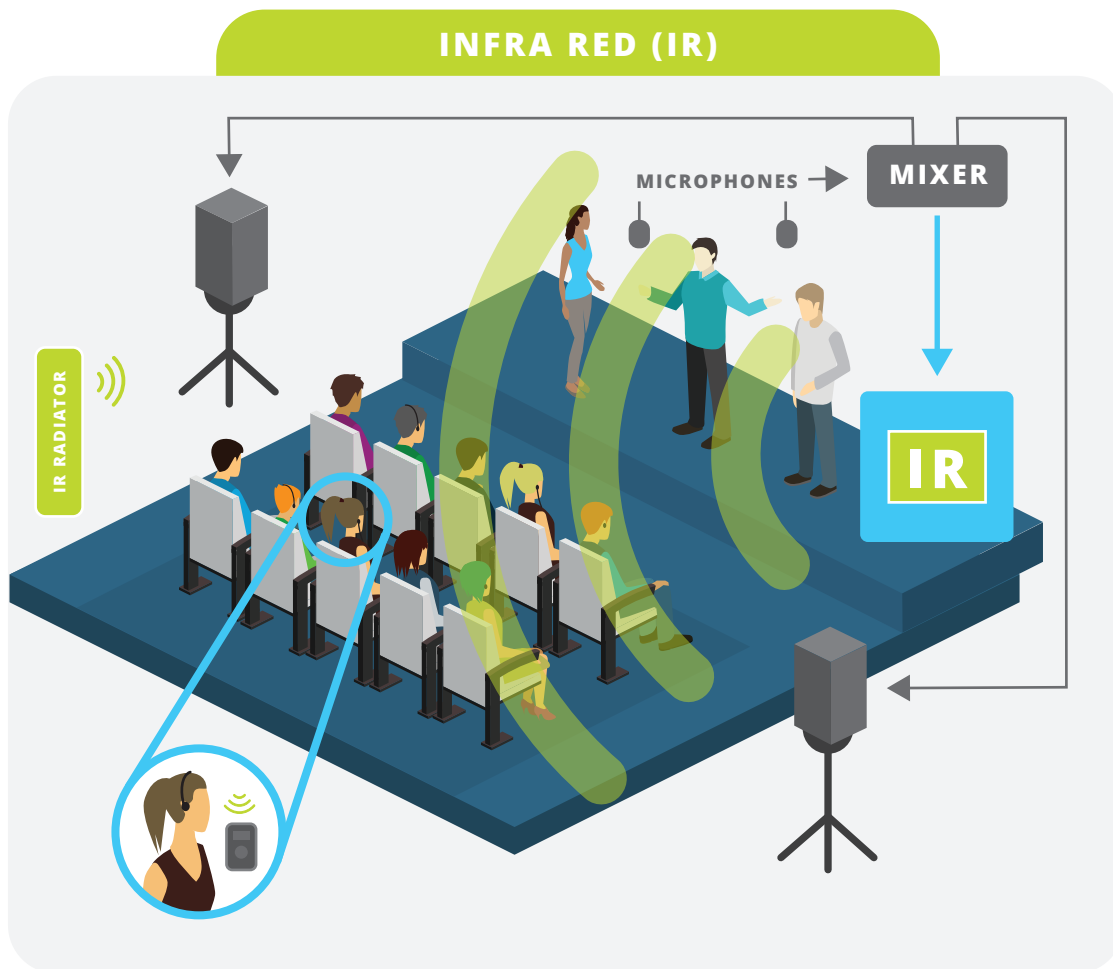


## Radio Frequency (RF) Solution

Simple setup and integration with existing AV or PA system, and multiple channels for language interpretation



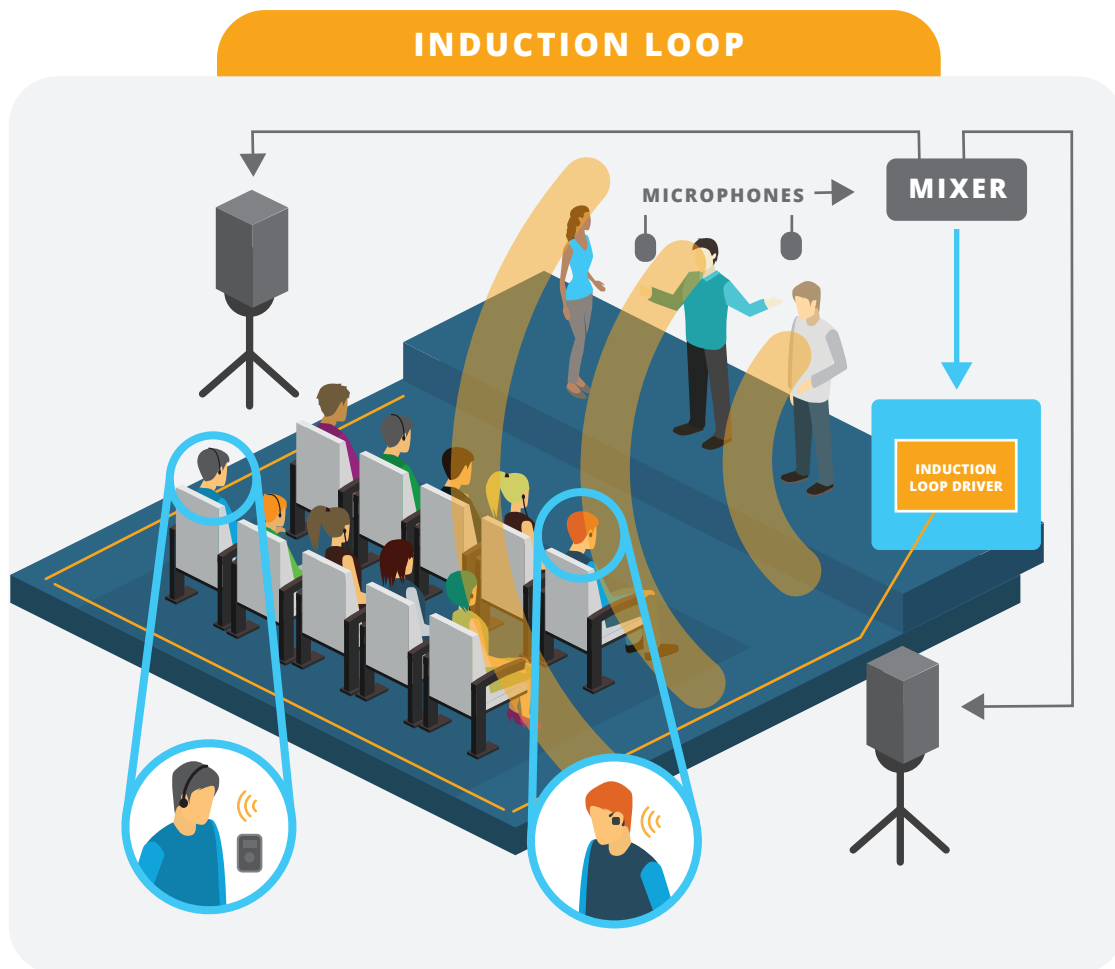
\*The standard FCC 72MHz and 216MHz bands used for Hearing Enhancement are not IDA compliant in Singapore. Only Hearing Enhancement products operating in the 1.9GHz (DECT) and 2.4GHz (ISM) bands are IDA compliant.



## InfraRed (IR) Solution

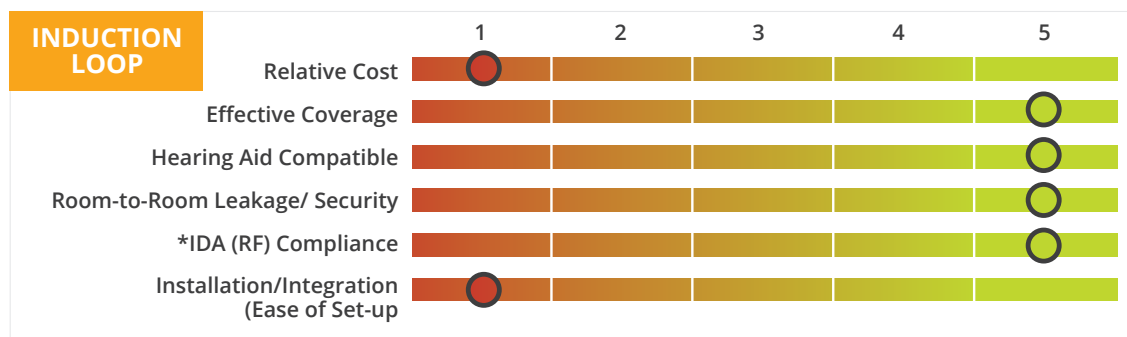
Infrared light cannot travel through walls and is perfect for secure audio transmission

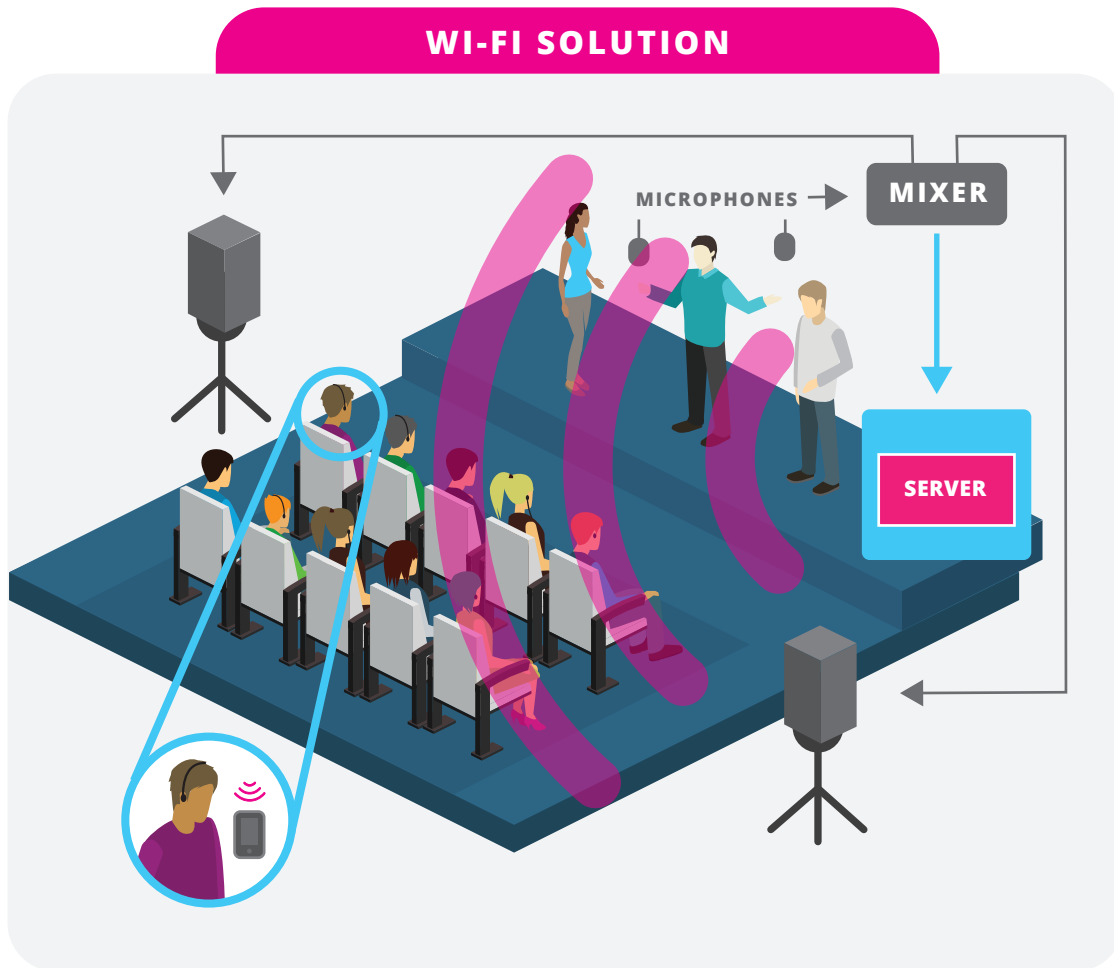
IR	1	2	3	4	5
Relative Cost				○	
Effective Coverage					
Hearing Aid Compatible				○	
Room-to-Room Leakage/ Security					○
*IDA (RF) Compliance					○
Installation/Integration (Ease of Set-up)			○		



## Induction Loop Solution

Preferred by those with hearing loss because it is discreet and works directly with hearing aids





## Wi-Fi Solution

Guests use their own smartphone and earbuds

WI-FI	1	2	3	4	5
Relative Cost	[Progress bar]				○
Effective Coverage	[Progress bar]				○
Hearing Aid Compatible	[Progress bar]				○
Room-to-Room Leakage/ Security	[Progress bar]		○	[Progress bar]	
*IDA (RF) Compliance	[Progress bar]				○
Installation/Integration (Ease of Set-up)	[Progress bar]			○	[Progress bar]

## Hearing Enhancement and Accessibility

The Building and Construction Authority (BCA) has stated in section 6.8.1 of the Code on Accessibility in the Built Environment (2013) that Hearing Enhancement systems shall be provided in “The function rooms, halls and auditoriums used for meetings, lectures, performance or films” and “At least one of the public information/service counters for cinemas, theatres, concert halls, stadiums, shopping complexes, museums, theme parks, purpose-built family amusement centres, sport complexes, public swimming pools, hospitals, clinics, transport stations, interchanges and passenger terminals.”



### ListenTALK (RF)

ListenTALK uses radio frequency on the DECT platform to broadcast the audio to user-worn receivers.

- Portable and can be used inside and outside
- Minimal Install
- Simple to setup and use



### ListenIR

Infrared systems utilize infrared light to broadcast an audio signal to users with IR receivers. Because IR systems are light-based, audio cannot be broadcast outside the designated space or room.

- Ideal for adjacent classrooms or meeting space
- Great for simultaneous broadcasts (multiple languages/interpretation)
- Secure, audio cannot be intercepted from outside the room



### Listen EVERYWHERE

Audio via Wi-Fi technology allows venues to stream multiple audio sources directly to guests' smartphones using the venue's network.

- Scalable to increase streaming channels or # of users
- Audio is received via FREE customizable app
- Guests can stream audio from smartphone directly to Bluetooth equipped hearing aids



### ListenLOOP

Hearing Loop technology, also called induction loop, utilizes an electromagnetic field to broadcast the audio signal to any visitor or participant with a cochlear implant, telecoil (t-coil) equipped hearing aid, or loop receiver.

- The T-coil in equipped hearing aids, cochlear implants, or hearing loop receivers picks up the audio signal and delivers it directly to the user
- Eliminates the need for individuals with hearing loss to carry additional equipment
- Preferred by the hard of hearing community - is the most dignified and convenient solution





## Combo Compliance Systems

Combo Compliance Systems enables you to meet and exceed your audio compliance requirements, expanding coverage to everyone with a Smartphone.

- Pairs a compliant RF, IR, or Induction Loop system with the convenience of Listen EVERYWHERE
- Expandable based on compliance requirements
- Encourages inclusion by offering a discreet listening option

	Range	Secure Signal	Compliant	Portable	Indoor/ Outdoor	# of Channels
<b>ListenIR</b>	3,716 m <sup>2</sup>	Yes	Yes	No	Indoor	4
<b>ListenTALK</b>	150m indoor/ 300m outdoor	Yes	Yes	Yes	Indoor/ Outdoor	10 groups in same space
<b>Listen EVERYWHERE</b>	Within Wi-Fi range	Optional*	Yes, when used in a Combo Compliance System	No	Indoor/ Outdoor	16+
<b>ListenLOOP</b>	Within loop	Yes	Yes	No	Indoor	1

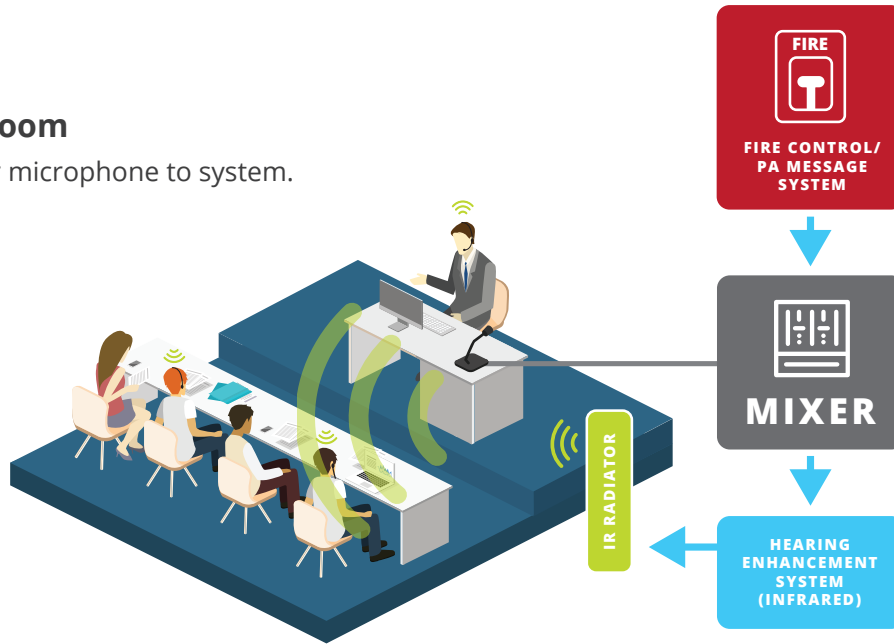
\* Secure signal if Wi-Fi is password protected

**ListenTALK and Listen EVERYWHERE can also be used as a simultaneous translation solution for Houses of Worship and Auditoria with multiple language needs.**

# Deploying a Hearing Enhancement System

## Classroom

Teacher microphone to system.



## Information Counter

Counter person microphone to system.







“Blindness Separates Us From Things,  
But Deafness Separates Us From People”

– HELEN KELLER



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