

THROUGHOUT THE AGES:

Accessibility Managed with the Deaf Community During Different Life Stages

AMBER CARTER & SHANDA MILLER



AGENDA

- ABOUT PRESENTERS
- ABOUT US
- MISSOURI D/HOH POPULATION
- INFANT, TODDLERS, & YOUNG CHILDREN
- ADOLESCENTS & ADULTS
- SENIOR CITIZENS
- HEARING AIDS
- COCHLEAR IMPLANT
- WHAT IS ASSISTIVE TECHNOLOGY FOR THE DEAF AND HARD OF HEARING?
- ASSISTIVE TECHNOLOGY
- QUESTIONS
- CONTACT INFORMATION



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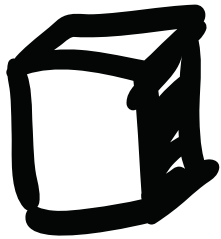


About Us

The Missouri Commission for the Deaf and Hard of Hearing works with individuals, service providers, businesses, organizations, and state agencies to improve the lives and opportunities of all Missourians with hearing loss.

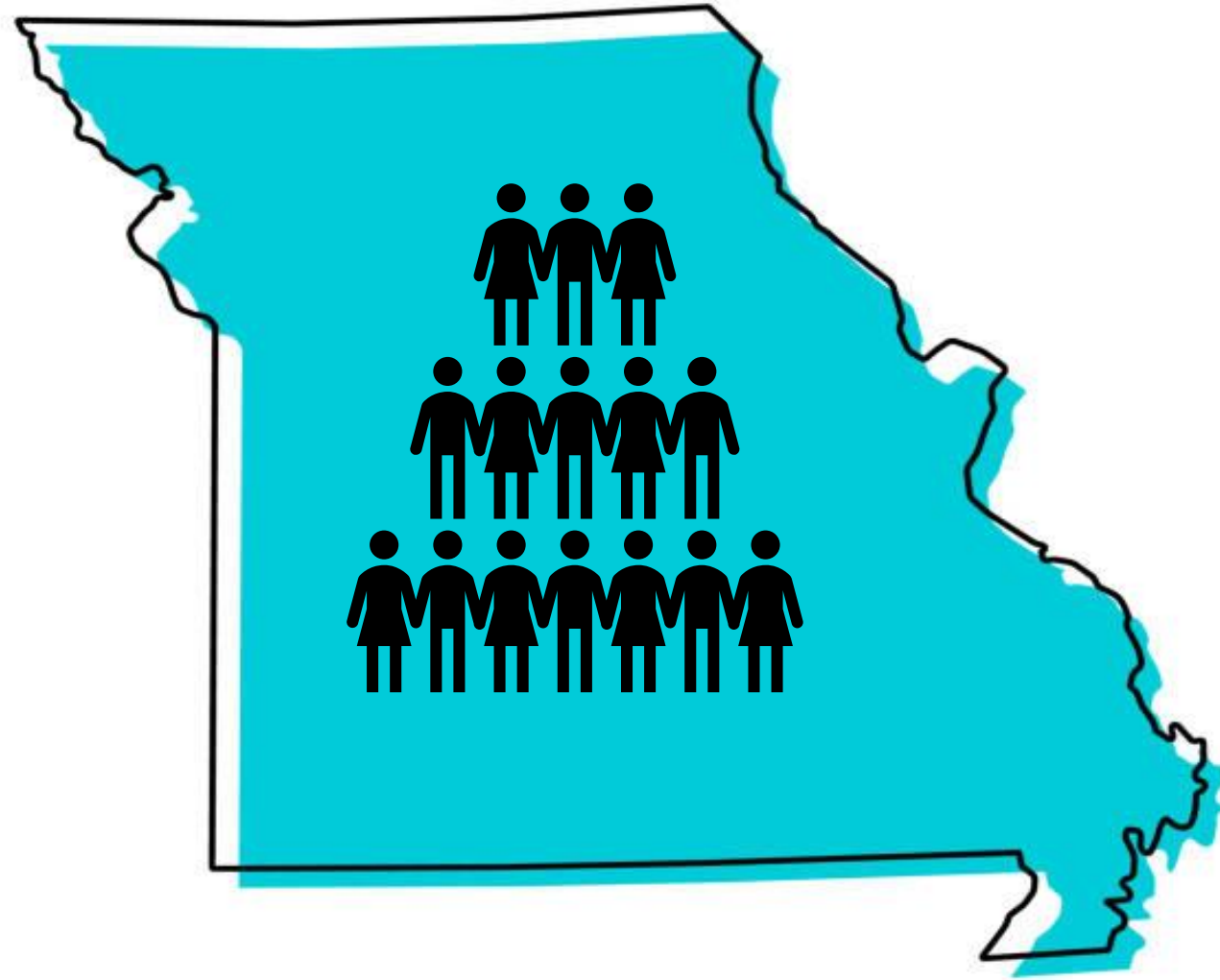


What kind of
accommodation are you
using right now during this
presentation?



Missouri Deaf and Hard of Hearing Population

- 598,893 (10%) Missourians have a hearing loss
- 539,003 (9%) Hard of Hearing
- 59,889 (1%) Deaf (2010 data.mo.gov)
- 245 DeafBlind (2019 nationaldb.org)





ASSISTIVE
TECHNOLOGY

FOR DEAF AND HARD OF HEARING

INFANTS
TODDLERS
YOUNG CHILDREN

STATISTICS

90% of infants of hearing loss are born to hearing parents.

90 %



ASSISTIVE TECHNOLOGY

FOR DEAF AND HARD OF HEARING

HOW DO DEAF PEOPLE TAKE CARE OF INFANTS?

- VIBRATING ALARM CLOCK
- APPS ON SMARTWATCH
- APP ON SMARTPHONE
- BABY MONITOR WITH VISUAL ALERT
- BABY MOVEMENT ALERT
- PUT THEIR ARM OR LEG NEAR THE BABY (ON BED OR IN CRIB)
- ANIMAL SERVICE



ASSISTIVE TECHNOLOGY IN EDUCATIONAL SETTING

FOR DEAF AND HARD OF HEARING



HIGH TECHNOLOGY AT

- VISUAL TIMER
- FM LISTENING SYSTEM
- CLOSED CAPTION/SUBTITLES
- TEXT TO SPEECH
- ASSISTIVE LISTENING DEVICES (ALD)
- POWERPOINT
- INTERACTIVE WHITE BOARD
- AUGMENTATIVE COMMUNICATION DEVICES

LOW TECHNOLOGY AT

- SAND HOUR-GLASS TIMER
- VISUAL SUPPORT
- PRINTED COPIES
- VISUAL SCHEDULE
- ERASABLE BOARD

GROUP ACITIVITIES

- PRINTED COPY
- VISUAL ACTIVITIES
- HAND-ON ACTIVITIES

COMMUNICATION METHODS

- ASL INTERPRETERS
- PAPER AND PEN
- BUDDY SYSTEM

HOW TO GET THE STUDENT'S ATTENTION

- FLICKER THE LIGHT
- TAP ON THE SHOULDER, LIGHTLY
- TAP ON TABLE, GENTLY

ASSISTIVE TECHNOLOGY IN HOME

FOR DEAF AND HARD OF HEARING



COMMUNICATION METHOD

- TEXT TO SPEECH
- ASSISTIVE LISTENING DEVICES (ALD)
- INTERACTIVE WHITE BOARD
- AUGMENTATIVE COMMUNICATION DEVICES
- ERASABLE BOARD

ALERTING SYSTEM

- WEATHER ALERT
- FIRE AND SMOKE ALARM
- VIDEOPHONE
- ALARM CLOCK
- DOORBELL
- MOTION DETECTOR



ASL INTERPRETERS

- DISNEY PLUS
- HBO MAX

Closed Captions & Subtitles

HOW TO GET THE CHILD'S ATTENTION

- WAVE
- FLICKER THE LIGHT
- KNOCK ON HARD SURFACE
- STOMP ON THE FLOOR
- TAP ON THEIR SHOULDER – GENTLY
- ANOTHER VISUAL SIGNAL



ASSISTIVE
TECHNOLOGY

FOR DEAF AND HARD OF HEARING

ADOLESCENTS - ADULTS

ASSISTIVE TECHNOLOGY: COMMUNICATION METHODS FOR DEAF AND HARD OF HEARING

TELEPHONE TECHNOLOGY

- VIDEO RELAY SERVICES (VRS)
- VIDEOPHONE
 - SORENSON
 - PURPLE
 - ZVRS
 - CONVO

TTY/TDD

IP-RELAY

- TMOBILE
- MO RELAY

COMMUNICATION USEFUL TOOLS

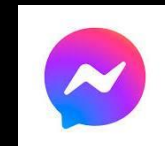
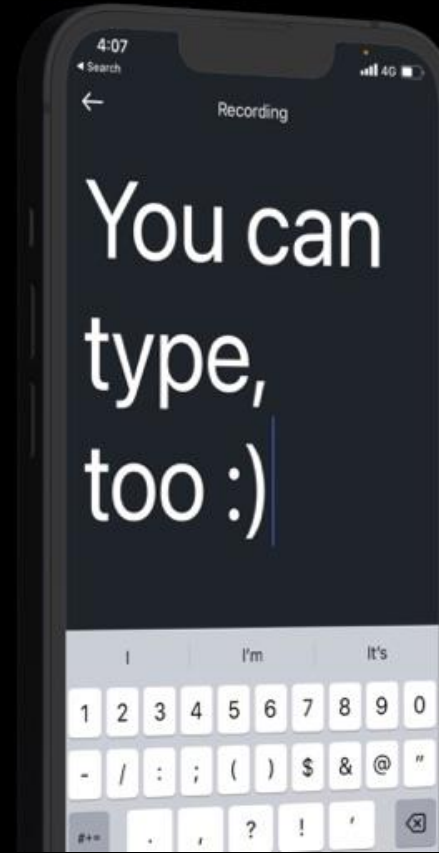
- EMAIL
- SMS
- UBIDUO
- NOTE APPS
- INSTANT MESSAGING
- MESSENGERS (INSTAGRAM, SNAPCHAT, FACEBOOK, WHATSAPP, ETC.)
- TRANSCRIBER APPS
- MOBLIE VIDEOPHONE

MOBILE & TABLET VIDEOCHAT

- FACETIME
- GOOGLE MEET (DUO)

VIDEOCHAT APPS

- FACEBOOK
- SNAPCHAT
- INSTAGRAM
- WHATSAPP
- GLIDE
- MARCO POLO



ASSISTIVE TECHNOLOGY

FOR DEAF AND HARD OF HEARING
IN AN EDUCATIONAL SETTING

COMMUNICATION METHOD

- ON SITE INTERPRETERS
- VIDEO REMOTE INTEPRETERS (VRI)

REMOTE CLASSROOM

- ZOOM MEETING
- CLASSROOM
- GOOGLE CLASSROOM

ASSISITVE TECHNOLOGY

- POWERPOINT
- RELAY CONFERENCE CAPTIONING
- FM SYSTEM
- CLOSED CAPTION & SUBTITLES
- CART
- NOTETAKER
- WHITEBOARD
- AI CC/SUBTITLE



ASSISTIVE TECHNOLOGY

FOR DEAF AND HARD OF HEARING AT WORKPLACE

COMMUNICATION METHOD

- ON SITE INTERPRETERS
- VIDEO REMOTE INTERPRETERS (VRI)

ASSISTIVE TECHNOLOGY

- POWERPOINT
- RELAY CONFERENCE CAPTIONING
- FM SYSTEM
- CLOSED CAPTION & SUBTITLES
- CART
- VIDEOPHONE

REASONABLE ACCOMMODATION

- VRI
- UBIDUO
- SPEECH TO TEXT APP
- TEXT SYSTEM
 - SLACK, TEAM, WEBEX, CELL PHONE
- PEN AND PAPER
- NOTE APP
- ERASABLE BOARD

ALERT SYSTEM

- GLOW SQUARE (OFFICE)
- WEATHER
- FIRE & SMOKE ALARM
- PAGER
- SECURITY SYSTEM
- SERVICE ANIMALS

CONFERENCING SYSTEM

- TEAM MEETING
- WEBEX
- ZOOM MEETING

MEETING

- COPIED NOTES
- POWERPOINT
- PAPER AND PEN
- ASSISTIVE LISTENING DEVICES
- INTERPRETERS





**ASSISTIVE
TECHNOLOGY**

FOR DEAF AND HARD OF HEARING

SENIOR CITIZENS

ASSISTIVE TECHNOLOGY

FOR DEAF AND HARD OF HEARING

ASSISTIVE TECHNOLOGY

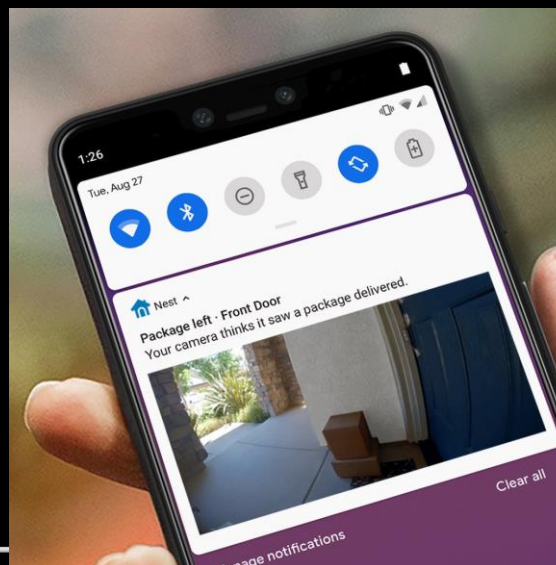
- DOORBELL
- SMART PHONE
- TELEPHONE SIGNALER
- CLOSED CAPTION AND SUBTITLES
- HOME SECURITY CAMERAS
- SPEECH TO TEXT APPS
- ANIMAL SERVICES
- ALARM CLACK AND SMARTWATCH
- VIDEO DOORBELL
- FIRE AND SMOKE ALARM
- SMART CONNECT SENSOR
- SMARTPHONE ALERT

COMMUNICATION ASSISTIVE DEVICES

- SPEECH TO TEXT APPS
- TRANSCRIBER APPS
- UBIDUO

ASSISTIVE LISTENING DEVICES

- HEARING AIDS
- AMPLIFIED PHONES
- CAPTIONED PHONES
- TV LISTENING DEVICES
- BLUETOOTH LISTENING DEVICES



ASSISTIVE TECHNOLOGY

FOR DEAF AND HARD OF HEARING

EMERGENCY ALERTS

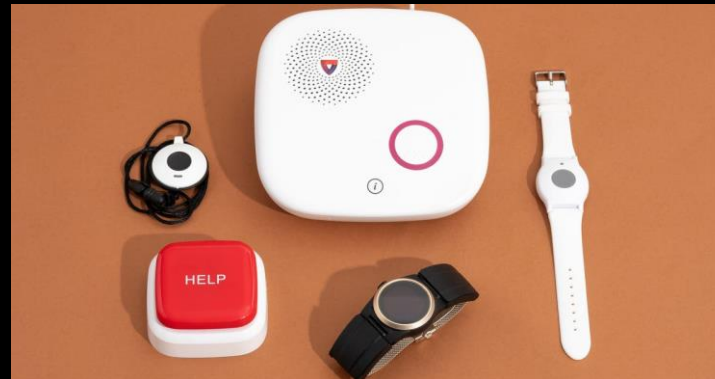
- SMOKE AND FIRE ALARMS
- CARBON MONOXIDE
- WEATHER
- MOTION ALERT
- SMARTWATCH NOTIFICATIONS
- SMARTPHONE NOTIFICATIONS

MEDICAL INFORMATION

- SMART 911
- MEDICAL INFORMATION ON PHONE
- SMARTPHONE MEDICAL ID (ANDROID AND IOS)
- MEDICAL ID APPS

MEDICAL ALERT

- FALL PREVENTION ALERT
- LOOP WITH PUSH BUTTON
- EMERGENCY PUSH BUTTON



ASSISTIVE TECHNOLOGY

FOR DEAF AND HARD OF HEARING

SENIOR CITIZENS

ISSUES FOR SENIOR COMMUNITY

- SOCIAL ISOLATION
- COMMUNICATION ACCESS
- SOCIAL GATHERING

ASSISTED LIVING CENTER
NURSING HOME
HOSPICE
HOSPITAL

INTERPRETER

- ON-SITE INTERPRETER VS VRI

HARD OF HEARING VS DEAF

PROVIDE SERVICES

SAFETY ISSUES

ALL AGES

Styles of hearing aids



Behind-the-ear (BTE)



"Mini" BTE



In-the-ear (ITE)



In-the-canal (ITC)



Completely-in-canal (CIC)

A HEARING AID IS A SMALL ELECTRONIC DEVICE THAT YOU WEAR IN OR BEHIND YOUR EAR. IT MAKES SOME SOUND LOUDER SO THAT A PERSON WITH HEARING LOSS CAN HEAR MORE IN BOTH, QUIET AND NOSIY SITUATIONS.

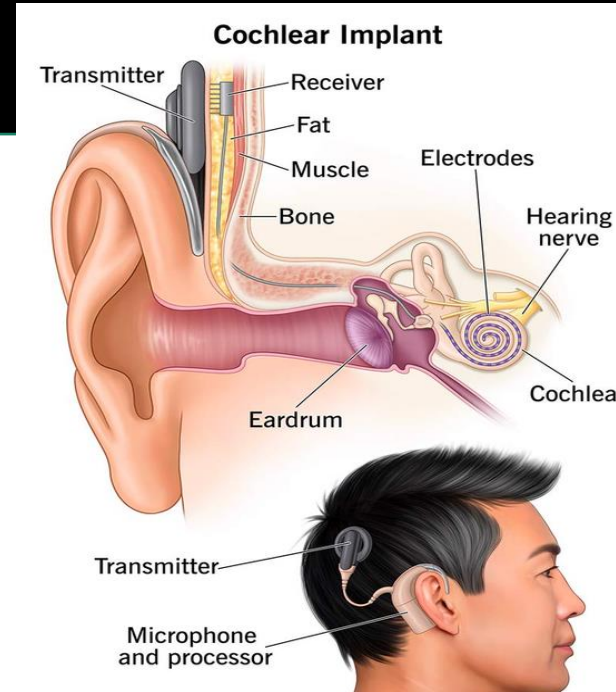
A HEARING AID HAS THREE BASIC PARTS: A MICROPHONE, AMPLIFIER, AND SPEAKER. THE HEARING AID RECEIVES SOUND THROUGH A MICROPHONE, WHICH CONVERTS THE SOUND WAVES TO ELECTRICAL SIGNALS AND SENDS THEM TO AN AMPLIFIER. THE AMPLIFIER INCREASES THE POWER OF THE SIGNALS AND THEN SENDS THEM TO THE EAR THROUGH A SPEAKER.

WHAT IS COCHLEAR IMPLANT?

COCHLEAR IMPLANT IS A SMALL, ELECTRONIC DEVICE THAT STIMULATES THE AUDITORY NERVE THROUGH ELECTRODES PLACED IN THE COCHLEA OF THE INNER EAR OF THOSE WHO IS PROFOUNDLY DEAF OR SEVERLY HARD OF HEARING.

COCHLEAR IMPLANT CONSISTS OF AN EXTERNAL PORTION THAT SITS BEHIND THE EAR AND SECOND PORTION THAT IS SURGICALLY PLACED UNDER THE SKIN AND ATTACHED TO AN ELECTRODE ARRAY THAT IS PLACED IN THE INNER EAR.

TOGETHER, THESE PARTS BYPASS THE PART OF THE EAR THAT ISN'T WORKING, SENDING SOUND STRAIGHT TO THE HEARING NERVE THEN SEND THE SOUND SIGNALS TO THE BRAIN THAT TRANSLATE THE SOUND YOU HEAR.



MANUFACTURER	Advanced Bionics	Cochlear Limited	MED-EL	Oticon Medical
				
DEVICE SAMPLE				



**WHAT IS ASSISTIVE TECHNOLOGY FOR THE DEAF AND
HARD OF HEARING?**

ALERTING SYSTEM

FOR DEAF AND HARD OF HEARING



ALERTING SYSTEMS IS TO SEND THE NOTIFICATIONS TO ALERT THE DEAF AND HARD OF HEARING OF THE SURROUNDING EVENTS, VARIETY OF ENVIRONMENTAL SOUNDS THAT IS HAPPENING AT HOME, SCHOOL, OFFICE, WORK, OR SCHOOL. THE ALERTING SYSTEMS COMES IN VARIETY CHOICES USING LOUD TONE, FLASHING LIGHTS OR VIBRATIONS.

Visual Signal Notifications

Flashing Light Alert System



LIGHT NOTIFICATION SYSTEMS ARE INNOVATIVE SOLUTIONS DESIGNED TO ENHANCE TO ACCESSIBILITY AND COMMUNICATION FOR INDIVIDUALS WITH HEARING LOSS. THESE SYSTEMS UTILIZE VISUAL SIGNALS, TYPICALLY THROUGH THE USE OF BRIGHT FLASHING LIGHTS OR STROBE, TO PROVIDE NOTIFICATIONS AND ALERTS IN VARIOUS ENVIRONMENTS.

VIBROTACTILE SIGNAL NOTIFICATIONS

Vibrating Alert System



VIBROTACTILE ASSISTIVE TECHNOLOGY THAT VIBRATES TO INFORM THE INDIVIDUAL WITH HEARING LOSS OF EVERYDAY OCCURRENCES, SUCH AS PHONE CALLS, OR VISITOR AT THE DOOR, OR EMERGENCY SITUATIONS SUCH AS FIRE ALARMS.

AUDITORY SIGNAL NOTIFICATIONS

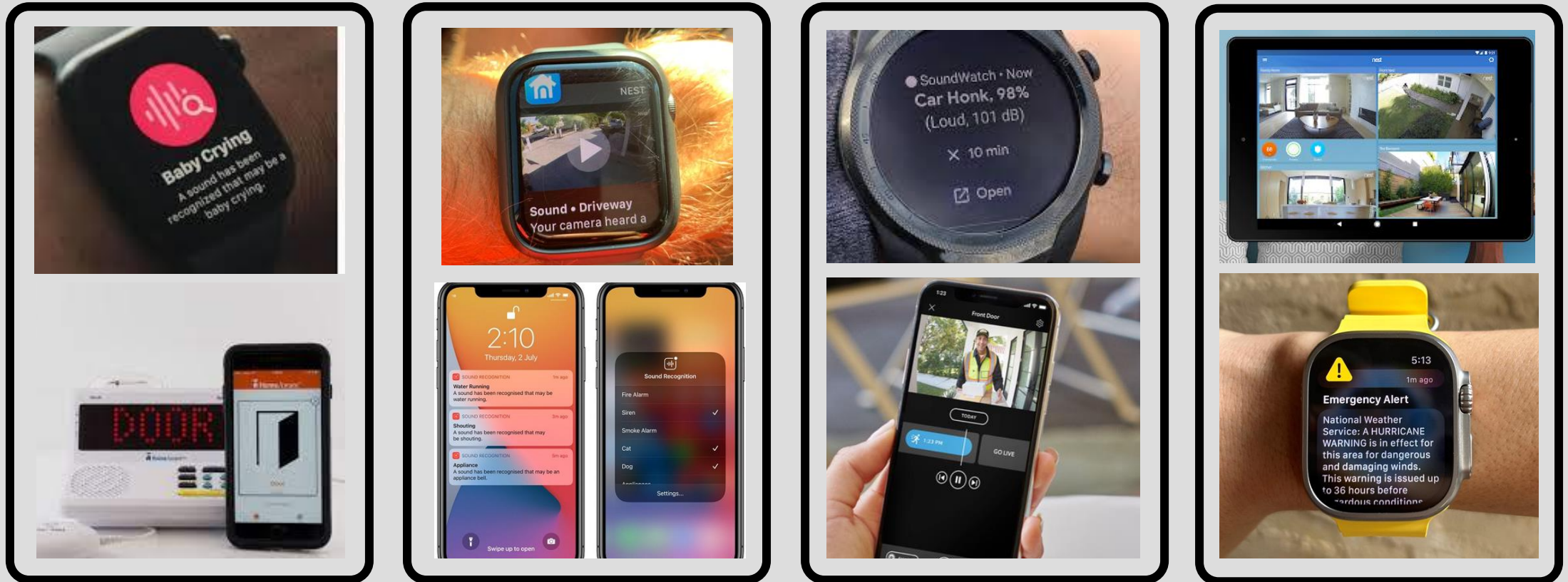
Sound Alert System



A SOUND ALERT USE A LOUD TONE AND MAY USE FLASHING LIGHTS OR VIBRATIONS TO ALERT PEOPLE WITH HEARING LOSS TO VARIOUS ENVIRONMENAL SOUNDS OR EVERDAY EVENTS IN HOME AND OFFICE.

SMARTPHONE & SMARTWATCH ALERT SYSTEM

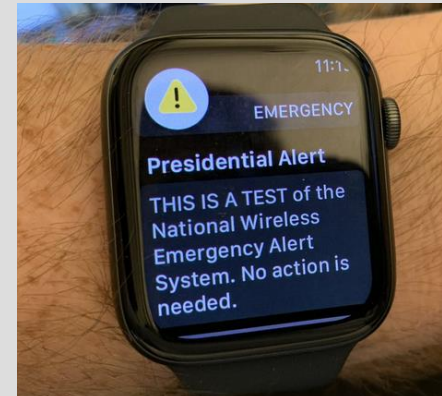
Notifications via Text and/or Apps



SMARTWATCH APP ALERTS IS A MODERN TECHNOLOGY THAT RECEIVES NOTIFICATIONS OF THEIR SURROUNDINGS, EMERGENCY NOTIFICATIONS, ALARMS, PHONE CALLS, TEXTS, AND SURROUNDING SOUNDS.

EMERGENCY ALERT SYSTEM

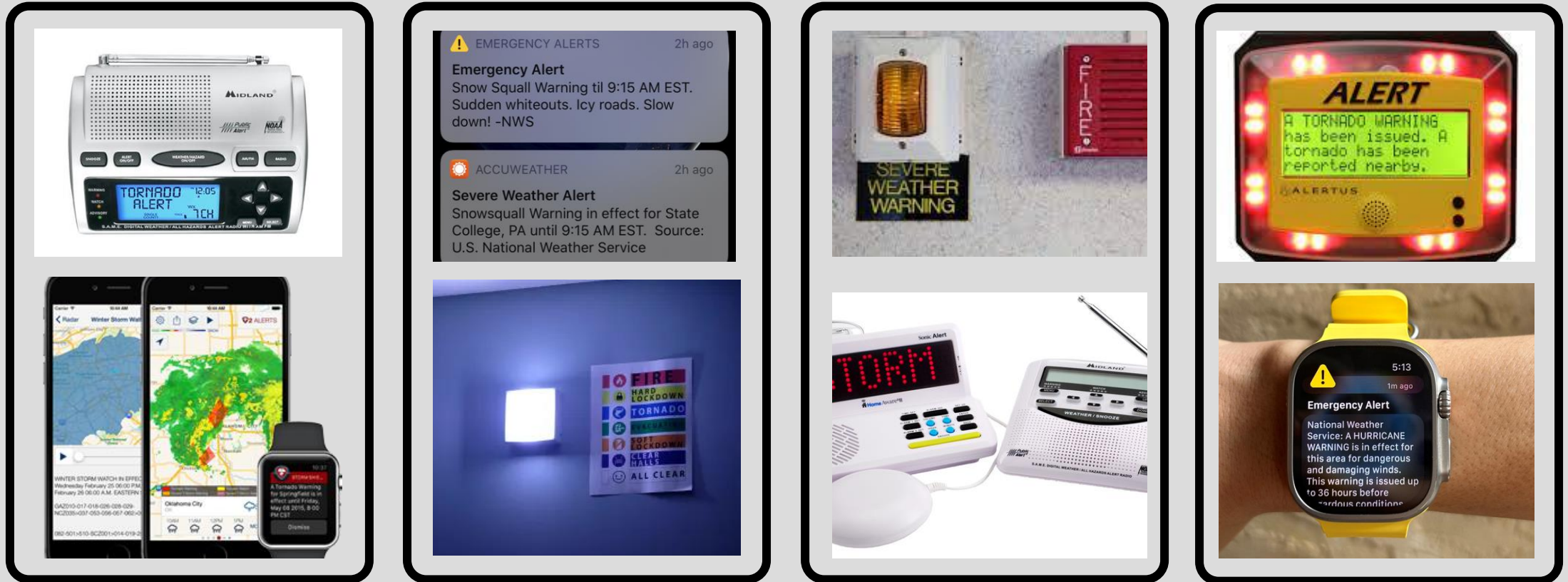
Emergency Alert Signal Notifications



EMERGENCY ALERT SYSTEM IS WHEN THE EMERGENCY OCCURRED THAT THE STATE AND LOCAL AUTHORITIES TO DELIVER IMPORTANT INFORMATION, SUCH AS WEATHER AND COMMUNITY EMERGENCY, OR VISUAL EMERGENCY ALERTING SYSTEMS TO NOIFY THE FIRE ALARM WARNING, INTRUDER IN THE BUILDING, ETC.

WEATHER ALERT SYSTEM

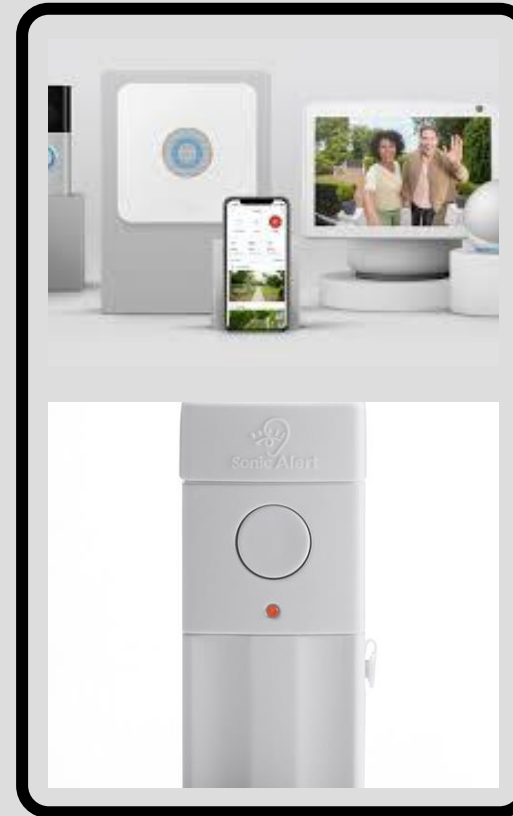
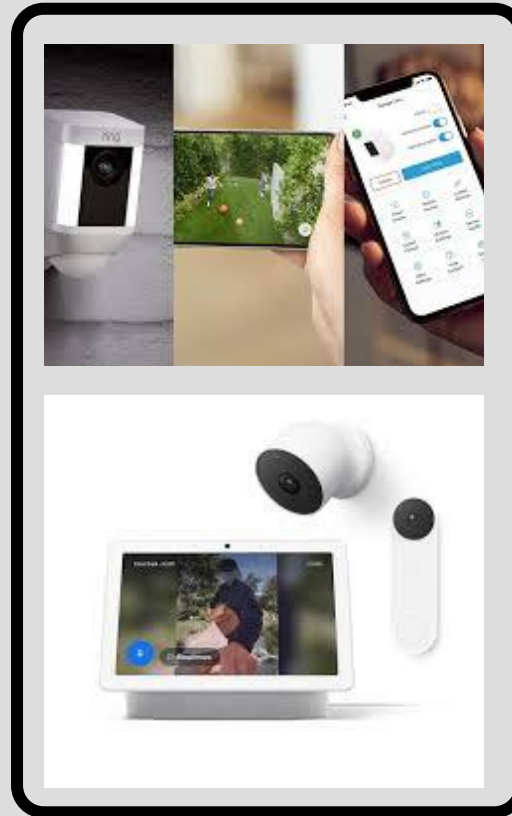
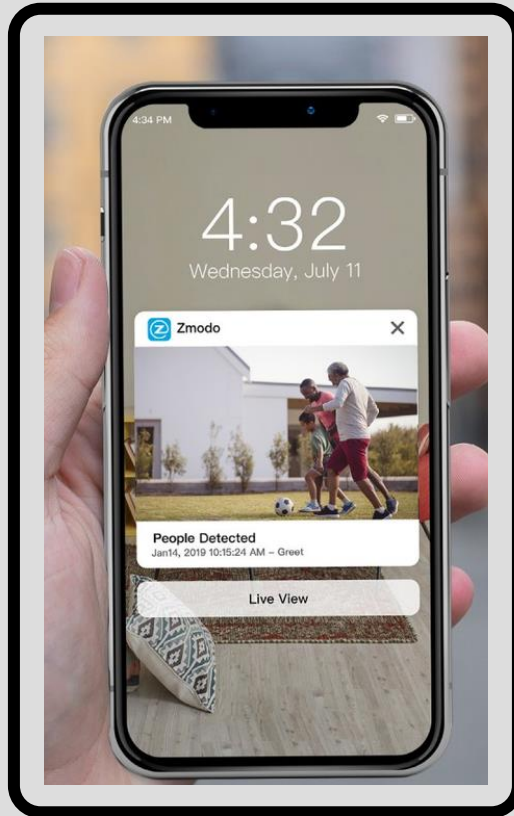
Weather Alert Signal Notifications



WEATHERY ALERT SYSTEM WILL ALERT YOU WHEN WEATHER WARNINGS AND WATCHES ISSUED BY THE NATIONAL WEATHER SERVICE, AND LOCAL WEATHER SERVICES THAT WILL WARN YOU THROUGH FLASHING LIGHT, VIBRATION OR EXTRA LOUD SOUND.

MOTION ALERT SYSTEM

Motion Detectors Signal Notifications



THE MOTION SENSORS THAT WILL ALERT YOU THROUGH FLASHING LIGHTS OR VIBRATION INCLUDING NOTIFICATION WILL BE SENT TO YOUR SMARTPHONE AND SMARTWATCH APPS AND TEXT.

DEAFSPACE

FOR DEAF AND HARD OF HEARING

- ENSURE COMFORTABLE LIGHTING - NATURAL LIGHT ARE BEST
- AVOID WINDOWS OR PLACES WITH LIGHTING BACKGROUND
- REDUCE VISUAL NOISE
- SEMI-CIRCLE TABLE
- ADDRESS PEOPLE FROM FRONT WHEN HAVE THEIR ATTENTION
- USE VISUAL SUPPORTS TO EXPLAIN CONCEPTS
- ADDRESS THE STUDENT, NOT INTERPRETER
- USE THE STUDENT'S PREFERRED MEANS OF COMMUNICATION
- MAKE SURE THE STUDENTS ARE INCLUDED
- CLASSROOM CULTURE OF RESPECT
- VISUAL ALERT SYSTEM
- DISTANCE OF THE INTERPRETER

“An approach to architecture and design that is primarily informed by the unique ways in which Deaf people perceive and inhabit space.”



CLOSED, OPEN-CAPTION & SUBTITLES

CAPTIONS ARE A TRANSCRIPTION OF DIALOGUE AND ARE PRIMARILY USED TO HELP VIEWERS WHO CANNOT HEAR VIDEO AUDIO.

MOVIE THEATER

- CLOSED CAPTION GLASSES
- CLOSED CAPTION RECEIVERS
- HI/VI HEADSETS
- CLOSED CAPTION RECEIVER

CLOSED CAPTION - (CC) CAN BE TURNED OFF BY THE VIEWERS WITH THE CLICK OF A BUTTON.

OPEN-CAPTION - EMBEDDED INTO THE VIDEO AND CANNOT BE TURNED OFF.

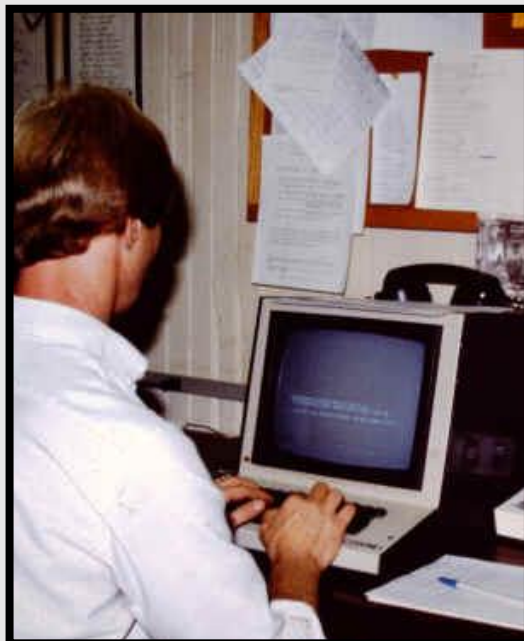
SUBTITLES - TRANSLATED CAPTIONS OF AUDIO FILES, OFTEN FOREIGN LANGUAGE FILMS, MOTION FILMS, OR TELEVISION PROGRAM.





Evolution of Telecommunication for the Deaf and Hard of Hearing

1964 - Present



PREHISTORIC TELEPHONE TECHNOLOGY

FOR DEAF AND HARD OF HEARING

OLD PHONE TECHNOLOGY

- APPEAR AT A PLACE PHYSICALLY, LEAVE A MSG.
- INSTANT MESSENGERS
- TTY/TTD (TELECOMMUNICATION TELETYPEWRITER FOR THE DEAF
- IP-RELAY

TTY IS STILL USE AT GOVERNMENT AGENCIES, 9-1-1 DISPATCHERS.
TTY DO NOT USE INTERNET BASED.



PHONE SIGNALERS

TELEPHONE SIGNALERS COMES IN A VARIETY OPTIONS: VISUAL ALERT, VIBROTACTILE ALERT, AND/OR AUDITORY ALERT.

PHONE SIGNALERS EITHER PLUG DIRECTLY INTO THE OUTLET AND PHONE LINE OR ARE ATTACHED TO THE SIDE OF A PHONE TO PICK UP THE SOUND DIRECTLY.



SINCE GENERATION X

MODERN TELEPHONE TECHNOLOGY

FOR DEAF AND HARD OF HEARING

TELEPHONE TECHNOLOGY

- VIDEO REMOTE INTERPRETERS (VRI)
- VIDEOPHONE RELAY SERVICES (VRS)
- CAPTIONED TELEPHONE
- RTT (REAL TIME TEXT - EFFECTIVE AND EFFICIENT REPLACEMENT OF TTY/TDD)
- APPS WITH REAR-FACE VIDEO CHAT

SMARTPHONE SIGNALERS

SMARTWATCHES
APP ALERTS

SMARTPHONE SIGNALERS USE LIGHTS AND/OR VIBRATION TO ALERT DEAF AND HARD OF HEARING PEOPLE TO CALLS, VOICE MAILS OR TEXT MESSAGES.



SIGN LANGUAGE INTERPRETERS

FOR DEAF AND HARD OF HEARING

TYPE OF INTERPRETERS

- Sign Exact English (SEE)
- American Sign Language (ASL)
- Pidgin Signed English (PSE)
- Deaf Interpreter (DI)
- Certified Deaf Interpreter (CDI)
- Protactile Interpreter
- Tactile ASL (TASL)
- Oral Transliterator
- Cued Speech Transliterator
- Trilingual Interpreter



HOW TO USE INTERPRETER WITH DEAF AND HARD OF HEARING:

- Look at the person when signing, not at the interpreter
- Address the person directly -
- i.e. appropriate communication, "where were you born?"
- Inappropriate communication, "ask him/her where he was born?"
- Make sure interpreter get enough lighting
- Sign and speak in your normal tone of voice at moderate pace.



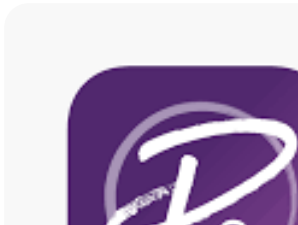
SIGN LANGUAGE INTERPRETERS

WHAT IS

VIDEO RELAY SERVICE



Video Relay Service (VRS) is a free, 24-hour service that enables users to place and receive calls through a professional American Sign Language (ASL) interpreter via a videophone .



VIDEOPHONE

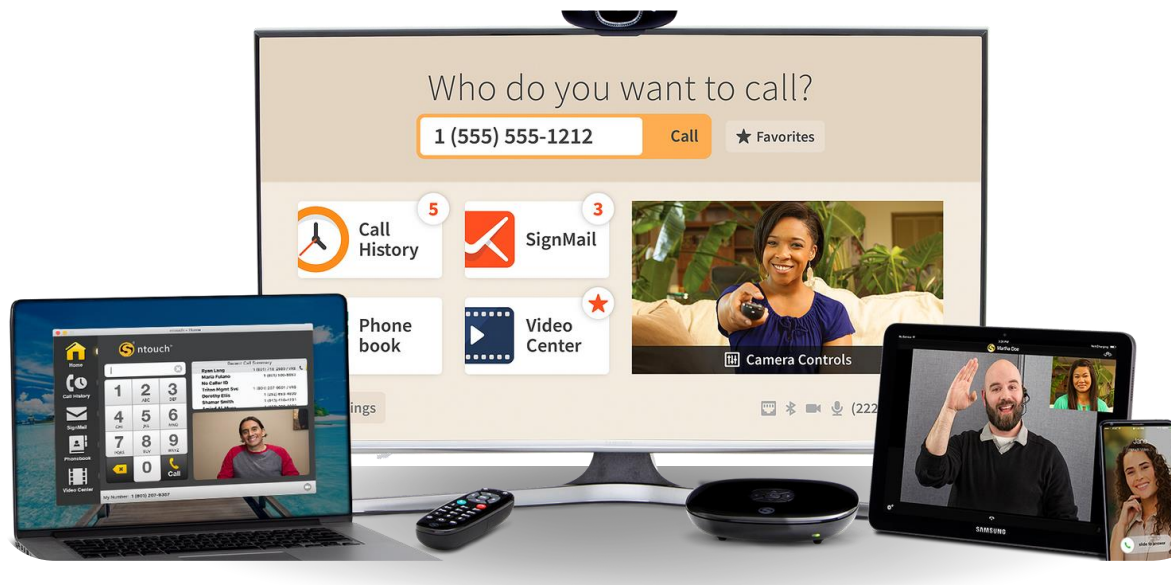
FOR DEAF AND HARD OF HEARING

VIDEOPHONE WAS INTRODUCED IN 2002.

VIDEOPHONE IS A DEVICE THAT ALLOW DEAF AND HARD OF HEARING WHO USES SIGN LANGUAGE ON SMARTPHONES, TABLETS, OR COMPUTER THROUGH CAMERA THAT ARE SET FOR VIDEO COMMUNICATION.

THE VIDEOPHONE PROVIDE VRS (VIDEOPHONE RELAY SERVICES) TO ALLOW A DEAF AND HARD OF HEARING PERSON TO CALL A HEARING PEOPLE USING A SIGN LANGUAGE.

WAVELLO, AN APP INTRODUCED IN 2020 TO ALLOW THE HEARING PERSON WHO IS A NON-SIGNER TO BE IN A VIDEOPHONE CALL. .



Questions



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