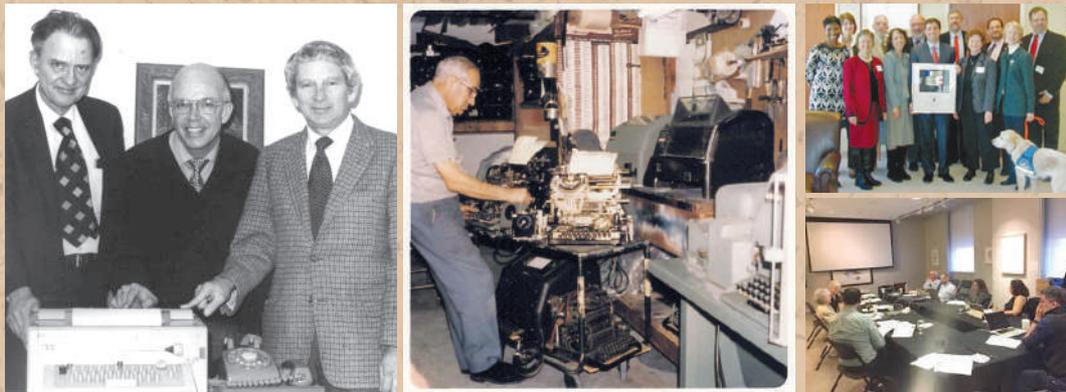
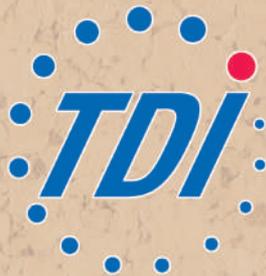


A PATH TOWARD AN ACCESSIBLE WORLD

1968 - 2018

TDI's 50 Years of Service and Contributions to the Deaf and Hard of Hearing Community



A TDI World Anniversary Commemorative Edition
Volume 49, Issue 2

Telecommunications for the Deaf and Hard of Hearing, Inc.



TDI Board & Staff

2018

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Shaping An Accessible World!

TDI BEGINNINGS

1968 – 1977



From Modest Beginnings to an Advocacy Powerhouse

Congratulations to Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI) on its 50th Anniversary! From its modest beginning in the Midwest, TDI has become a powerhouse for an accessible world as a leading advocacy organization in the nation's capital. Its current mission statement is to provide leadership in access to telecommunications, media, and information technology for people who are deaf and hard of hearing. Our work has also touched the lives of people who are deafblind, deaf plus, late-deafened, and others with the goal of effective communications through technology. TDI's ongoing collaboration with other consumer groups serving people who are deaf or hard of hearing is a force multiplier that leverages its

technological expertise and its vision that anything is possible when new and emerging technologies are equipped from the very beginning with accessibility features such as captioning, text, and video along with traditional audio information. TDI's achievements over the past 50 years have inspired hundreds and thousands of individuals and groups to join in the spirit of shaping an accessible world.

For more than five decades TDI has adapted to the rapid changes in technology that has provided new ways to stay in touch with members and friends. Since 1968 when TDI incorporated in Indianapolis as Teletypewriters for the Deaf, Inc., the annual directory that began with 174 TTY listings is now the "TDI National Directory and Resource Guide for Deaf and Hard of Hearing People". What we know today affectionately as "The

Dr. Robert Haig Weitbrecht

Dr. Robert Haig “Bob” Weitbrecht was a deaf physicist with an unusual avocation in amateur radio, commonly known today as ham radio. Thousands of licensed operators use ham radio today as a way to communicate with friends around the world, and to connect with others during disasters when traditional telecommunication networks are down.



As W6NRM, Bob Weitbrecht used Morse Code and radioteletype to communicate with other ham radio operators the world over. One day, at the request of his good friend Dr. James L. Marsters, he retrofitted his radioteletype modem for use on telephone lines, and made possible telephone access for deaf people. The hundreds of thousands of TTYs installed worldwide today bear testimony to Weitbrecht’s genius and vision.¹

For several years, Weitbrecht, Marsters, and Andrew Saks were in business together manufacturing modems and helping to make the TTY network grow. The trio founded a company, APCOM, which by 1979 was struggling in a competitive business environment where competitors snatched bids from telecommunications equipment distribution programs, and incompatible TTY standards that existed throughout the world.

Bob portrayed himself as a low key character where he is more comfortable doing the work he was supposed to do than to toot his own horn. Rumor has it that one day, Weitbrecht and a friend went to visit a school for the deaf. As instructed, they went to a waiting room and sat for quite some time just outside the superintendent’s office. Because Bob was casually dressed with a baseball cap, the superintendent did not recognize him and passed by several times. When someone spotted Mr. Weitbrecht and informed the superintendent, all of a sudden classes were called to a screeching halt and a special assembly was hastily put together to give the students a chance to meet the inventor of the TTY. Dr. Weitbrecht was a humble man who just wanted to make a difference in the lives of deaf and hard of hearing people.²

Blue Book” has 20,000 plus listings using several telecommunication technologies such as videophones, captioned phones, mobile phones, and more. This book contains many excerpts from the 2018 Resource Guide (blue pages) that records several chronologies listing achievements, large and small, of our struggles toward full access in telecommunications, media, emergency preparedness, and advocacy.

The first TDI newsletter, The GA-SK, was published in 1970 from a mimeograph machine in Latham Breunig’s home that is “...published every once in a while.” Today almost fifty years later you now hold in your hands a slick multi-color quarterly magazine, the 50th Anniversary Special Commemorative Edition of TDI World.

The first International TDI Convention where consumer advocates, industry professionals, and government officials gathered took place in 1974 in Chicago. Last year TDI held its 22nd Conference in Bethesda, MD with more than 350 attendees. TDI sent out its first eNote email news in 1999, and produced its first vlog (video blog) in 2008.

This 50th Anniversary Commemorative Issue of TDI World is not so much a list of “who’s who” like the TDI 30th Anniversary GA-SK Commemorative Issue where we listed all the movers and shakers in our world, plus other notable achievements that can be found in the annual Blue Book chronologies within its blue page section. This time around, we acknowledge and applaud TDI’s leadership in major legislative and regulatory

Dr. James Marsters

Dr. James Marsters, a deaf orthodontist by vocation and a pilot by avocation provided his good friend, Bob Weitbrecht a discarded TTY and a request that he find a way for both of them to communicate with each other. Unlike Weitbrecht, Marsters was not a ham radio operator, so the only way for them to communicate was either face-to-face or over the regular telephone lines using interpreters. At the time, the Bell telephone company, through its monopoly on the telecommunications network, owned all the phones and did not allow customers to add their own peripheral equipment directly to the network. From this request, an acoustic coupler was invented to allow TTYs to transmit tones to each other.



James Marsters teaches his son how to use the TTY.

achievements in the past half century that have brought lasting change in the pursuit of inclusive and universal design in communication access.



The three founders of the TTY network. L-R: Dr. Robert H. Weitbrecht, Dr. James L. Marsters, and Andrew Saks.

EARLY DEVELOPMENTS

A key event that led to the establishment of TDI was during the mid 1960's, when Robert H. Weitbrecht, Dr. James L. Marsters, and Andrew Saks of APCOM showcased the new acoustic coupler, a modem-like device which became the connection between a hulking TeleType machine and the standard telephone, hundreds of deaf and hard of hearing people signed up. The deal was that the customers would receive a free TTY if they purchased a coupler and signed up for telephone service. The original TTY transmitted in 45 baud (a snail's pace compared to the blazing speed on the internet today) came in several models but all included a keyboard and a roll of paper to type our conversations. Some

were as large as a street corner mailbox and shook the house each time a call was made.

After years of asking AT&T to allow the deaf community to have access to the telephone network, Dr. Robert H. Weitbrecht, a deaf scientist developed an acoustic coupler modified for Baudot transmission of TTY tones. Dr. James C. Marsters, a deaf orthodontist, sent Weitbrecht a Teletype Model 32ASR and asked that a system be set up so they can communicate directly with each other between Pasadena in Southern California and Redwood City, more than 360 miles away in Northern California. Unlike Weitbrecht, Marsters did not have a license to operate a ham radio, so the only way to communicate was to do it over the public phone system. Andrew Saks brought his business management expertise to help build the TTY network. The APCOM coupler made its public debut at the 1964 Alexander Graham Bell Association for the Deaf Conference in Salt Lake City, Utah.¹

Meanwhile, big businesses such as Bell Telephone, Western Union, and others were discarding their Teletype machines and migrating to new computers that can transmit messages much faster in ASCII code. When deaf leaders learned that the corporations were dumping and destroying the old TTY machines, they approached the Bell Telephone Pioneers and asked them to salvage their inventory and divert the unwanted machines to them.

Andrew Saks



*Andrew Saks spray painting PhoneType modem cases
(Credit: Andrea Saks)*

Andrew Saks was another friend with an interest in ham radio technology. Marsters introduced him to Weitbrecht and they hit it off well with common interests in telephone access and other topics. Marsters convinced Saks that an investment in the TTY network would be worthy of great consideration. Saks eventually came around and brought his business acumen and financial backing to the TTY network to allow APCOM to acquire more TTYs for refurbishing.

His wife, Jean Saks, became an early proponent of the TTY network, and demonstrated TTY calls to her friends across the country. Their hearing daughter, Andrea Saks, who once relayed her parent's phone calls as a child, introduced the TTY to England. Andrew Saks' first advocacy efforts paid off when the IRS allowed expenses related to TTYs to be deducted as medical expenses. This marked the first time that the federal government recognized the unique needs of deaf people in telecommunications. Andrew Saks, ever the visionary, presented the idea of a relay service where deaf people could call and leave messages for hearing people without a TTY. This concept was years ahead of its time. An operator would collect the message and call the hearing person to "relay" the message a few hours later. The same system would allow hearing people to call the same relay service and ask that a message be relayed to a deaf person. Saks set up the relay call center in Redwood City, California while Marsters set up a similar relay service 350 miles away in Glendale. However, due to the high cost and the long length of time it took to exchange messages, the first relay services did not last long.

The TTY was a breakthrough for some deaf and hard of hearing people who were able to read and type back and forth to each other. Since the telephone was patented in 1876, it had become an insurmountable obstacle for deaf people seeking employment or integrating in any community activity. If it was a local call, both callers would type for hours as long as they had paper available and installed with ink in the typewriter ribbons. The paper also provided a way for callers to refer back to a transcript of a previous phone call to resolve disputes.

1968 – The Oral Deaf Adults Section (ODAS) of the Alexander Graham Bell Association (AGBell) and the National Association of the Deaf (NAD) both found that the two organizations had limited resources and manpower to handle the acquisition and distribution of TTYs. Both organizations agreed to join forces and create an independent organization, the Teletypewriters for the Deaf Distribution Committee (TDDC) in March 1968. This allowed the first batch of 200 TTYs donated by AT&T to be stored in a warehouse for repairs and refurbishing before being distributed to deaf people’s homes.



Nancy Breunig, H. Latham Breunig, and Jess M. Smith

H. Latham Breunig was selected as the first President of TDDC. He and his wife Nancy Breunig, represented AGBell. Jess M. Smith from NAD was the Vice President. On June 10, TDDC became incorporated in Indianapolis as a non-profit organization called Teletypewriters for the Deaf, Inc. (TDI). At the time, the Breunigs ran TDI part-time from their master bedroom, the shipping department was from a second bedroom, and the Rolodex files containing names of people who owned a TTY sat in the dining room. Before long, the Hoosier State Chapter of the Telephone Pioneers of America, an honor society of retired employees of Bell System, donated office space and volunteers to help TDI in distributing TTYs nationwide.²

Because typing words took more time than to speak or sign, long distance calls were prohibitively expensive. TTY users often abbreviated many words and developed a code. GA means “Go Ahead” it is your turn to type. Then the other party types the response and both callers type what they want to say then GA back and forth. To end the call you type GA SK. SK comes from a common practice in telegraphy when SK meant Send Kill or Stop Keying. The other party either continues to type the conversation, or confirms the end of the call by responding SKSK then taking the handset off the coupler and hanging up the phone. If there is a question, instead of using the shift key to type ??, we instead punch the Q key twice

like this QQ. Today when we text, we use abbreviations like LOL (Laughing Out Loud), OMG (Oh my goodness), TTYL (Talk to you later!), and many others.³

The TTY machine unified the deaf community, which at the time were educated in either of two ways as follows. AGBell advocated that deaf children should inte-



Vicki Hurwitz types out a reply to a friend in St. Louis, Mo, as her husband [Alan], reads the teletype message from the friend. The deaf couple are using a Phonotype, a device which enables deaf persons to communicate over ordinary telephone lines. (Credit: Johnson, staff photographer at Sioux City, Iowa Journal 7/30/68 Thanks to Sally Taylor and SMECC)

grate in the world at large. Many of the organization's members do not know sign language, having been taught to listen and speak. Breunig worked as a chemist and statistician at Eli Lilly in Indianapolis. On the other hand, NAD, the oldest consumer advocacy organization in the United States promoted the preservation of American Sign Language and the rich cultural heritage of the deaf community. Generally, their members embrace the bilingual approach of using sign language to teach English and develop other linguistic skills. Smith was a teacher and the editor of NAD's magazine, *The Deaf American*. With both men using different communication modes, how do they communicate with each other when Breunig does not know sign language and Smith does not speak? The TTY was the perfect solution as they could still type to each other. The TTY transmitted text instead of spoken English used by "oralists" or sign language used by "manualists".⁴

The three founders continued to demonstrate the acoustic coupler to hundreds of deaf and hard of hearing people across the United States, stopping at major conferences hosted by the the Oral Deaf Adults Section (ODAS) of the Alexander Graham Bell Association (AG Bell) and the National Association of the Deaf (NAD). Major sports events and tournaments where deaf people compete for prizes were also targeted. Little by little, the fledgling TTY network grew. As more individuals, businesses, and agencies

I. Lee Brody



I. Lee Brody, a deaf son of a tavern owner in New Jersey was a tinkerer. He became interested in TTYs after an outdoor hunting accident that left him unable to walk for several hours and unable to call for help. He had installed doorbell flashing systems for many of his deaf friends so they would know if someone was at the door. A few of them also had TTYs and wanted the signalling system to also flash when their phones were ringing. Brody also noted that the acoustic couplers produced by APCOM were somewhat out of reach financially for many of his customers. Since the phone company had failed to develop a coupler on its own, he took it upon himself to build a modem at a reasonable price to meet the demand for more TTYs on the East Coast, and founded the New York/New Jersey Phone-TTY. As volunteer relay call centers were established on the East Coast, Brody supplied the centers with TTYs. With the help of Jim Steel of ESSCO Communications, Brody developed software applications to automate many of the relay call functions. One of Brody's proudest accomplishments was when he created a Braille TTY for deafblind callers in 1974. With the help of Jim Steel of ESSCO Communications, Brody developed software applications to automate many of the relay call functions. One of Brody's proudest accomplishments was when he created the Braille TTY for deafblind callers in 1974.

joined, it became apparent that a directory was needed.⁵

As the TTY network grew, the main question was “Who else has a TTY?” Some were hesitant to be listed, afraid that their homes would be identified as easy targets for burglars. From the records maintained of each TTY delivery, TDI compiled a TTY directory of all 174 members who had obtained a TTY. Individuals and households made up the majority of those listings with about half living in California and Missouri. Although there were several government agencies listed, half of the states in America did not have a single TTY user yet.⁶

start working to establish volunteer relay centers in California where households with a TTY can pay a monthly fee to use the service. Competition hits APCOM when a new TTY coupler hit the market. To meet the demand for TTYs from people who lived on the East Coast, I. Lee Brody, established the New York/New Jersey Phone-TTY, Inc. Ever the tinkerer, Lee had jerry-rigged flashing light signal systems and placed them in deaf people's homes so they can tell if someone is at the front door, or calling them on the TTY. Seeing a need, he developed an affordable TTY coupler to help deaf and deafblind to have TTYs in their homes.⁷

1969 — Dr. Marsters and Andrew Saks





I. Lee Brody of New York-New Jersey PHONE-TTY and H. Latham Breunig with a Model 31 TTY. (Credit: Southwest Museum of Engineering at www.SMECC.org)⁸

The founders of the TTY network came up with an idea of selectively placing TTYs in the homes of deaf community leaders of the day. Within months, those leaders had orders from their friends and family asking for a TTY in their homes as well. Schools and government agencies ordered multiple TTYs for different departments to be used by employees and customers. The success of this strategy was the major reason for the jump to 475 Blue Book listings in its second publication. The IRS granted TDI its 501(c)(3) nonprofit tax exempt status.⁹

1971 — Consumer activism scored a victory, thanks to the efforts of Andrew Saks of APCOM, when the IRS ruled that the cost of TTYs and modems are tax deductible as medical expenses.

The First National Conference of Agents of Teletypewriters for the Deaf was held at Gallaudet College in Washington, DC. Government officials and industry professionals looked at several issues, including interfaces between TTYs and computers, emergency access, TTY answering services, and the burgeoning TTY news and weather services such as the accessible Dial-A-News service by

New York/New Jersey Phone-TTY, and other text news services in Washington, DC and Houston.

1972 — Andrea Saks, daughter of Andrew Saks voyaged to London with two APCOM Phonetype acoustic couplers. Her mother, Jean Saks had gone to school there and still had many friends in the area to help Andrea and Bob Weitbrecht build a TTY network in England. With new installations in businesses, schools, government agencies, libraries, rehabilitation centers, transportation hubs and other public places, access increased as more than 2,500 TTYs were in use throughout America.¹

TTYs were also installed in city police departments throughout Texas, California, Alabama, New York, and Maryland. While some emergency services could respond to calls from deaf people experiencing heart attacks and other medical emergencies, gas leaks, severe storm damage and other threats to their lives or property, the majority of 9-1-1 centers were inaccessible to deaf TTY callers.¹⁰



TDI Board meeting in 1972 L-R, Joe Dyer, Gordon Allen, Jess Smith, Paul Taylor, Latham Breunig, Tom Rule, and Joe Slotnick. (Credit: SMECC)

TDI's first experience in working with the emerging captioning industry came about at the first National Conference on Television for the Hearing Impaired in Nashville, Tennessee. There, the National Association of Broadcasters (NAB) and other engineers determined that TV captioning is feasible, allowing PBS to begin development and testing of the Line 21 captioning system. The newly launched Caption Center at the Boston Public Broadcasting System (PBS) affiliate, WGBH airs a new cooking show, *The French Chef*, with Julia Child airs as the first program with open captions. The National Bureau of Standards and the ABC network held a demonstration of a *Mod Squad* episode with closed captions at Gallaudet College.¹¹

1973 — David Saks founded the Organization for Use of the Telephone (OUT), dedicated to making telephones compatible with hearing aids and installing inductive loop amplification in public meeting places. The TTY network grew with over 3,000 listings. The first TTY call between Honolulu and the mainland costed \$15.00 for fifty lines of text.

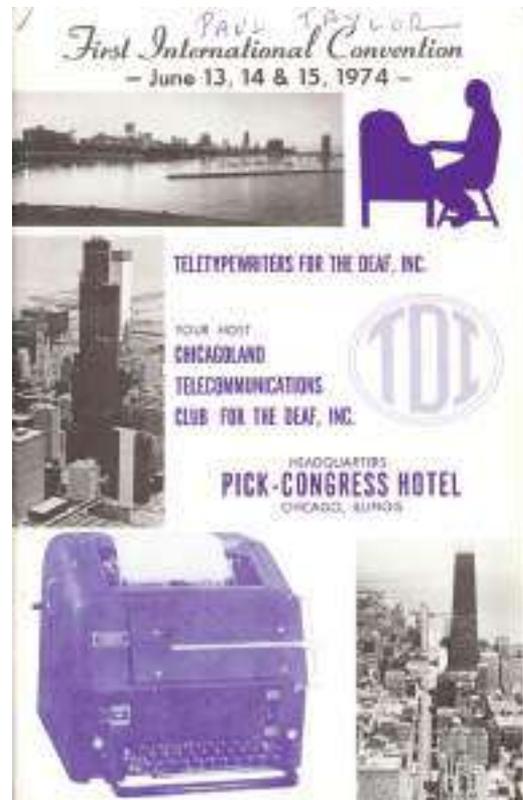


Julia Child in The French Chef
(Credit: The Caption Center)



Mod Squad (Credit: IMDb)

As President Richard Nixon's inaugural speech was open-captioned, the Caption Center began captioning ABC World News Tonight, replacing commercial slots with text readouts of deaf community news, airing four hours after the original broadcast. Now many of us are able to keep up on what is happening around the world instantly on our mobile phones. Meanwhile, HEW contracted with PBS to develop the closed captioning system, and the system was formally approved by the FCC. Three years later, TDI joined the Council of Organizations Serving the



Program Book for the First International TDI Convention in Chicago, Illinois.
(Credit: Paul Taylor and SMECC)

Deaf, a coalition of national organizations that meet to discuss any pending federal legislation that could have an impact on deaf Americans. Accordingly, the Council would advocate in support or in opposition of federal legislation or regulation. This action in 1973 is one of the earliest records of TDI's foray into advocacy.

The Rehabilitation Act of 1973 was signed by President Nixon. This major disability rights law prohibited discrimination in Federal agencies and other entities that receive funding from the US Government. The right to access was secured through accommodations such as sign language interpreters, TTYs in government offices, and changes in policies to eliminate barriers to access.¹²

1974 — 358 registrants attended the first International TDI Convention hosted by the Chicago Telecommunications Club for the Deaf. Al Pimentel was elected as Board President while Breunig was selected as TDI's first Executive Director.

TDI published "Teletypewriters Made Easy," a TTY repair manual for TDI Agents. This red notebook showed photos and instructions for troubleshooting a broken TTY and making the appropriate repairs. A consumer guide on "How to Use Your TTY" was also published to show hearing family members, coworkers, and professionals how to make phone calls to deaf and hard of

hearing people using TTYs.¹³

Lee Brody developed the first Braille TTYs in the United States. The first call on a Braille TTY was made between Martin Sternberg at New York University and Robert Smithdas, a deaf-blind administrator at the Helen Keller National Center on Long Island. Over the next two years, more than 40 Braille TTYs were built and installed around the country at a cost of two thousand dollars per machine. Years later, Brody received a letter from President Ronald Reagan about his contribution to the deaf and deafblind community, "To be cut off from the ability to communicate with others can be a lonely, frightening experience...I know their gratitude for your effort is boundless."¹⁴

1975 — The first authorized transatlantic TTY call was placed between England and the United States. From Washington, DC, Robert Weitbrecht started the call with THIS IS THE UNITED STATES OF AMERICA CALLING GREAT BRITAIN GA. Jack Ashley, a deaf member of the Parliament in London responded, GOOD AFTERNOON. THIS IS LONDON SENDING WARMEST GREETINGS TO OUR FRIENDS IN THE UNITED STATES. ... CONGRATULATIONS ON THIS SYMBOL OF PROGRESS FOR DEAF PEOPLE WHICH HAS GIVEN VAST ENCOURAGEMENT TO EVERYONE HERE.¹⁵



Left: H. Latham Breunig takes part in the first transatlantic TTY conversation between officials at HEW in Washington, DC, and British officials at the World Trade Show in London, England on May 12, 1975. Right: Michael King-Beer, Jack Ashley and U.S. Ambassador Elliott L. Richardson making the first transatlantic call over the deaf telephone.

1976 — As the nation celebrated its Bicentennial with patriotism on display everywhere, the telecommunications industry paused to remember the hundred years since Alexander Graham Bell successfully patented the voice telephone and first demonstrated it at the Centennial Exhibition in Philadelphia. Legend has it that the telephone was invented while Bell was experimenting with ways to communicate with his deaf wife, Mabel Bell, and to teach speech to deaf children.

1977 — 500 registrants attended the second TDI Convention hosted by the New York/New Jersey Phone-TTY, Inc. in Port Chester, NY. The participants identified three avenues of advocacy that continue through this day: 1. Seek legal mandates through federal legislation, 2. Convene negotiations to encourage AT&T and other industry stakeholders to voluntarily improve services and equipment, and 3. Seek regulatory relief from the FCC. Today TDI still follows roughly the same strategies.¹⁶

Students from Gallaudet College (now University) joined hundreds of disability activists in a sit-in protest at the offices of the US Department of Health, Education, and Welfare (HEW) in Washington, DC. Similar sit-ins were going on simultaneously at HEW offices in other cities around the country, the largest in San Francisco. They were pushing for the Secretary of HEW, Joseph Califano to sign and implement regulations in Section 504 of the Rehabilitation Act of 1973. These regulations prohibit discrimination against people with disabilities at Federal agencies and any other entity that received federal funding.

As the Rehabilitation Act became effective, the FCC, Amtrak, IRS and other federal agencies installed toll-free TTY numbers. Members of Congress as well as state and local elected officials also installed TTY's in their offices for constituents, helping to bring the total of 35,000 TTYs in use. Federal employees who are deaf or hard of hearing received accommodations in the workplace such as TTYs and amplified telephones.

The National Center on Law and the Deaf (NCLD) filed comments with US General Services Administration (GSA) on TTY's in public facilities and petitions FCC for Rulemaking regarding Telecommunications Services and Charges for Deaf and Hearing Impaired Citizens, leading to a yearlong inquiry into the telecommunication and computer access needs of deaf & hard of hearing people.¹⁷

Dr. H. Latham Breunig



(b. 1910, d. 1999)

First Executive Director, TDI (1973-1978)

After H. Latham Breunig became deaf at age 4 or 5 from unknown causes, he attended Clarke School for the Deaf in Northampton, MA, and then Shortridge High School in Indianapolis, IN. He graduated with a Bachelor of Science degree in 1934 from Wabash College in Indiana, and then received a Ph.D in chemistry in 1938 from Johns Hopkins University in Maryland. He was employed as a statistician with Eli Lilly & Co., and his main role there was to develop statistical procedures to improve quality control on the company's products.

"Funny Noise on the Line" One day some time back Judge Finesilver, whom many of us (knew) as a champion of the legal rights of the deaf, planned to travel from his Denver, CO home to Minneapolis, MN. Since he wanted to talk to Gordon Allen of that city, he sent him a telegram advising the details of his arrival. Gordon and his wife, Myrtle (were) the only people in their home, and all of their communication (was) by TTY. As it happened, the telegram (arrived) by mail a couple of days later. On the bottom someone had written: "Party does not answer phone. Funny noise on the line."

*(by Dr. H. Latham Breunig - December, 1970
GA-SK newsletter)*

He and his wife Nancy were two of the three founders of Teletypewriters for the Deaf Distribution Committee (TDDC) in March 1968. When the Committee was renamed as Teletypewriters for the Deaf, Inc. (TDI) in June 1968, he became the first President, and then its first Executive Director in 1973. He and his wife Nancy were among the key forces for the growth of the TTY network across America, and as a team, they produced the first ten annual TDI directories of all TTYs in the nation. All of TDI's activities in the early years were done from the Breunig's master bedroom, the shipping department was from a second bedroom, and the Rolodex files containing names of people who owned a TTY sat in the dining room. After TDI relocated to Washington, DC, and then Silver Spring, MD, Breunig retired from this position in 1978.

He was the first deaf president of the Alexander Graham Bell Association for the Deaf. He later served as a member of the President's Committee on Employment of the Handicapped.

"TTYs Assist the Stork" The first TTY installations early this year in Atlanta, GA, were in the homes of Mr. and Mrs. Roland Swanson (Gail) and her parents, Dr. and Mrs. George Vann. The chief purpose for the installation, arranged by Mr. John Lyle of Southern Bell, was to make it possible for Gail to reach help when her expected baby decided to be born. The first call came at 4:00 a.m. last April 26. With the TTY the Swansons reached the Vanns who then alerted the physician. Following a ten-minute ride to the hospital, a daughter, Carol Ann, was born at 11:00 a.m. Not only was the TTY of practical assistance, but also its availability contributed greatly towards the peace of mind of the young couple and the parents

*(by Dr. H. Latham Breunig - December, 1970
GA-SK newsletter)*

TDI Agents

The Nuts and Bolts of TDI

Like the nuts and bolts that hold a TTY together, our agents have been what held TDI together at the outset. TDI wants to recognize our “people on the streets” for their hard work and their families for support. As the TTYs are distributed, they spent many hours installing them, and training individuals and businesses how to use them, and selling TDI memberships. When closed captioning began on television and the TeleCaption decoders came on the market in the 1980s, those dedicated individuals reprised their roles, installing them, and training individuals and businesses how to use them, and selling even more TDI memberships!

Here is how it all began. In 1968, the Hoosier State Telephone Pioneers trained an army of TDI Agents to repair and restore donated TTYs so they can be distributed to customers across the United States. Each machine weighed at least 200 pounds and were as big as a street mailbox. Every time a call was made, the whole house thundered, and apartment landlords frequently imposed restrictions on tenants’ use of the TTY after neighbors complained about the noise. The mechanical keyboards often

jammed several keys together each time the caller accidentally pressed more than one key. When you type near the end of the line, you had to remember to hit the RETURN key to return the carriage back to the left margin of the paper, and then hit the LINE FEED key to advance the paper roll up one line before you can continue typing.¹

Most TDI Agents were men who liked to tinker with the intricate mechanical parts inside the TTY. If they were married, their wives often helped keep their records in order. Whenever Paul Taylor goes out to install a TTY in someone’s home, he calls home to his wife, Sally to test the new TTY and see if all keys were working properly. The standard testing protocol was to type RYRYRY, then THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG’S BACK 1234567890 TIMES which covered all parts of the Baudot code and to test each character on the TTY keyboard.²

In 1974, TDI published “Teletypewriters Made Easy,” a pictorial TTY repair manual for TDI Agents. This red notebook shows photos and instructions for troubleshooting a broken TTY and making the appropriate repairs. TDI Agents hold this notebook in high esteem.³



The Teletype Corporation Model 28 ASR teletypewriter was a first generation TTY. It weighed 260 pounds and measured 39" x 36" x 18". (Credit: I. Lee Brody Collection at NY-NJ Phone-TTY, Inc.; George Potanovic, Jr./Sun Studios; and SMECC)

Without these TDI Agents, the deaf telephone network would not have grown the way it did in the 70's, 80's, and 90's. Many of these ambassadors went above and beyond the call of duty. Here are some of their stories:



Members of the Telephone/Teletype Communicators of St. Louis (Credit: Sally Taylor and SMECC)

In 1967, Paul and Sally Taylor wired a

private telephone line from their home to Sally's parent's home "in case of an emergency." They and their friends formed the first local telecommunications advocacy group, the Telephone/Teletype Communicators of St. Louis and established the third relay service in the country, which later became Relay Missouri. This volunteer relay service was modeled after the ones in California that were established by Jim Marsters and Andrew Saks. Back then, families were charged \$30 per month to use the relay service, and now today this service is free for anyone to use, simply by dialing 7-1-1 or a toll-free number. From there, this group expanded the TTY network outward from the Midwest, and an estimated 25 TTY stations were in operation that year. The FCC settled the Carterfone lawsuit by ordering telephone companies to revise their policies to allow the use of consumer-provided equipment with direct connections to the telephone network as long as it did not harm the network itself. This ban on direct connections influenced the acoustic coupler design where you have to put the handset so it was rested in the cups on the coupler.²

Two years later, in 1969, the Taylors came up with another service, The St. Louis Deaf Messenger. Since some of the machines were once used by United Press International (UPI) to send news feeds to newscasters around the world, why

can't the deaf community receive their own news through this system? The TTY could become the "radio" for the deaf where they can get text news on demand. UPI donated a TTY that included a ticker tape feed encoded with news stories. An editor would come in and change the tape once a week with updated national news and other notices supplied by the deaf community. Anyone who has a TTY can call in weekly to catch up on the news. The Taylors also made the first TTY call from their home in St. Louis out of the country to their Canadian friends in Vancouver, BC.⁵



Lester Zimet, a TDI agent calls his customer in Rochester, New York. (Credit: Paul and Sally Taylor via SMECC)

Lester Zimet, a TDI Agent, and his wife, Eleanor launched the first TTY news service in Rochester, New York. They called each subscriber household, set the tape

manually on their Kleinschmidt TTY, and transmitted the news one by one. At the time, there were only ten people who owned TTYs in Rochester who subscribed to the biweekly news service. Nationwide, the number of TTYs exceeded the 1,500 benchmark in 1971.⁶



Hyman Krakover, a TDI Agent repairing TTYs in the Los Angeles area. (Credit: James Marsters / Harry Lang Collections at SMECC.org)

Thank You, TDI

A PHONE OF OUR OWN



THE DEAF INSURRECTION AGAINST MR BELL
HARRY G. LANG

GU Gallaudet University Press
PRESS



Richard Dramin working on his first Model 15 TTY in September 1974



Henry Dorsey installed and repaired TTYs and the early TeleCaption decoders around United States and Canada. The first TTYs were big, heavy, clunky mechanical devices that weighed as much as 75 to 200 pounds, stood as tall as four feet high, and two feet wide.



Jerry Berke, a local expert in TTY communications and repair, was hired by Communication Services for the Deaf (CSD) to train Bill Christiansen to repair and install TTYs in the homes of deaf and hard of hearing residents and local businesses. (Credit: CSD)



The Telephone Pioneers of America and some interested deaf men from the Washington, DC metropolitan area got together in 1970 for the Pioneers training course on repairing and refurbishing Model 15 teletypewriters. Hence began a new volunteer group called the TDI agents. The four members of Telephone Pioneers of America stood behind the men in the front two rows, some of whom later became active TDI agents: Bud Dorsey, Jerry Attix, Steve Brenner, David Christenson, Frank Hutchinson, Mark Law, James Marsh, Roger Scott, Homer Smoak, Gary Tompkins and Byron Zimmerman.



Bill Christiansen was hired by CSD in 1976 to repair TTY devices in and around the Sioux Falls area. He was assisted by Willard Schumack and Paul Berka. (Credit: CSD)

TELETYPEWRITERS MADE EASY!

by Sally Taylor <from www.smecc.org>

The year was 1974. A realization came that with so many obsolete TTYs being distributed all over the United States, there was a need for knowledge on how to rewire the machines so deaf people could use them with the recently-developed TTY modem invented by Robert H. Weitbrecht. The St. Louis group had been fortunate to have John Woodard from Western Union, St. Louis, to train some of the guys to redo the machines. During discussions, they agreed that a manual would be a very helpful with lots of photos and less technical words to make it easier for those who wanted to learn. Paul Taylor shared this idea with Dr. Latham Breunig who was coordinating deliveries of TTYs throughout the nation (along with Jess Smith) and getting the machines registered by each new owner.

Breunig worked as a statistician for Eli Lilly, and he was able to obtain a grant from the Eli Lilly Foundation in Indianapolis to assist with the publication of the manual. The grant was for \$10,000. Soon a manual-writing committee was formed.

Paul headed this committee, assisted by Robert Weitbrecht, who flew to St. Louis from California. Others who were enlisted were Tom Rule of Boston, an illustration specialist; three TTY maintenance men, Fred Stewart, Gene McDowell and Tom Schwarz of St. Louis; and Dan Skinner (the only hearing guy in this group) of the Southwestern Bell Telephone Company in St. Louis. Two deaf women, Sally Taylor and Peggy McLaughlin, were assigned to do the typing (pre-computer days), using an electric IBM typewriter. Another local deaf man who pitched in at the last minute was Tommy Markham who developed and printed pictures each evening after they were taken, and delivered to the guys each morning for work on the book.

One thousand copies of the manual, titled "Teletypewriters Made Easy" were printed. This "Red Book" as it was called, made its debut at the first TDI Convention in Chicago, in June 1974, and sold for \$12.95. They quickly became very sought-after.

All of this was done on a volunteer basis. Truly a labor of love!



TDI Agents in the St. Louis area who worked on the Red Notebook. L-R: Dan Skinner, Tom Schwarz, Gene McDowell, Paul Taylor, Sally Taylor, Fred Stewart, Bob Weitbrecht, and Tom Rule. (Credits: Paul and Sally Taylor Collection at SMECC)



Today on TDI's fiftieth anniversary, we see history repeating itself with video relay service providers and captioned telephone service providers who would send installers to customers homes and installing video phones and captioned telephones, and training individuals and businesses how to use them.



Paul Taylor, James Marsters, Alfred Sonnenstrahl, and I. Lee Brody at New York/New Jersey Phone-TTY warehouse in mid 1990's.

Below is the list of all known TDI Agents in the United States and Canada listed by state or province.

ALABAMA

Desmond Brown
Robert W. Cunningham
Cam Desmarais
Brack Gilliam
Martin Maier
Charles Stringer
James White

ARIZONA

Delores Erlandson
Don Kitson
Sol Moss
Allan Wilson

ARKANSAS

Kenneth G. Van Dyke

CALIFORNIA

Floyd Barlow
Paul Barnes
Carl Blinchatz
Linda Cummings
Vincenzo Generoso
Edward Ingham
Roland James
Hyman Krakover

James Marsters
Andrew Saks
Dale Saterlund
Julian Singleton
Joseph Slotnick
Ray Stallo
Jim Swanberg
George Turner
Ina Weber
Robert Weitbrecht
Richard Zellerbach

COLORADO

Alex Pavalko

CONNECTICUT

Edward Buell
George T. Ecker

FLORIDA

Joseph M. Allen
Harry Anderson
Miles O. Chandler
Daniel Curl
Arnold Daulton
Paul Enfinger
Jerome Peeples
Gerald Piscotty

Henrietta E. Samples
Ruth Souppe
Ruth Smith

GEORGIA

DuWayne Dukes
James Peterson
William Sofey
Horace Taylor

ILLINOIS

Russell Dolan
Marion Dramin
Frederick Neubert
Dennis Roin
Bobby Smith
Frank B. Sullivan

INDIANA

H. Latham Breunig
Nancy Breunig
Robert Downing
Gerald O'Neal
Ronald M. Richardson
Alan Rork
Jess Smith



IOWA

Harold Kinkade
Dale Van Hemert

KANSAS

Fred Banks
William P. Ragland, Jr.
George H. Ruby
William F. Thompson

KENTUCKY

John S. Calvecard, Jr.
James Hester
John Love
Everett McCoy
Barry Rankin
Thomas Ryan

LOUISIANA

Harold Austin
David Myers

MAINE

Lois Morin
Bett L. Woods

MARYLAND

A. Philip Aiello
Steve Brenner
Macon Calhoun
Bernard Davidson
Bud Dorsey
Tom Dowling
Michael Downey
Howard Haines
Mark Law
Louis Schwarz
Paul Snyder
Frank Stewart
Gary Viall

MASSACHUSETTS

Russell Biando
George Clapp
Paul Ducharme

Alfred Marotta
Tom Rule

MICHIGAN

James Carrigan
Charles Casper
Dudley Cutshaw
William Dawe
Robert D. Grumm
Gerald Holmes
Dennis Rodell

MINNESOTA

Gordon L. Allen
Jerome Carstens
William Manders

MISSISSIPPI

John Alman
Joe Deaton
Frank J. Margiotta

MISSOURI

Don Dunham
Leslie Hall
James Roper
Howard Schwartz
Sally Taylor
Paul L. Taylor

MONTANA

Edward Van Tighem

NEBRASKA

Everett Degenhardt
James DeVaney
Arthur G. Nelson

NEVADA

Mike Barkan
Richard Cale
Jim Swanberg

NEW JERSEY

Carl Anderson
Bernard Argule
Jack Bahan
Carl Bravin
Philip Bravin
I. Lee Brody
George Calder
Daniel Chiarello
Fred Danneman
Walter Genter
Bernard Gross
Harold Hagaman
Irving Hand
Arthur Jones
Phil Leeds
Rick Levenson
Robert Norflus
Junior Ritter
Cliff Rowley
Sol Soll
Ed Sonnenstrahl
James Stern
Jerry Tesler

NEW MEXICO

Robert Ferguson
James E. Holliday
Jerry Seth

NEW YORK

William Brown, Jr.
Dana Carlile
Deborah Cobb
Julius Duquin
Warren R. Goldmann
Colleen Kazragis
Robert D. Neill
Donald Neimeyer
John Ratcliffe
Harold Roach
Carmelo Sciandra
William Tulloch
Leonard Vanvechten



Charles M. West
Lester Zimet

NORTH CAROLINA

Hans Brower
Lyon Dickson
Robert Dykes
D. A. Hipp
Carlisle Saunders
Grady Spence

OHIO

A. Frank Benedict
Ann Benedict
Arnold Daulton
Robert Gantz
Norman Gerger
Charles Goodyear
John Haldie
George Henry
Benjamin Hermelin
Robert O. Lankenau
Alfred Lepka
Ben H. Medlin
William D. Otis
Harry Reese
William J. Richard
Dick Rosenberg
Hoad Shiner
Harry R. Smith
Paul Sernsing
Roy Wires
Chuck Woodall

OKLAHOMA

O'Neal Bennett
Jack Bertram

OREGON

Robert Jones
Carl D. Veriebe

Gordon Wallace
Kenneth Welch

PENNSYLVANIA

June Asman
Joanne Campbell
Edward Cooley
John Fedio
Michael Gusikoff
Donald Lurwick
John Maurer
John Sadowy

RHODE ISLAND

Edwin Medeiros
Roberta Zebrowski

SOUTH CAROLINA

Craig Maddox
J. Charlie McKinney

SOUTH DAKOTA

Jerrold Berke

TENNESSEE

Lloyd Billingsley
Robert Grubbs
Sam W. McBride
James McCain

TEXAS

Jimmy Brooks
James Chaney
Gordon Crocker
Carl Dykman
Abraham Israel
Tate Malcolm
Michael Moore
Wallis Schmit
Carey Shaw

David Shirley
W. S. Smith, Sr.
Franklin Tippet
Ann Wallis
Glynn Whittemore

UTAH

Robert Sanderson

VIRGINIA

Patrick Bryant
Wayne Frick

WASHINGTON

Floyd Brower
Bruce Malcolm
Robert McKnight
Michael Schmitz
Jerome Schwear
Frank D. Sullivan
Ken Whitney

WISCONSIN

Philip Annarino
Donald Bauman
William D. Otis
Warren Riege
Frank Sprader

WYOMING

Dean Cosner

CANADA

BRITISH COLUMBIA

Wilfred Kelly

NEWFOUNDLAND

Peter Haskins
Hamilton Taylor

Board Presidents

Navigating the Future through Leadership and Vision for TDI

In recognition of past and present Board presidents who have led the Board in the last 50 years to make strategic and budgetary decisions for the staff at TDI to conduct the daily operations in the best manner possible. The distinguished list of 14 names who have honored TDI with their leadership, vision, and guidance as the Association's presiding officer:



Breunig,
Dr. H. Latham
(1968-1974)



Pimentel,
Albert
(1974-1976)



Rowley,
Clifford
(1977-1979)



McClintock,
Robert
(1979-1981)



Slotnick, Joseph
one of the TDI Board members that served in four non-consecutive terms during the 1970's through 1990's, (1982)



Allen, Gordon
(1983)



Lankenau,
Robert
(1984-1985)



Spalton,
William
(1986)



Bernstein,
Seymour
(1987-1991)



Ransom, Pamela
(1991-1993)
TDI's first and only hearing Board President



Turk, Dr. Frank
(1993-1995)



Breslow, Lori
(1995-1997)



Miller, Dr. Roy
(1997-2013)



Conlon-Mentkowski,
Sheila (2013-present)

Board Members

Charting the Future for TDI

In recognition of past and present Board members who have voluntarily contributed their talents, expertise, and resources to guide the Association via policies, procedures, and strategic planning throughout its first 50 years. The distinguished list of 78 names who have honored TDI with their service on the Board is as follows:

Allen, Gordon (1971-1983)	Herron, Diana (1994-1995)	Rothschild, Kenneth (1995-1999)
Archer, Charles (1984-1987)	Hobson, Cary (1989-1995)	Rowley, Clifford (1975-1979)
Bernstein, Seymour (1985-1993)	Holmes, Pam (1998-2001)	Rule, Tom (1974-1977)
Bloch, Nancy (1992)	Hurwitz, Bernard (2011-2015)	Scheffel, Robert (1986-1993)
Brenner, Stephen (1980-1983)	Hurwitz, T. Alan (1991-1995)	Schmidt, Peggy (1990-1992)
Breslow, Lori (1993-1997) (2001-2009)	Jacob, Phil (2007-2011)	Schriempf, Alexa (2013-2016)
Breunig, H. Latham (1968-1974)	Jones, Robert (1982-1985)	Schwarz, Louis (1976-1983)
Breunig, Nancy (1968-1975)	Ketchum, Clyde (1985-1986)	Seeger, Mark (2017 – present)
Boryslawskij, Cassandra (2015-present)	Kinstler, John (2017 – present)	Singleton, Julian (1976-1979)
Bourgeois, Susanna (1986-1991)	Lange, Andy (2013-2017)	Sliney, Carol (1995-2013)
Buell, Stephanie (2009-2017)	Lankenau, Robert (1974-1987)	Slotnick, Joseph (1973-1976) (1979-1983)(1991-1994) (1996-1999)
Conlon-Mentkowski, Sheila (2011-present)	Leeds, Phil (1983-1987)	Smith, Jess (1968-1976)
Driscoll, Tom (1999-2007)	Littleton, Larry (1999-2003)	Smith, W.S. (1973-1976)
Duarte, Joseph (1996-2016)	MacGillivray, Charles (1973-1974)	Sonnenstrahl, Alfred (1983-1987)
Dukes, Duwayne (1975-1985)	Marotta, Alfred (1977-1981)	Spalton, William (1983-1987)
Dunne, Toni (1997-2001)	McClintock, Robert (1977-1985)	Taylor, Paul (1973-1975)
Dyer, Joseph (1973-1975)	Miller, Roy (1993-2013)	Teuber, Hartmut (1979-1983)
Estes, Charles (1973-1975)	Myers, David (1973-1979)	Tiberio, Carmen (1989)
Evans, Larry (1991-1993)	Myrick, Matt (2017 – present)	Turk, Frank (1992-1995)
Gantt, Greg (2005-2009)	Nelson, Gerald (1985-1989)	Viera, Judith (2007-2011)
Grindstaff, Jarvis (2017 to present)	Parnes, Alan (1987-1991)	Watson, Susan (1997-2001)
Hall, Leslie (1993-1997)	Peterson, Paul (1987-1991)	Weiner, Fred (2003-2015)
Harris, Mack (1987-1989)	Pimentel, Albert (1973-1976)	Weinstock, Robert (1994-1998)
Hart, Ted (2003-2007)	Post, Alan (1997-1998)	Withers, Jan (2015-present)
Heppner, Cheryl (1993-1994)	Ransom, Pamela (1989-1994)	Zeledon, Michael (1997-2001)
	Rodriguez, Ramon (1987-1991)	
	Rosenthal, Rebecca (2009-2017)	
	Roth, Ellen (2001-2005)	



TDI Board during the late 1980's. Back row: Jerry Nelson, Robert Schefel, Robert Lankenau, Susanna West (Bourgeois), Seymour Bernstein, Charles Archer. Front row: Alfred Sonnenstrahl, Bill Spalton.



Left L-R Alan Hurwitz, Joseph Slotnick, Pamela Ransom, Seymour Bernstein, Nancy Bloch, Larry Evans, Alfred Sonnenstrahl, and Cary Hobson (Credit to Steve Brenner). Right: Running late for the TDI Board picture, Robert Scheffel at the Boston Marathon (GA-SK Newsletter Winter 1992)



During a break from the 1993 TDI Biennial Conference in Anchorage, Alaska, the TDI Board pose for a group photo on a cruise. L-R: Alfred Sonnenstrahl, Joe Slotnick, Larry Evans, Pam Ransom, Cary Hobson, Cheryl Heppner, Seymour Bernstein, Dr. T. Alan Hurwitz and Dr. Frank R. Turk.



The TDI Board at the 30th Anniversary Gala. L-R Pam Holmes, Michael Zeledon, Susan Watson, Carol Sliney, Dr. Roy Miller, Joe Duarte, Alan Post, Ken Rothschild, Joseph Slotnick, and Claude Stout



TDI Board and Executive Director posing for picture with Mardi Gras masks during 2005 TDI Biennial Conference in New Orleans, Louisiana. This photo was taken six weeks before Hurricane Katrina made landfall. L-R Tom Driscoll, Roy Miller, Carol Sliney, Claude Stout, Ellen Roth, Joe Duarte, Lori Breslow, and Ted Hart.



TDI Board Members at an exhibit. L-R: Dr. Roy Miller, Carol Sliney, and Judy Viera



TDI Board and Executive Director with their families posing for picture while on a cruise to the Bahamas in 2006.



Current TDI Board of Directors, staff and friends in Durham, North Carolina. From Front to back: John Kinstler, Matt Myrick, Jan Withers, Jarvis Grindstaff, Eric Kaika, CM Boryslawskiy, Sheila Conlon-Mentkowski, Donna Lucido, Vicki Potts, Rebecca Rosenthal, Judy Stout, Claude Stout, and David Rosenthal



TDI Board met on May 12, 2018 in Durham, North Carolina. L-R: Sheila Conlon-Mentkowski, Jan Withers, Matt Myrick, Claude Stout, Jarvis Grindstaff, a CART writer, CM Boryslawskiy, and John Kinstler

A NEW ERA

1978 – 1987

TRS



A NEW ERA FOR TDI

1978 — Breunig retired upon TDI's relocation to a new office in Silver Spring, MD. The U.S. General Accounting Office (GAO) issued a report recommending a study into the effective ways for deaf and hard of hearing citizens to communicate with the government, and raises concerns about the ASCII/Baudot incompatibility between TTYs and computers. TDI Board member Alfred Sonnenstrahl and a deaf priest, Jay Croft ask AT&T to consider providing TTY operator services for telephone users with hearing and speech disabilities. Communication Services for the Deaf (CSD) begins local 24/7 relay service in Sioux Falls, South Dakota.

1979 — The third TDI convention was hosted by Georgia Telecommunications for the Deaf in Atlanta. TDI Board approved the name change to Telecommunications for the Deaf, Inc. Barry Strassler is selected as TDI's second Executive Director.

A former TDI Agent, Steve Brenner introduced Robert Weitbrecht to Robert Engelke, an engineer from Madison, Wisconsin. The bonds formed during this friendship led to the establishment of Ultratec, the first TTY manufacturer to recognize Weitbrecht's patent and sell affordable electronic TTYs.

The National Captioning Institute (NCI) was formed with seed money from HEW to provide captioning services for broadcasters that perceived The Caption Center as a competitor with ties to PBS, a rival network. The Silent Network produces and broadcasts sign language and captioned programming targeting deaf and hard of hearing viewers in Los Angeles, California.

1980 — TDI experimented on electronic messaging (email) with DEAF-NET in Washington, DC, San Francisco, and with HERMES in Boston. The FCC began its inquiry into the needs of deaf and hard of hearing consumers and approved AT&T's request to lower long distance rates for TTY users. Reduced rates for interstate long distance TTY calls are allowed in 12 states. A free TTY distribution program began in California for deaf residents, funded by a small surcharge on all monthly telephone bills. AT&T started its toll free TTY operator service.

On Sunday March 16, NCI began closed captioning on ABC's Sunday Night Movie, NBC's The Wonderful World of Disney and PBS' Masterpiece Theater and other programming totaling 16 hours that week. Sears started to sell TeleCaption set-top decoders and TV sets with built-in captioning made



Barry M. Strassler



(b. 1942)
Second Executive Director, TDI
(1979-1983)

Born deaf from unknown causes, Barry Strassler grew up in the boroughs of Brooklyn and Queens in New York City. He graduated after the ninth grade from P.S. 47 School for the Deaf, and then earned his diploma from Charles Evans Hughes High School. Then he went to Gallaudet, having earned a Bachelor of Science in Business Administration (Accounting) in 1966.

He worked as accountant for 9 years with Export-Import Bank

before moving on to the National Association of the Deaf, serving as Administrative Assistant. Then he became the second Executive Director with TDI, and continued in this position for five years. After leaving TDI, he worked for the Department of General Services in the State of Maryland, and DCARA in California, both in accounting-financial analysis capacities. Then he returned to NAD as its Managing Editor of NAD Broadcaster and then as Director of Membership Services. After leaving NAD, he worked as Director of Payroll Services with the Pennysaver Advertiser (Maryland) and then worked 24 years as an accountant with Federal Mediation Conciliation Services before retiring in 2014.

For many years, he has been the Editor of Deaf Digest, an online news service for the nation's deaf and hard of hearing community. He is as many say, a "walking encyclopedia" on history of Gallaudet athletics. He has been married since 1997 to Cathryn Carroll and he is a proud father of a daughter - Kelly Gagain from a previous marriage.

"As far as the future is concerned, the TDDs are no exception. Even at that, we still have to take into consideration the portable TDDs on the market which didn't exist a decade ago. These portables give us flexibility in use - while traveling or while bringing these to our places of employment, or even as second or third TDDs in a household." From article, "TDD's and the Future"

by Barry Strassler, June 1980 GA-SK newsletter





Paul Dramin, President of Telecommunicators of Central Illinois (TCCI), gives recognition to Bobby Smith and Barry Strassler, TDI Executive Director, at TCCI's 6th Anniversary Banquet. (Credit: TCCI)

by Sanyo-Fisher. An IBM TV commercial was the first to be captioned. *Force 10 from Navarone* became the first captioned home movie videotape.

1981 — Missouri-Kansas Telecommunications for the Deaf, Inc. hosted the fourth TDI Convention in Overland Park, Kansas. AT&T reduces long distance rates for TTY users nationwide while NCLD provided assistance to TDI chapters and other advocates in more than 30 states seeking reduced rates for intrastate long distance calls. President Ronald Reagan appointed former TDI Director Latham Breunig to the National Council on the Handicapped, which created the National Policy on Disabled Persons, a forerunner of the Americans with Disabilities Act.

After a series of grassroots protests



Early TeleCaption Decoders circa 1980 - 1990 The #2 (middle) decoder was the first to have a remote control. What many people may not know is that if you remove the outer shell, you will see a hidden parallel printer port. If the technology had been further developed, it would have been possible to make a connection to a Braille so deafblind TV viewers can follow along with captions output to a Braille.

nationwide, CBS Television relented and started captioning Dallas and other popular programming, joining ABC, NBC, and PBS in using the Line 21 encoding system instead of waiting for Europe's Teletext system to come to the United States. While Teletext in Europe is similar to Line 21, there were a lot of extra features that could only be seen over the air. The major drawback was that the Teletext service was not recordable, so it could not allow Hollywood or anyone else to produce captioned home videos.

1982 — With 180,000 TTYs in use, two more chapters joined as TDI started to sell NCI TeleCaption decoders and TV sets at reduced rates. Real-time captioning began with The Oscars Academy





CBS Line 21 Protests in Rochester, New York. The Hurwitz family are seen holding signs, left to right, Vicki, their two children, Stephanie and Bernard, and Alan; unidentified woman behind Alan. (Credit: Alan and Vicki Hurwitz)

Awards by Martin Block of NCI followed by ABC's World News Tonight as the first daily regular live captioned news program. The Super Bowl XVI was the first live sporting event to be captioned.

1983 — TDI united with Electronic Industries Association (EIA) to develop TTY technical and compatibility standards. TDI held its fifth Convention hosted by the Delaware Valley Telecommunications for the Deaf, Inc. in Philadelphia. Phone-TTY develops CM-4 TTY modem and TTY software for personal computers. The AT&T Telecommunications Devices for the Deaf Center was established to meet the special long-distance telecommunication needs of deaf and hard-of-hearing customers as well as people with speech-related disabilities nationwide. AT&T petitioned state public utility commissions.

1984 — Thomas Mentkowski became TDI's third Executive Director. To reduce publishing costs for the directory through a third party, the Blue Book layout work was done in-house on Mac computers then sent out to a local printer. TDI worked with TTY manufacturers to include a TDI membership/Blue Book order form in boxes of all new TTYs, which boosted memberships.

TDI conducted a joint study with the Gallaudet Research Institute and counted approximately 100,000 Baudot TTYs in use compared with five million ASCII based computers that are incompatible with TTYs according to the US Architectural and Transportation Barriers Compliance Board (The US Access Board). Other findings by the Access Board showed Federal institutions to be inaccessible to TTY users and that computers could function as TTYs. These findings were based on updates to Federal Guidelines with the help of Frank G. Bowe, a Hofstra University professor and respected national disability advocate, and David Myers, who was later appointed to a second term on the US Access Board by President Reagan.

Judge Harold Greene ordered the break-up of telephone monopoly, AT&T, into regional Bell companies. NCLD helped TDI chapters across the nation file local regulatory petitions to reduce intrastate rates for TTY users, eliminate charges for flashing light signallers, and make TTYs more affordable.



Thomas M. Mentkowski



(b. 1955)

*Third Executive Director, TDI
(1984-1986)*

Tom Mentkowski was born and raised in Milwaukee, WI, the youngest of three brothers and the only Deaf member of his family. He graduated from Marquette University High School in Milwaukee and attained a Bachelor of Arts degree in Sociology in 1977 from Gallaudet University. At Gallaudet, he was the Editor-in-Chief for the 1977 Tower Clock, an annual yearbook, and also served as Director of Student Media there with Gallaudet's Student Body Government.

He worked with the National Association of the Deaf on its 504 Project and Public Information Office before joining TDI as its third Executive Director. While at TDI for three years, he oversaw fast rising sales of TeleCaption decoders in addition to meeting his regular TDI duties. He left TDI to become Mr. Mom for two years.

After moving to California, he became the first licensed deaf hearing aid provider in the state, as well as attaining a board certification. He worked in this field for 25 years before retiring in 2014. He now volunteers his time with the Sacramento Southside Organic Garden Committee as its Treasurer, and also volunteers with the California Public Utilities Deaf and Disabled Telecommunication Program's (DDTP) Equipment Program Advisory Committee (EPAC).

He is married to Sheila Conlon-Mentkowski for 36 years and they have one son, Alex, who is a graduate student pursuing dual master degrees in International Development and Public Administration at Gallaudet University.

"One only has to step inside a school, note the computers that are used for many things: word processing, calculations, ... go through a food store and note the money machines which before giving you cash, call your bank and check to make sure you have money and the computers that scan food labels as you checkout and many other places that use computers not only to store information, but to gather data, read/or display data and store this valuable input."

From article, "Bits and Bytes" by Tom Mentkowski, Summer 1986 GA-SK newsletter





UbiDuo 2^{SGD}

Face-to-Face Communicator - Speech Generating Communication Device



HUMAN INTERACTION - ESSENCE OF LIFE

One-on-One Communication Equality

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1985 — Nevada Association of the Deaf hosted the sixth TDI Convention in Las Vegas. State telecommunication equipment distribution programs intensified competition among TTY manufacturers.

American Data Captioning (now VI-TAC) opened as the first for-profit captioning service provider. First local news captioned in Kansas City with electronic news system. Such systems generate captions while the in-studio Teleprompter is being used. As a result, since the



PUSHING FOR A NATIONWIDE TRS
Clockwise from top left: Paul Taylor (TDI), Paul Singleton (NAD), Sheila Conlon-Mentkowski and Karen Peltz Strauss (both of NCLD)

weather and sports segments are usually unscripted, viewers lose access to weather forecasts and sports scores as well as live in-studio interviews and field reports.

1986 — TDI continued its lead in Tele-Caption decoder sales. The Air Carrier Access Act is signed into law, including rights for air travelers with disabilities. It

has since been amended to update access rules on in-flight entertainment.

Paul Singleton from the National Academy at Gallaudet University surveyed sixty-one cities and found that a whopping 57 percent of the police departments do not even own a TTY. Many of those that did have a TTY just simply shoved them in a drawer and failed to train their call center staff on how to recognize and respond to a TTY call.

The Caption Center provided real-time captions for local news programs in Boston for two hours a day. Computer Prompting & Captioning started selling software that outputs captions simultaneously with pre-scripted Teleprompter data from the television news studio.

1987 — New York/New Jersey Phone-TTY, Inc. once again hosted the seventh TDI Convention at the Meadowlands Hilton Hotel in Secaucus, New Jersey. TDI's goals were reassessed to include: advocacy for accessible telecommunications and increased captioning; updating TTY standards from Baudot to ASCII; evaluation standards for TTYs and other assistive devices; ensure compatibility between programs, consumers and manufacturers.

The lack of FCC action following its Notice of Inquiry that acknowledged the patchwork systems of state and local relay services prompted the National Association of Regulatory Utility Commissioners (NARUC) to petition that the FCC conduct a Further Notice of Inquiry on interstate relay services. NCLD strongly



Executive Director, Tom Mentkowski at an exhibit booth selling TDI memberships, which included the Blue Book Directory. (Credit: Tom Mentkowski)

endorsed the NARUC petition that described the frustration and confusion by consumers over inadequate relay services that allow deaf and hard of hearing consumers to make calls within the state, but not across state lines. Other limitations included restrictions on hours of operations, length and content of the calls, and the many breaches of confidentiality of relay calls.

During the fall, the push for nationwide TRS services gained impetus with the development of two new national consumer committees. The first one was the TDI Relay Services Committee, chaired by Paul Taylor, and the second one was the NAD Task Force on Relay Services, led by Paul Singleton. Their agenda was to create a comprehensive and uniform nationwide TRS system. Both committees later worked with Karen Peltz Strauss and Sheila Conlon Mentkowski of NCLD, along with industry and state government representatives, on a task force that draft-



Executive Director Tom Mentkowski with boxes of NCI TeleCaption Decoder 200 units. Where possible, a TDI Agent would install the decoder in the customer's home. (Credit: Tom Mentkowski)

ed the TRS provisions of the Americans with Disabilities Act.

On behalf of the TDI and NAD committees, as well as other consumer groups, NCLD sent a letter to Bob Silverstein, staff director and chief counsel of the Subcommittee on the Handicapped of the Senate Committee on Labor and Human Resources. This subcommittee was chaired by Senator Tom Harkin, a Democrat from Iowa who was intimately familiar with the shortcomings of the relay services as experienced by his older deaf brother, Frank Harkin. The advocacy groups urged Senator Harkin and Senator Daniel Inouye, a fellow Democrat from Hawaii to increase Congressional pressure and spur the FCC into creating a committee to review relay services. Meanwhile, California had inaugurated the first statewide, 24/7 relay service, operated by AT&T. 80,000 calls were made in its first month of service.



We would like to congratulate TDI on 50 years of leadership, 2018 being TDI's 50th anniversary, and the significant milestone we've all been achieved without the commitment of and hard work from all involved individuals, including past and current Executive Directors and Board Members. TDI is still going strong, and we applaud TDI for its historical stand in advocating for equal telecommunication rights and policy changes within state TDD administration. We commend everyone with TDI on your ongoing efforts, well over all aspects, be it VRS or Captioning, as we know you have our backs!



California Coalition
Of Agencies Serving Deaf & Hard of Hearing Persons, Inc.

Best wishes,
The California Coalition of Agencies Serving the Deaf and Hard of Hearing

Shari A. Farinha, Chair,
NorCal Services for
Deaf & Hard of Hearing



Patricia Hughes, Ph.D., Vice Chair,
Greater Los Angeles
Agency on Deafness



Patricia Diagon-Perry, Secretary,
Deaf Community Services
of San Diego



Michelle Bronson, Treasurer,
Deaf & Hard of Hearing
Services Center



Raymond Rodgers, Board member,
Deaf Counseling &
Referral Agency



Rose Thomas, Board Member,
Orange County Deaf
Equal Access Foundation



Juliana Field, Board Member,
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TDI: A POWERFUL FORCE

1988 – 1997

9-1-1



TDI EMERGES AS A POWERFUL FORCE

1988 — Gallaudet University made headlines during the Deaf President Now movement when the students shut down the campus following the Board of Trustees’ selection of Elizabeth Zinser, a hearing woman with no background in deaf education over two deaf finalists for the position of President of the University. Alfred “Sonny” Sonnenstrahl, TDI’s fourth Executive Director donated 25 TDI Blue Books to the Piekhoff Alumni House on campus for students and supporters to arouse support from alumni and friends around the country. Within just one week, Zinser resigned and I. King Jordan was selected as Gallaudet’s first deaf president in its 124 years. Phil Bravin was selected as the first deaf chairman of the Board of Trustees. After Greg Hlibok, one of the four student leaders, was selected as ABC News Person of the Week, he went on to become an attorney, and later the director of the Disability Rights Office at the FCC.

Shortly after the Gallaudet victory, the FCC started an inquiry seeking proposals on how to implement the new relay services and what the rules should look like. Fred Weiner from NAD suggested that during the summer NAD and SHHH (now HLAA) conferences host a grassroots letter writing campaign. Al Sonnenstrahl and Paul Taylor reserved exhibit booths

at both conferences with computers and laser printers. The goal was to bombard the FCC with thousands of letters asking that: TRS services be of high quality with no restrictions on frequency, length, hours, or content of calls with acceptable answering speeds; communication assistants would be skilled in English and be able to understand typical cultural and linguistic considerations, including grammar and syntax used by deaf people when typing, and be able to type at least 60 words per minute; relay operators must adhere to strict codes of conduct and not alter the contents of the calls; the TRS system needs to take advantage of new and emerging technologies to increase efficiency and lower costs; and an advisory committee of all stakeholders, including consumer advocates, industry professionals, and government officials will guide the TRS operations.

Unsatisfied with the inadequate Federal Relay Services, one of Arizona Senator John McCain’s staffers, Mark Buse shared his frustrations in trying to call his friend at Gallaudet University. Only one operator was on duty during business hours. If she was sick or on vacation, there was no one else to handle TTY calls to Congress or any other Federal agency. McCain declared that Americans with hearing dis-



abilities were still being denied telephone access enjoyed by the rest of the nation.”

The Technology Access Program at Gallaudet put on a four-day conference on relay services, real-time captioning, and automatic speech recognition. The forward-looking conference attracted 300 attendees and was the first time that representatives of large telecommunications companies came to learn about deaf issues and mingle with community leaders. A proceedings published a few months later was made possible because the entire conference had been real-time captioned — long before this became a common practice at conferences. Information from the conference was used in policy work on what became Title IV of the ADA.

For years, TTY users in the nation’s capital had to dial a seven-digit number during emergencies. When Washington DC Metropolitan Police announced a new 9-1-1 service for TTY users, a press conference was held to demonstrate how the system worked, which did not go as expected. In the audience was John R. Lopez who was representing TDI on 9-1-1 services. After many calls to 9-1-1 centers in suburban Maryland and Northern Virginia, Lopez found numerous glitches while attempting to connect with the Public Safety Answering Points (PSAPs). There was almost no collaboration or outreach with local deaf and hard of hearing people prior to setting up TTY services. One center in Northern Virginia took more than two hours to connect simply because the

TTY printer was jammed. Later that fall, TDI created the Emergency 9-1-1 Access Project with Lopez as its chair.



John Lopez discusses a 9-1-1 educational coloring book with Alfred Sonnenstrahl (Credit: Estate of John R. Lopez)

1989 — TDI held its eighth convention and in the form of Technology Forums on captioning, 9-1-1 access, relay services, and computers at Deaf Way, an international conference hosted by Gallaudet University in Washington, DC.

At the Deaf Way International Conference in Washington, D.C., TDI and Deaf Artists of America unveiled the new International TTY Symbol designed by Jennifer Hummel to designate TTY locations in public places as required by the Telecommunications Accessibility Enhancement Act. As this Act was implemented, President George H.W. Bush makes first call on the newly expanded Federal Relay Service. TDI produces a new TTY training videotape, *Using Your TTY/TDD* with Sign Media, Inc.

With NCLD’s advocacy and support, Dr. Frank Bowe was working with Senator Tom Harkin who sent him overseas



Alfred Sonnenstrahl



(b. 1935)
Fourth Executive
Director, TDI
(1987-1996)

Born deaf to deaf parents in New York City, Alfred "Sonny" Sonnenstrahl attended Lexington School for the

Deaf and transferred to PS 47 on 23rd Street at the age of 10. He then went to Stuyvesant High School, graduating in 1954. He obtained his bachelor's degree in mechanical engineering from New York University's College of Engineering in 1958. For 10 years, he was employed as a marine engineer for the U.S. Department of the Navy in Washington, DC. He then obtained his Masters Degree in Administration and Supervision in Special Education from California State University at Northridge's Leadership Training Program in 1969 and worked as a job placement specialist for the Michigan Department of Labor from 1970 to 1974. There, he created a nationwide employment program for deaf postal workers.

Subsequently he became a State Coordinator for Deaf Clients for the Massachusetts Rehabilitation Commission. Three years later, in 1977, he became the director of a residential mental health program in St. Paul, Minnesota. During his stay there, he was part of the planning committee that created statewide services for deaf people, which continues

to this day. In 1981, he returned to the DC area to lead the NAD's Section 504 Technical Training program and then entered Gallaudet University to pursue his doctorate in aging.

When he was ready to start his doctoral dissertation in the spring of 1987, he was asked by the TDI Board of Directors to become its acting and eventually permanent Executive Director. After 10 years, during which he worked on the ADA and the TV Decoder Circuitry Act legislations, he retired in 1996. Since then, he has worked for CSD VRS as a regional marketing director, and served as a consultant, contractor, and expert witness on various telecommunications access issues. Currently, he is Vice President of Deaf Seniors of America, Treasurer of Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN), and a member of the Maryland Relay Board and the FCC Disability Access Committee. He has two married children, Sam (Marjorie Charles) and Beth (Dwight Benedict) and is a proud grandparent of Rachel, Lauren (Jon Mowl), Ethan, and Brett. He resides in Maryland with Irene W. Leigh, Ph.D.

Because of the new law, all new television sets with at least a 13-inch screen must have the decoder chip built in by 1992. It would mean that every such television set sold anywhere in this country will have a decoder chip in less than two years! Imagine going to any hotel, hospital, or your hearing relatives' and friends' homes, and finding captions on their sets. This will mean hearing-impaired people will not have to lug their decoder adapters when they travel."
by Alfred Sonnenstrahl, Fall 1990 GA-SK newsletter

to interview CEOs of all TV manufacturers in Japan and South Korea about the proposed captioning chip requirement. Bowe learned that the CEOs do not see captioning as an added value for competition, but if there was a law passed in the United States, they would comply by making their TV sets capable of displaying captions with a built-in chip. Meanwhile, major network prime time programming reaches the 100% benchmark for captioning.

1990 — After the Americans with Disabilities Act (ADA) passed the House on July 12, and the Senate the following day, it was time for a conference because both versions of the bill had minor differences that needed to be reconciled and agreed upon. The advocates worked with Karen Peltz Strauss of NCLD to get the US Congress to insert the new language into the ADA's legislative report requiring direct TTY access to 9-1-1 emergency services. The revisions were approved by both houses including the new language and the bill passed the final conference. President George H. W. Bush signed the ADA into law in a White House Rose Garden ceremony.

The ADA is now the premier civil rights law, ensuring equal access for all Americans, including those with disabilities. Title I prohibits workplace discrimination, which applied to businesses with more than 15 employees, although states were allowed to enact more stringent employment anti discrimination laws.



The International TTY Symbol logo, created by Jennifer Hummel, a deaf artist from Seattle, Washington, was chosen as the winner of an international contest to design a logo to indicate the location of TTYs in airports, train and bus stations, government buildings and other public places. The judging took place during the Deaf Way Conference in Washington, D.C. on July 6, 1989.



The judges for the International TTY Symbol on the left are: Ellen Harland, Accessibility Specialist with the U.S. Architectural and Transportation Barriers Compliance Board; Jim Stewart, Director of the Office of Design and Construction, General Service Administration; and Paula Grcevic, Professor of Art at the National Technical Institute for the Deaf at Rochester Institute of Technology. Also pictured on the right are Alfred Sonnenstrahl, Executive Director of TDI; and Tom Willard, Executive Director of Deaf Artists of America (DAA). TDI and DAA co-sponsored the logo contest, which awarded a prize of \$500 to the winning artist.





President George H.W. Bush signs the Americans with Disabilities Act in an outdoor South Lawn ceremony at the White House as disability advocates, Evan Kemp, Rev. Harold Wilke, and Justin Dart, Jr. (with cowboy hat) look on.



Alfred Sonnenstrahl reviews legislative language in the ADA with Senator Tom Harkin.

Title II mandates effective communications, prohibits discrimination in state and local government services, including 9-1-1 and other emergency services. Title III requires public accommodations to provide auxiliary aids and services, and remove architectural barriers for people with disabilities. For example, the ADA Accessibility Guidelines require that pay-

phone stations with four or more phones to include a TTY. Local and state government began to install payphone TTYs in public buildings and transportation hubs. However, there have been anecdotal reports of builders circumventing this requirement by erecting banks of only three payphones without a single TTY. Sy Dubow and others at NCLD played a



TDI and other key consumer advocates pose together with U.S. Senator John McCain after the signing of the Americans with Disabilities Act at the White House on July 26, 1990. From left to right, Kevin Nolan, Sy DuBow, Gerald Buckley, Karen Peltz Strauss, Alfred Sonnenstrahl, U.S. Senator McCain, Larry Evans, Paul Taylor, Jack Gannon, I. King Jordan, and Tim Rarus.

huge role in the development and advocacy for this Act.

Title IV establishes the Telecommunication Relay Services (TRS) and requires captioning on video public service announcements produced with federal funds. Throughout the process, agreement was reached by key stakeholders to ensure that relay services would be treated as a utility service that is fully integrated into the public switched telephone network, rather than a charitable or social service.

TDI and the American Athletic Association of the Deaf presented a Certificate of Appreciation to Senator John McCain for his role in passing the ADA.



In 1990, President Jordan places a call to the office of Senator Daniel Inouye (D-Hawaii) on a Gallaudet pay phone TTY to launch a one-year trial in the Baltimore-Washington area. L-R interpreter Bill Adams; Del Lewis, president, C&P Telephone, Washington, D.C.; Alfred Sonnenstrahl, executive director, Telecommunications for the Deaf; and Ray Smith, chairman and chief executive officer, Bell Atlantic. (Credit: Gallaudet University On The Green)

On October 15, 1990, President Bush signed the Television Decoder Circuitry Act, requiring TV sets above 13” diameter to have captioning capabilities built-in, effective in 1993. The law included some last minute amendments that cover computers with TV cards to support captioning, regardless of monitor screen size. The law also protects captioning in the event of future changes in broadcast technology.

TDI hosted two national forums to help the FCC draft its regulations for the nationwide telecommunication relay service program. The first one was held in April 1990 in Tempe, AZ, and the second was held in November 1990 on Capitol Hill in Washington, D.C.

1991 — TDI helped the US Department of Justice (DOJ) and the Federal Communications Commission (FCC) to develop federal relay standards as defined by Title IV of the ADA. A new mission statement and bylaws were passed by the TDI Board at its ninth convention hosted by Deaf Community Services in San Diego.

NTID loaned Paul Taylor to the FCC for one year to help draft rules and regulations for TRS services. At an FCC open meeting, the Commissioners discussed a long list of issues to consider in developing TRS policy. About 70 issues were raised by Judy Viera and other advocates based on their experiences in implementing the California Relay Service. A TTY was brought into the meeting room where Paul Taylor demonstrated the TTY relay call experience.



Captioning service providers helped design new Line 21 decoder display standards for FCC. Zenith Electronics Corp. was the first TV manufacturer to develop televisions with a built-in captioning chip since the first TeleCaption TV sets were sold. The US House of Representatives begins captioning its floor proceedings

on C-SPAN. The US Dept. of Education sponsored a national conference on local news captioning in Washington, DC.

TDI coordinated three national forums on Access to Emergency Communication Services where experts engaged in an ongoing dialogue on policy, technology, legal issues, and implementation models

White House TRS Demonstration



Frank Harkin / President Clinton

In a White House ceremony marking the inauguration of Telecommunications Relay Services, Senator Tom Harkin arranged to have President William J. Clinton make a demonstration relay call to Frank Harkin, the Senator's older deaf brother. With TV cameras on him, President Clinton dialed the number but the line was busy. Frank was on the TTY talking to someone else. Brother Tom had to call Frank's neighbor to get his brother off the phone so the President could call him. They had a pleasant conversation through TRS. "He taught me that people with disabilities are people with abilities



Frank Harkin, the deaf brother of Sen. Tom Harkin, D-IA, wipes tears from his eyes at the Harkin family home in Cumming, Iowa, Tuesday after talking with President Clinton by using a nationwide telephone relay system. Harkin's interpreter, Joy Milligan, stands at far left. (Credit: The Des Moines Register on July 28, 1993)

with the right to be full participants in all facets of society," Tom Harkin said in a statement upon Frank's passing in June 2000. President Clinton later remarked that Frank Harkin was the only person who stood him up on a phone call during his eight years in the White House.

Ed Bosson



The “Father of VRS”

Ed Bosson from the Texas Public Utility Commission began discussing the idea of using video conferencing products for deaf people not only to call each other directly, but also to set up video relay with a network of sign language interpreters to relay conversations between deaf and hearing parties using ASL over broadband Internet connections. His vision earned him the title of “Father of VRS”.

surrounding access to 9-1-1 services. TDI also had meetings with NENA and the Association of Public Communication Officers (APCO) which were both leading 9-1-1 industry associations. With the help of Toni Dunne on 9-1-1 access issues, TDI helped develop a white paper outlining accessible policies for TTY users when they call 9-1-1 for emergency assistance. NENA and APCO were concerned about the ASCII requirement, which had yet to be proven as a reliable way to communicate by text. The TTY manufacturers were

adding ASCII capabilities to their products based on the theory that this feature will allow TTY users to call computers.

1992 — In mid-July, TDI and NCLD submitted a request to the FCC for two three-digit N11 numbers for nationwide access to relay services: as planned, 7-1-1 for TTY users and 5-1-1 for voice users. The request was filed on behalf of 12 national organizations and 26 state and local consumer groups, telephone relay centers, and government offices.

TDI conducted a national poll that confirmed TTY as the preferred acronym for text telephones over “TDD” (Telecommunications Device for the Deaf) or “TT” (Text Telephone). TDI joined the Consumer Action Network, (currently known as DHHCAN) a national advisory council for national consumer organizations serving deaf and hard of hearing Americans. All states and the District of Columbia established 24/7 telecommunication relay services. Norman Williams developed FUTURA TTY, a DOS computer program that was compatible with both ASCII and TTY modems.

Hillsborough County, Florida and Fremont, California became the first county and city, respectively, to caption real-time all government and school board meetings, funded by a surcharge on all cable TV bills.

1993 — The tenth TDI Convention was hosted by the Alaska Association of the Deaf in Anchorage. Title IV of the ADA



takes effect with 24/7 telecommunication relay services (TRS) in every state.



At the 1993 Conference in Alaska. L-R: Karen Peltz Strauss, Sheila Conlon Mentkowski, Alex Mentkowski, future advocate in training, and Tom Mentkowski.



At the press conference held in Chapel Hall on July 1, 1993, Rep. Steve Gunderson speaks to the audience while President I. King Jordan, Senator Tom Harkin and Senator John McCain look on. This was the day the Television Circuitry Decoder Act went into effect, mandating that new television sets 13 inches or larger manufactured or sold in the United States have a closed caption decoder chip built into the set. (Credit: Gallaudet University On The Green)



A Zenith TV ad for the GA-SK on the first TV with a built-in decoder since the 1980's

The National Center for Accessible Media (NCAM) is formed as the research arm of the Corporation for Public Broadcasting and WGBH-TV. One of NCAM's early achievements is the development of the Rear Window Captioning (RWC) System to display movie captions off the back wall of the theaters onto reflectors. At the time, there were more than 750 hours of TV captioning per week on network programs and over 5,000 captioned

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and everyone at Google



home videos. The Television Decoder Circuitry Act takes effect so all televisions larger than 13” in diameter essentially became decoders, and the captioning functions preserved whenever broadcast technology is upgraded.

1994 — The US Department of Justice (DOJ), contracted with TDI to develop a training kit, Emergency Access Self Evaluation (EASE), for emergency personnel at 9-1-1 call centers. The EASE training packages covered the basics of recognizing and handling a TTY call, including things such as ASL syntax commonly typed by deaf callers that could be perceived as “broken English”. The EASE training kit led to the requirement for all call-takers to have access to their own TTY or TTY software built into their computer consoles.

The Caption Center introduced relocatable roll-up captioning during the Winter Olympic Games for CBS, which ensures that important sports action or graphics are not obscured with captions.

1995 — Reed Hundt was the first



Chairman of the FCC to be the keynote speaker at TDI’s 11th Convention, hosted by D.E.A.F., Inc. in Boston. He said, “...we have no higher responsibility and no greater calling than making sure that people with disabilities share in the communications revolution. This mission is in itself a sufficient justification for the existence of the Federal Communications Commission.”



Miss America Heather Whitestone and FCC Chairman Reed Hundt demonstrate how a relay call works. Linda Dubroof and Pam Gregory of the FCC Disabilities Issues Task Force are in the background.

FCC Chairman Reed Hundt announced a new TRS campaign with the first deaf Miss America, Heather Whitestone. Simultaneously, Linda Dubroof and Pam Gregory were selected to head the new Disabilities Issues Task Force at the FCC to ensure that the needs of TTY users are considered along with telecommunication needs of other disability groups. The goal of universal access to telecommunication had existed since Congress passed the Communications Act of 1934. This Act included a provision requiring that the newly established Federal Communications



Commission (FCC) must ensure universal service ... “as far as possible to all the people of the United States with rapid efficient, nationwide and worldwide wire and radio communications” and to regulate all interstate and foreign electrical communication systems originating in the US.



Celebrating the 5th Anniversary of the ADA in 1995 on a Potomac River dinner cruise ship. L-R: Paul Taylor, I. Lee Brody, Andrea Saks, James Marsters, H. Latham Breunig, and Alfred Sonnenstrahl.

Sprint conducted a number of successful video relay interpreting (VRI) trials at four locations in Austin, Texas using AT&T’s PictureTel products on ISDN lines. *Live! With Derek McGinty* from The Discovery Channel became the first regularly captioned regular Internet program.

1996 — Alfred Sonnenstrahl retired as Executive Director after ten years at TDI. Texas VRI trials expanded to ten cities, enabling children at Texas School for the Deaf to call parents, many for the first time. President Clinton signed the Telecommunications Act of 1996 into law, paving the way for the telecommunications industry to consolidate operations within the local and long distance

telephone sectors. This Act amends the Communications Act of 1934 and mandated full captioning of television, including cable television, with a phase-in period granted by the FCC until 2006. A separate ramp-up schedule for Spanish captioning would also go into effect at the same time. The FCC issued hearing aid compatibility regulations for landline and cordless telephones but exempted wireless digital handsets temporarily.



1997 — TDI hired Claude L. Stout as its fifth Executive Director.

The Missouri-Kansas Telecommunications for the Deaf, Inc. hosted TDI’s 12th Convention in Kansas City. Wireless communication devices (cellular phones, fax, emails, pagers) became popular and filled the airwaves. TDI participated in two forums to study analog TTY access through digital wireless cellular networks to 9-1-1 systems. The FCC made available the 7-1-1 number for easier dialing access to TRS; issued regulations on captioning in accordance with the Telecommunications Act of 1996; and required wireless carriers to forward all 9-1-1 calls.

TDI was an active participant in the U.S. Access Board’s Telecommunication Access Advisory Committee (TAAC). This advisory group reported out recommendations for regulations under Section 255 of the Communications Act. Section 255 mandated accessibility of telecommunications equipment where readily achievable.

A Brief History of TDI Biennial Conferences

TDI conferences began as an opportunity for what was then called “TDI Agents” to gather and share their expertise and experiences, as well as to answer consumer questions regarding the modification and distribution of teletypewriters.

Since then TDI conferences have grown into biennial events that feature exhibits from various industry vendors, presentations from government policy makers concerning their plans for future policy changes, workshops given by industry representatives concerning their newest accessible technologies, panels where consumers are invited to ask questions and raise issues concerning accessibility, an awards luncheon where worthy individuals and/or organizations are recognized for their outstanding

contributions to making telecommunications, media and information technologies accessible for deaf and hard of hearing people, and unlimited opportunities for networking with movers and shakers who are concerned with and knowledgeable about accessibility issues facing deaf and hard of hearing consumers.

Over the years TDI conferences were held in various places around the country in order to provide opportunities for consumers everywhere to participate in the conferences. However, starting in 2015, due to budget constraints on federal agencies, TDI has found it more suitable to host the biennial event in the Washington, DC metro area. Our next Biennial Conference, TDI’s 23rd will be held at Gallaudet University in Washington, DC on August 13-18, 2019

Past TDI conferences have been held in the following cities:

2017 – Rockville, MD	2005 – New Orleans, LA	1989 – Washington, DC
2015 – Baltimore, MD	2003 – Las Vegas, NV	1987 – Secaucus, NJ
2013 – Albuquerque, NM (TDI-ALDA Joint Conference)	2001 – Sioux Falls, SD	1985 – Las Vegas, NV
2011 – Austin, TX	1999 – Seattle, WA	1983 – Philadelphia, PA
2009 – Washington, DC	1997 – Kansas City, MO	1981 – Overland Park, KS
2007 – San Mateo, CA	1995 – Boston, MA	1979 – Atlanta, GA
	1993 – Anchorage, AK	1977 – Port Chester, NY
	1991 – San Diego, CA	1974 – Chicago, IL



TDI Conference Photos



During a break at the TDI Conference, Rob Engelke of Ultratec poses for the picture with Jayne Turner and Kevin Colwell joining in.



Tom Mentkowski, TDI Executive Director poses with wife, Sheila, Robert Lankenau and Robert McClintock in Las Vegas, NV for the 6th TDI Biennial Conference.



During the 21st TDI Biennial Conference in Baltimore, MD (2015) following Chairman Tom Wheeler's keynote speech, Rosaline Crawford, E. Elaine Gardner, and Karen Peltz Strauss speak during the FCC Town Hall.



Matt Myrick enjoys a moment with Joe Duarte and Clayton Bowen.



Jenny Lay-Flurrie, Vikki Porter, John Fetcher, Pam Holmes, Matt Myrick on the "Interacting with Hearing Colleagues" panel at the 21st Biennial Conference.*



Donna Platt, Suzy Rosen Singleton, Richard Ray and Toni Dunne after they finished the 9-1-1 workshop*.



Joe and Meg Duarte visiting with Ron Vickery in the exhibit area as a Med El (a cochlear implant manufacturer) representative looks on.*



Christopher Soukup, CEO of CSD gives keynote speech at the 22nd TDI Conference "One World: Community Ownership as a Catalyst for Innovation"*



Murray Margolin, Dr. Christian Vogler, and Neil McDevitt participate in a discussion.*



Panelists during FCC Town Hall from left to right: Karen Peltz Strauss, Deputy Chief of the Consumer Governmental Affairs Bureau (CGB); Suzy Rosen Singleton, Chief for the Disability Rights Office (DRO); Eliot Greenwald, Deputy Chief for DRO; Robert McConnell, Telecommunications Accessibility Specialist with DRO; and Dr. Christian Vogler from the Technology Access Program at Gallaudet University.*



Haben Girma, first DeafBlind graduate of Harvard Law School gives keynote speech at the 22nd TDI Conference "The Universal Benefits of Accessible Design"*



Angela Officer, Judy Stout, and Katie Fishbein.*



Dr. Scot Atkins with Gary Behm from NTID discuss a recent workshop with Alfred Sonnenstrahl, former Executive Director of TDI.*



Benro Ogunyipe, a current member of the National Council on Disability Board of Directors, visits with Pam Holmes, a former member.*



Omnitor's Gunnar Hellstrom, SignAll's Zsolt Robotka, Fidelity's Jeff Witt and IDEAL Group's Steve Jacobs.*

* Photos by Steve Brenner





This animated set up is part of the David Rose Prsonas presentation on holograms and sign language.



Norman Williams accepts the Saks Award from Andy Lange.



The crowd is jealous after Conference volunteer, Gary Viall wins the iMac computer as a raffle prize. L -R: CM Boryslawskyj, Jarvis Grindstaff, Gary Viall, Andy Lange, Donna Viall, and Tayler Mayer.



Dot and Steve Brenner volunteers at the registration table and as photographer, respectively.



Members of the IP-CTS panel from left to right: Ron Bibler (consumer), HLAA's Lise Hamlin, Clear Captions' Mike Strecker, Hamilton Relay's Dixie Ziegler, Ultratec's Pam Holmes, Sprint Accessibility's Mike Ellis, and CaptionCall's Cameron Tingey.



VRSCA's Sharon Hayes pose for photo with FCC's Karen Peltz Strauss.



A dinner table crowd from l-r: Laurie Dowling, Tom Dowling, Peter Sepielli, Karen Sepielli, Donna Viall, Byron Hampton, Gary Viall, Jim House, and Karen Philo-House.

The "Big Three": Two former TDI Executive Directors - Tom Mentkowski and Alfred Sonnenstrahl with Claude Stout, current Executive Director.



Five FCC Chairs Lend Credibility to TDI Conferences with Their Presence



Reed Hundt, the first FCC Chair to give a keynote presentation at the 1995 TDI Conference in Boston.



William Kennard, FCC Chair talks about the implementation of Section 255 (of the Telecom Act of 1996) in his keynote speech at the 1999 TDI Conference in Seattle, Washington



Michael Copps, as a new Commissioner, 14th TDI Biennial Conference in Sioux Falls, South Dakota, and again as Acting FCC Chairman, 19th TDI Biennial Conference in Austin, Texas.



Tom Wheeler, FCC Chairman, 21st TDI Biennial Conference in Baltimore, MD



Ajit Pai, FCC Chairman, 22nd TDI Biennial Conference in Rockville, MD



A Kaleidoscopic Look at Accessible Technology

As we celebrate TDI's half-century of innovation, we take a moment to look at the human side of technology. The artwork below by deaf artists over the years can provoke deep thinking, provide comic relief, or illuminate the funny side of access.

Description: This is an assemblage of an old TTY, painted orange and with the stick-on letters GA and SK on the TTY's readout line, which is lit up by a neon light. In addition, on the back of the TTY



TTY Call, 1997 Neon Assemblage, 21" w x 21" d and 26" h, old TTY, hand /phone / half - figure

is a half figure piece in a collage and surrounded by a swirl of blue and purple neon light. There are also pieces of curled neon lights on each side of the TTY. On the keyboard of the TTY is a hand, placed as typing a TTY message.

BETTY G. MILLER



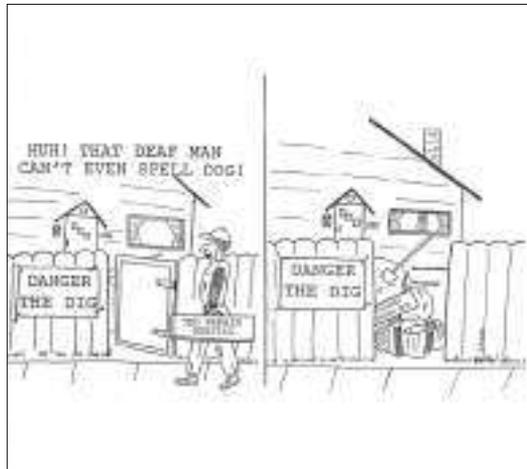
Betty G. Miller, also known as Bettigee, her artwork signature, was a deaf artist who became known as the "Mother of De'VIA" (Deaf View/Image Art). She was born hard of hearing in Chicago to deaf parents and attended an oral school, but learned ASL at home. In June of 1976, she earned a Doctor of Education degree (Ed.D.) in art at Pennsylvania State University, becoming the first undergraduate alumna of Gallaudet to earn a doctoral degree. She was also a Certified Alcohol and Drug Counselor, specializing in working with deaf patients. Her art practice included some of her reflections on a deaf person's experiences in an oral school. Miller taught at Gallaudet, her alma mater. In 1975, she co-founded Spectrum, Focus on Deaf Artists, which brought together other painters, dancers, and artists contributing to deaf culture. In 2009 she was awarded the Alice Cogswell Award from Gallaudet for service to deaf people.



J. STERLING WHITE



Sterling White was born on January 5, 1935 in Elizabeth City, NC. He earned his diploma from the NC School for the Deaf in 1934 and graduated from Gallaudet in 1959 with a BA in Chemistry. After earning certificates in Infrared Spectroscopy and Computing, he started working as an Infrared Spectroscopist for RJR-Nabisco Co. Sterling was elected as president of NCAD in 1973 for five years, and remained as an editor for the NCAD newsletter, *The Bugler*. He served as the President of the Piedmont Lions Club while organizing the NC State Service for the Deaf and Hard of Hearing in 1974. He was chosen for *Who's Who* in the South and Southwest 16th and 17th Edition, and honored with the Amos Kendall Award from Gallaudet in 1990, and received several other awards. He enjoys growing orchids, studying birds, and astronomy.



POWERFUL FORCE





BRUCE HANSON

When Bruce Hanson earned his certificate in Information Technology, TDI contracted with him to provide IT Support to its growing office computer network. In the years since, Bruce currently enjoys working full-time as a Senior Technical Support agent. He is happily married, and buying property in the Philippines with his wife.



Video phone for the Deaf: Drawback Number One, a cartoon in the May 1992 *Silent News* by Bruce Hanson

POWERFUL FORCE

DIVERSITY & INCLUSION IS OUR FOUNDATION FOR INNOVATION AND DRIVES OUR BUSINESS FORWARD.

Comcast NBCUniversal is proud to support TDI and their 50th Anniversary Gala.

DIVERSITY.COMCAST.COM



ANN SILVER



Born deaf into a hearing family in Seattle, WA, in 1949, Ann Silver attended public schools. As professional support services did not exist, she was not mainstreamed. Her childhood education, she says, "was 90% guesswork, 10% art."

Silver received her BA in Commercial Art from Gallaudet University and an MA in Deafness Rehabilitation from New York University in 1977. Along with Betty G. Miller, she has the distinction of being one of the founding members of the Washington DC-based Deaf Art Movement (DAM) in the 1960s-1970s. While working as a designer/art director for major book publishing companies in Manhattan, Silver burned the midnight oil as a sign language artist and a Deaf Studies researcher and writer. In 1979, she and the Museum of Modern Art established a 125-museum consortium program for Deaf visitors, earning a NY Governor's Art Award. She was also a museum docent at the Metropolitan Museum of Art. Living in Japan as a 1986 Japan-U.S. Friendship Commission Fellow, her pioneering cross-cultural research led to Japanese Deaf Studies. Silver's artistic background is varied—ranging from poster art, graphics, drawings, logos and greeting cards to book jackets, Deaftoons and creative direction. A self-taught artist, her work has been exhibited across the country and abroad, including Stockholm and Tokyo. While Silver's work represents the visual arts wing of the academic Deaf Studies spectrum, she also deals in issues of discrimination. As an oppression theorist, her work includes legal/policy analysis and identification of system barriers for agencies such as the Washington State Human Rights Commission.



GA / SK

(1992, Ann Silver / 2-D layered paper collage / 20"x16")

The bold GA and two pointing arrows, one pointing left and one pointing right, grace the first signpost. GA was used to signify that the other person could "Go Ahead" and type. In the second signpost, there is a bold SK and a red stop sign. The term SK stood for "Stop Keying," meaning the conversation was over -- but many in the Deaf community still believe it meant "Send Kisses."



TT, T & TDD: WRONG WAY / TTY: RIGHT WAY

(1992, Ann Silver / 2-D layered paper collage / 20"x16")

This pair of signposts highlight the terms for a TTY that the Deaf community never widely approved: TT (Text Telephone), T (Teletypewriter), and TDD (Telecommunications Device for the Deaf) were bad choices. Regardless of the age or size of the machine, it was a TTY -- the term accepted and used by the Deaf community.



TDI GOES DIGITAL

1998 – 2007



TDI GOES DIGITAL

1998 — TDI appointed as a member of the Electronic and Information Technology Access Advisory Committee (EITAAC), a federal advisory committee formed by the US Access Board to develop Section 508 standards based on the recently amended Rehabilitation Act. The newly amended Section 508 rules require all Federal agencies to develop, procure, maintain, and use accessible electronic and information technologies in ways that give full access to federal employees with disabilities and the public seeking to do business with the government if it can be achieved without undue burden. Section 508 went far beyond telecommunications by covering computers, office equipment, software, and websites. Various advocates including Claude Stout, Dr. Judy Harkins of the Technology Access Program at Gallaudet University, Dr. Gregg Vanderheiden of the TRACE Center, Pam Holmes, a member of the US Access Board, and Karen Peltz Strauss participated in this advisory group.

TDI launched a new website, and



Claude Stout, Dr. Judy Harkins, Pam Holmes, Dr. Gregg Vanderheiden, and Karen Peltz Strauss with other members of the Electronic and Information Technology Access Advisory Committee, US Access Board, in May 1999.

celebrated its 30th Anniversary celebration with an Expo and Gala at Gallaudet University honoring past and current advocates in telecommunications and media access. The Expo with 43 exhibitors drew 2,000 attendees.

1999 — TDI's new public email listserv, TDI eNotes, proved to be a valuable tool in engaging its members and friends in advocacy with timely updates in areas of telecommunications and media access. In one of its early eNotes, TDI joined with



Claude L. Stout



(b. 1954)
*Fifth Executive
Director, TDI
(1997-present)*

After completing his preparatory year at Gallaudet, he returned to North Carolina School for the Deaf in

Morganton where he obtained his high school diploma in 1974. Returning to Gallaudet, he was able to pursue two degrees, achieving a Bachelor of Science in Business Administration (General Business) in 1978, and a Master of Business Administration (MBA) in Management in 1980. He was the first in Gallaudet's history to be re-elected for a second one-year term as President of its Student Body Government.

After attaining his MBA, he taught six months as an Instructor in Gallaudet's Business Administration Department. He then worked for ten years at National Association of the Deaf in Silver Spring, MD, as Assistant Executive Director for Business Services. He relocated to Fulton, MO to become the Executive Director for Missouri Commission for the Deaf. He was also the Assistant Director for Community Affairs with North Carolina Division of Services for the Deaf and the Hard of Hearing in Raleigh, NC for five years. When the Executive Director position at TDI opened up in the fall of 1996, Stout applied and was offered the position which he accepted.

He has served as TDI Executive Director since January 1997. He

recently stepped down after serving for eighteen years as Chair of Deaf & Hard of Hearing Consumer Advocacy Network (DHHCAN), a national consumer coalition of twelve organizations representing deaf and hard of hearing citizens. He is a two-term member of the Federal Communications Commission's Disability Advisory Committee.

Mr. Stout has served on numerous government and industry advisory committees such as: Cingular Wireless Task Force, 1999 to 2007, AT&T Advisory Panel on Access and Aging, 2006 to present, AT&T National Consumer Advisory Board, 2008 to 2014, Federal Communications Commission Consumer Advisory Committee, 2000 to 2015, Electronic and Information Technology Access Advisory Committee - U.S. Access Board, 1998-1999, Microsoft Disability Access Advisory Committee, 1998-2000, and AOL Accessibility Advisory Committee, 1997-2009.

Mr. Stout is happily married to his high school sweetheart, Judy Cummings Stout for thirty-eight years, and they have two children, Abby (Katie), and Ty (Emily). They are the proud grandparents of Abby and Katie's two boys, Landon and Logan.

"The Sky is No Longer the Limit" "We must not give up when we run into obstacles on the journey to full accessibility. Dealing with adversity brings out the best in us. A cordial but firm approach will enable the general mainstream to understand and respect our concerns and aspirations. We must exercise every diplomatic option, conflict resolution, and communication facilitation to accomplish our dreams."

by Claude Stout in the 1998-4 GA-SK newsletter



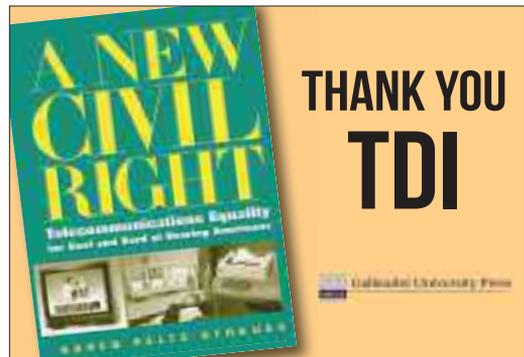
Dr. Roy Miller, Claude Stout, Pam Holmes, and FCC Chairman William Kennard ready for a "toast" at the 1999 TDI Conference in Seattle, Washington.

NAD and other consumer groups with an action alert on June 25 requesting that the deaf community respond to an FCC inquiry on eliminating barriers to voicemail and interactive telephone menu systems. Following the endorsement of Personal Communications Industry Association (PCIA), the FCC acted by a vote of three to two to support Section 255 rules, including accessibility of interactive telephone menu systems, ensuring access to telecommunications equipment and services by consumers with disabilities where readily achievable. These new rulings were acclaimed as having a potential impact similar to the ADA in the Information Age.

Right after the historic Section 255 rulemaking, FCC Chairman William E. Kennard sets the tone at the 13th Biennial TDI International Conference in Seattle, Washington, hosted by Thurston County Association of the Deaf. His keynote speech, "Defining Vision," encouraged telecommunications engineers and design-

ers to work side-by-side with consumers with disabilities in the design phase.

In other telecom news, Ameriphone, Crown and Ultratec developed TTYs with 2.5mm audio jacks that connect to cellular phones and household cordless phones as well as microphones and handsets for VCO and HCO users. Two-way pagers with TTY, fax and e-mail capabilities became popular for those on the road. Ultratec and Sprint conducted joint Fas-Tran trials to improve TRS services using speech recognition technology. Maryland became the first state in the continental United States to implement the three-digit 7-1-1 TRS number, which led to an increase of 41% in calls initiated by voice users over the ten-digit toll-free number.



Charter Communications is proud to support TDI and its 2018 Biennial Conference.

Collaborating with the deaf and hard of hearing community allows us to better meet the needs of all of our customers.



2000 — TDI submitted filings to the FCC in areas of digital television captioning standards, instant messaging, Internet Telephony, handset volume control, obligations of television broadcasters, the needs of deaf-blind consumers in video description. The FCC overhauled TRS rules to improve access to telephone service for people with hearing and speech disabilities, requiring increased quality standards, providing for Speech to Speech (STS) relay, and ensuring that TRS keeps up with the Information Age. The FCC also adopted regulations requiring all telecommunications carriers nationwide to implement the 7-1-1 three-digit dialing for state relay access. TDI filed comments with the US Access Board on telecommunication and media access issues in Section 508 rulings and the upcoming revisions to the ADA Accessibility Guidelines. Claude Stout coordinated activities of the TRS Coalition in bringing the case for reaching TRS functional equivalency to the FCC.



The Coalition for Movie Captioning group. L-R: Nancy Bloch, Toby Silver, Claude Stout, Brenda Battat, a representative from AG Bell, Jim House, Cheryl Heppner, and John McClland.

The Movie Access Coalition, a subcommittee of the NAD, was reorganized to

become the Coalition for Movie Captioning (CMC). TDI became a charter member and Jim House, its Director of Public Relations, was selected as the Vice Chair. CMC authored a position paper on access to theatrical movie captioning. CMC's vision was "We believe that individuals who are deaf and hard of hearing should have the same freedom as anyone else to attend and showing of any movie at any theater; to be seated anywhere within the theater with their family and friends; to receive equal access to the audible portions of the movie through high quality captioning; and to be guaranteed that the presentation of captioning is consistently reliable."

Dr. Harry G. Lang's book, *A Phone of Our Own*, is published, detailing the birth of the TTY network and the inception of TDI. The AOL/Time Warner merger prompted calls to standardize competing Internet instant messaging protocols. Ultratec introduced the Cap-Tel line of phones, which uses automatic text transcription using "communications assistants" and speech recognition.

The FCC cited TDI's opposition in its denial of a closed captioning waiver based on undue burden to Home Shopping Network because a similar competitor, QVC was captioning their home shopping shows. The FCC established a phase-in schedule for captioning of digital television programming, mandated increased accessibility of video programming to viewers with hearing and vision

disabilities during local emergencies, and launched a beta version of in-house real-time Internet captioning to make its Open Meetings and public forums accessible to Internet users with hearing disabilities. Air Force News became the first military funded regular programming to use captioning. The Weather Channel began 20 hours of captioning on its all-weather cable network.

2001 — The TDI Board of Directors reorganized with five elected representatives from the Northeast, Southeast, Midwest, Central and West Regions. CSD hosted the 14th Biennial TDI Conference and Expo in Sioux Falls, South Dakota, its first time in a rural setting under the theme: “Information, Technology, Access: The Gold Rush of the Future”.



Michael J. Copps, the newest Commissioner of the Federal Communications Commission (middle) discusses the success of the TDI Conference with Claude Stout of TDI (left), and Rick Norris of CSD (right).

On the second day of the Conference, Michael J. Copps gave the keynote speech, his first since his Senate confirmation as FCC Commissioner. Copps

said “My overriding goal as an FCC Commissioner is to help bring the best, most accessible, and cost-effective telecommunications system in the world to our people – and I mean all of our people. Each and every citizen of this great country should have access to the wonders of telecommunications. I don’t think it exaggerates much to characterize access to telecommunications in this modern age as a civil right.”

TDI filed comments with the FCC on Universal Service Fund support for orphan technologies such as TTYs with Braille output and for service fees above customary fees required to make telephones accessible such as a second line for 2-Line VCO users. ISDN technology is displaced as modern broadband Internet services gained a foothold in 8 million American households fueling the rapid growth of video relay services (VRS). Digital Subscriber Line (DSL), cable modem and fiber optic services were faster, less expensive, and easier to set up and maintain. MCI WorldCom and AT&T Relay implemented IP-Relay trials, allowing TTY users to make relay calls through the Internet. The FCC extended its deadline for coin-operated payphones and digital cell phone compatibility with 9-1-1 and TTYs. The FCC approved the AOL/Time Warner merger with the condition that future versions of AOL’s popular instant messaging (IM) software be interoperable with competing IM software as long as AOL retains dominant market share.



Several captioning providers began to caption streaming videos on the Internet. WGBH's National Center for Accessible Media published guidelines for making software accessible to deaf or blind users. Congress allocated funding for a pilot CART training program.

On 9/11, terrorists hijacked airliners and attacked the World Trade Center in New York City, the Pentagon near Washington, DC and a fourth plane crashed enroute to Washington, DC in a Pennsylvania field. Following the attacks, TDI rushed an issue of The GA-SK on Disaster Preparedness. The FCC reminded television broadcasters of their emergency news accessibility requirements.

The FCC formed a new Consumer/



Disability Telecommunications Advisory Committee. Section 508 went into effect requiring that the federal government procure information technology products and services that are accessible to federal employees with disabilities as well as the public seeking government services. The US Department of Justice reported success in removing barriers to local government services as part of its ongoing Project Civic Access.

2002 — TDI filed comments with the FCC requesting that the Commission revoke current exemptions to the Hearing Aid Compatibility Act of 1988; requesting that it uses the Universal Service Fund for training and outreach from schools and libraries on TRS and other telecommunication services; urging the FCC not to classify wireline broadband services as information services; streamline and simplify its informal complaint procedures; requesting that cable modem Internet service be accessible and usable to people with disabilities; supporting the petition of the National Exchange Carrier Association (NECA) to recover costs for wireless calls made through TRS from the Interstate TRS Fund. TDI also sent comments with sign-ons from NAD and ALDA on cost jurisdiction and other mechanism issues regarding reimbursement for Internet Protocol Relay, including people with hearing or speech disabilities. TDI, NAD, SHHH, and CAN (Consumer Action Network) filed a petition for reconsideration of the FCC's



Order on the handling of relay calls made through payphones, alleging that the Order violated the requirement to not charge relay users any more than conventional callers for payphone calls, and required outreach measures that would alert relay consumers about making payphone calls using relay services. TDI also filed comments with the Federal Trade Commission (FTC) urging that it make its “Do Not Call” registry accessible to all consumers. TDI filed joint comments with CAN, NAD and Deaf Seniors of America (DSA) to the National Telecommunications and Information Administration at the U.S. Department of Commerce in support for full deployment of broadband services across America

TDI also filed joint comments with NAD to the FCC opposing the petition of several digital wireless service providers to extend the time or waive their responsibilities to make their network digital-TTY 9-1-1 compatible.

TDI was recognized by students in Galaudet University’s Department of Business as the Organization of the Year 2002.

Twenty-two captioning providers formed the Accessible Media Industry Coalition (AMIC), a trade association to address quality issues in captioning and audio-description. Real-time voice-to-text captioning and CART using automatic speech recognition becomes widely used in the marketplace. Walt Disney World provided breakthrough technology of mobile captioning through handheld

receivers for use while waiting in lines for certain attractions.

2003 — TDI returned to Las Vegas, Nevada for the 15th Biennial TDI International Conference. Voice over Internet Protocol (VoIP) raised many new accessibility and funding questions as legacy landline telephone service wanes. The FCC approved Ultratec’s CapTel as an enhanced voice-carry-over TRS service and other TRS enhancements such as Call-Waiting; Call-Release; 900-number Dialing and other features. With TDI’s support, Brenda Battat, the Executive Director of HLAA had spent many years collaborating with phone manufacturers and service providers to make their digital wireless handset phones hearing aid compatible (HAC) within three years. In addition to a new version of EnVision SL, Sorenson launched the VP-100; the first TV set-top videophone mass-produced for deaf and hard of hearing users and implements its own video relay service.

TDI filed a petition asking and reinforcing the contention made by others that emergency TRS calls be routed to the most appropriate PSAP, rather than be automatically routed to the geographically “nearest” PSAP. The FCC then issued new TRS rules that require emergency calls to 9-1-1 to be routed to the nearest appropriate PSAP. Hospitals nationwide turn to Video Remote Interpreting (VRI) in an effort to address accessibility issues by deaf and hard of hearing patients.



Two national coalitions changed names, CAN changed to the Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN). A second coalition, COR is now the Deaf & Hard of Hearing Alliance — A Coalition of Professional and Consumer Organizations (DHHA).

2004 — Cheryl Heppner from NVRC, with support from Claude Stout and Kelby Brick, released a 40-page *DHHCAN Emergency Preparedness and Communication Report*, that revealed significant gaps and a general lack of coordination in the nation's ability to respond adequately, and gave America's communication network systems a failing grade for not being accessible to deaf and hard of hearing citizens.

The US Department of Homeland Security awarded TDI a \$1.5M Competitive Training Grant for TDI's 2-year proposal to implement the Community Emergency Preparedness and Information Network (CEPIN) Project. CEPIN was developed as a network of four deaf service centers with specialists who go out and provide community emergency preparedness workshops to deaf, deafblind, and hard of hearing people. CEPIN also developed "Disaster Preparedness," an eight-hour course to teach community members and emergency management professionals about best practices in effective communication during emergencies.

The FCC clarified rules that emergency news access regulations do cover acts of terrorism in response to a complaint brought on by a community service agency

decrying the lack of accessible news during the DC Sniper spree in October 2002. In Texas, the San Antonio police installs VRI in police station for deaf victims and witnesses to report crimes in sign language. Sacramento (CA) police began to accept 9-1-1 calls from deaf citizens using text pagers.

As broadband services and video equipment became more affordable, video phones and webcams gradually replace TTYs in many households and businesses. TDI and other organizations filed a petition asking that the FCC make Video Relay Services (VRS) a mandatory TRS feature. TDI and other consumer groups established the National Video Relay Services Coalition (NVRSC). Over 5,500 individuals joined an Internet petition in support of improved VRS standards and for ASL to Spanish relay services. The FCC issued new regulations for VRS providers to provide 24/7 VRS service, and required that 80 percent of all calls be answered within two minutes by January 2007.

Movie theaters in Washington, DC and New Jersey agree in separate settlements to increase their offerings of closed-captioned movies. Internet search engines, Google and Yahoo turn to captioning data as a tool to find online video clips, using words stored within the caption files. The FCC declined more requests for captioning waivers from television program producers.

TDI and other organizations filed a petition to the FCC addressing technical and



non-technical captioning quality issues. Some of the requests TDI made of the FCC include listing contact information of someone who can resolve captioning problems immediately, not having to wait days or weeks for resolution; require fines or penalties for noncompliance with captioning rules, continuous monitoring of captions to ensure that technical problems are remedied promptly and efficiently; meet minimum standards for completeness, accuracy, readability, and synchronicity with the audible portion of the video. The FCC immediately responded, in part, to the 2004 Petition by amending the captioning complaint process and requiring providers to make contact information available. Nearly 10 years later, the FCC adopted captioning quality standards and technical compliance rules to ensure that video programming is fully accessible.



2005 — TDI appointed Jim House as the National Coordinator for its Community Emergency Preparedness Information Network (CEPIN) project and

Trudy Suggs as the National Public Relations Specialist. Regional specialists joined the four

community service centers collaborating with TDI as follows: Stephanie Clark - DEAF Inc., Lise Hamlin - NVRC, Kristina Hakey then Glenna Cooper - CSD of Oklahoma and Christine Seymour - DCARA. TDI became partners with Colonel Thomas Tucker, Rick Matthews, and Charlotte Curtis of the National Center on Biomedical Research and Training at the Louisiana State University in Baton Rouge for the CEPIN project in course development and instructor certification.

TDI had its sixteenth biennial international conference in New Orleans, Louisiana. During the membership business meeting at the Conference, a motion was passed by a majority vote to change TDI's organizational name to Telecommunications for the Deaf and Hard of Hearing, Inc. to acknowledge the growing hard of



hearing population. During the conference, TDI honored captioning providers, advocates, and other supporters for a great 25 years of access to television and videos. TDI and other national organizations continue to oppose many petitions for captioning waivers.



Deaf Section in the Houston Astrodome after Hurricane Katrina (Credit: FEMA)

One month later, Hurricane Katrina made landfall in New Orleans as a Category 4 Hurricane, causing widespread damage. CEPIN and TDI assisted Hurricane Katrina survivors with a fundraising drive to restore their basic telecommunication needs. CEPIN worked behind the scenes to relay reports of no captioning or inaccessible emergency bulletins in the Gulf area to the FCC. Upon receiving complaints that sign language interpreters and videophone installers were being barred from entering the Houston Astrodome and other emergency shelters, CEPIN worked with FEMA's Office of Civil Rights and Civil Liberties to allow personnel in the shelters to provide auxiliary services and ensure effective commu-

nication. In the aftermath of Hurricane Katrina that caused over 1,700 deaths and resulted in \$100 billion damages, President Bush developed a new policy to appoint a disability expert to oversee recovery access and functional needs in future disasters. Emergency Notification System for the Deaf and Hard of Hearing, a joint effort by the Maine Emergency Management Agency, Division of Deafness and the Maine Center on Deafness began sending alerts to deaf and hard of hearing residents in the state.

Claude Stout was appointed to serve as Chair of the Disability Access Working Group, one of the subcommittees of the FCC Consumer Advisory Committee. The FCC instructed industry to provide Video Relay Services (VRS) 24 hours 7 days effective January 1, 2006. The FCC ruled that Spanish relay interpreters will be reimbursed with TRS funds. Hearing aid compatibility issues with digital wireless devices emerges to the forefront. TDI helped the California Coalition of Agencies Serving the Deaf and Hard of Hearing in a Petition for Declaratory Ruling on Interoperability. FCC issued a rulemaking to solicit input from consumers and industry on TV captioning quality issues based on the 2004 joint petition filed by TDI, NAD, DHHCAN, ALDA and HLAA.

2006 — Under the leadership of Sheri Farinha, TDI hosted an E-9-1-1 Stakeholder Council, which led to a summit at the FCC. In TDI's White Paper on Access to 9-1-1 Services, the stakeholders ex-

pressed grave concerns about the fact that the provision of emergency 9-1-1 services to the deaf and hard of hearing communities has lagged behind the provision of such services to the hearing community. Although the technical challenges in providing 9-1-1 services to TRS users are greater than 9-1-1 services associated with traditional voice telephony, all Americans need rapid action from first responders. As a result, all stakeholders in the provision of emergency services must be committed to overcoming the technological challenges they are facing to ensure that those who are deaf or hard of hearing receive critical emergency services when needed.

In August, the FCC expanded on an earlier clarification to the effect that broadcasters in the top 25 markets were not required to caption emergency announcements if they were unable to do so in good faith and listed steps that broadcasters should take to ensure full coverage and compliance with regulations. Neil McDevitt, a deaf volunteer firefighter from North Wales, PA, was appointed to lead the CEPIN Project while Jim House resumes his public relations duties at TDI. Lisa Bothwell becomes the new Public Relations Specialist. Four pilot workshops for the CEPIN course “Emergency Preparedness and the Deaf and Hard of Hearing Community: Taking the First Steps to Disaster Preparedness” were held in San Francisco, Tulsa, Boston and Philadelphia and fifteen instructors were certified. CEPIN developed a new one-stop

center emergency preparedness website along with quarterly newsletters and FAQ sheets about different disasters.



Robert Engelke, Kevin Colwell, and Ron Schultz discuss Ultratec’s plans for its new CapTel captioned telephone service.

The FCC determined that Internet Protocol (IP) captioned telephone service (IP CTS) is a reimbursable TRS expense, which made it more attractive for employers to accommodate their workers’ ability to answer the phones on the job. Captioned telephone relay services became available in 42 states, as well as to federal workers and retirees in all states and territories. Ultratec licenses its CapTel technology to Hamilton Relay and Sprint Relay.

Because Every Conversation Matters

A promotional graphic for Purple and ZVRS. It features a purple-to-orange gradient background with a blurred image of people in a meeting. The Purple logo is on the left, and the ZVRS logo is on the right. Below the logos are the website URLs purplevrs.com and zvrs.com.

Purple
purplevrs.com

ZVRS
zvrs.com



HDTV transition begins as captioning users experience glitches in viewing CEA-708 captions on new digital TV sets. The 100% captioning benchmark arrives for all new non-exempt television programming. In September, the FCC issued nearly 500 waivers to nonprofit video programmers granting permanent exemptions and bypassing public comment periods to create a new category for program providers to claim exemption based on undue burden. Evidence surfaced that the FCC did not follow its own protocols for reviewing requests in the Angler's Exemption Order. TDI and other organizations filed an application for review, resulting in further modifications of policy to balance consumer and broadcaster interests. The FCC agreed to put all future petitions for waivers on their website to allow for public comments, inform all petitioners affected by those waivers that those waivers were in fact, temporary, not permanent.



Executive Director, Claude Stout gave a presentation about technology access at the International Deaf Forum in Fez, Morocco.

2007 — Nearly 500 people “left their hearts” in San Mateo, California, during the 17th Biennial TDI Conference. At the Conference, the new TDI logo and quarterly magazine “TDI World” were unveiled. The TDI Board completed its new strategic planning document titled,

TDI Mission 2010. The strategic goals included: policy development and advocacy in telecommunications, media, and information technology; applications of existing and emerging technologies; consumer education and involvement; and networking and collaboration.

TDI received a second \$1.3 million grant from the Federal Emergency Management Agency (FEMA) to develop an online course designed for emergency management people on how to incorporate access and functional needs populations into mass care shelter planning. CEPIN expanded training of its first workshop, Emergency Responders and the “Deaf and Hard of Hearing: Taking the First Steps to Disaster Preparedness” under a new partnership with the Rural Domestic Preparedness Training Center at Eastern Kentucky State University.

E9-1-1 Stakeholder Council convened with the US Department of Transportation to stress access needs in Next Generation 9-1-1 that will incorporate more avenues for people to obtain emergency help.

TDI participated in a two-day VRS demo on Capitol Hill that featured Marlee Matlin as its spokesperson, demonstrating the impact that the videophone has on deaf people today. In 1964, AT&T had demonstrated the Picture-Phone at the New York World's Fair. Calls using this first videophone would have cost \$21 for a three-minute call over an analog network. That equals \$120 in today's dollars.



Led by Karen Peltz Strauss, Rosaline Crawford of NAD, and Jenifer Simpson of the American Association of People Disabilities (AAPD), the Coalition of Organizations for Accessible Technology (COAT) was formed. Advances in technology created gaps in national policy during the transition from its legacy infrastructure to internet-based digital technologies. COAT's ultimate goal was to see the Communications and Video Accessibility Act (CVAA) passed. Its agenda included expanding Section 255-type accessibility provisions to internet-enabled communication products and services; extending relay obligations to internet-enabled services; establishing a telecommunications equipment distribution program for deafblind people; widening the scope of the Television Decoder Circuitry Act to include all devices that playback video programming; extending closed captioning obligations to internet videos previously shown on television with captions; requiring easier access to accessibility features such as a captioning button on TV remotes and voice navigation for blind viewers; and restoring video description rules. Other goals include improving Hearing Aid Compatibility rules and



improving access to emergency services. By the time the CVAA was passed in three years, more than 300 organizations had signed on with COAT.



On October 17, 2007, Claude Stout presented testimony to the House Subcommittee on Technology and the Internet, chaired by Rep. Markey, about the difficulties in accessing captioning on new digital television sets. Ms. Jenifer Simpson (AAPD) sits behind him.

In a historic first for a TDI Executive Director, Claude Stout testified on behalf of COAT about digital television transition issues with captioning before the US House Subcommittee on Telecommunications and the Internet. The switch over to high-definition digital television brings nightmares to many early adopters who rely on captioning. The FCC begins an educational campaign to promote a digital-to-analog converter box coupon program for viewers that still use the older analog TV sets to receive programming from over the air using “rabbit-ears” antennas.

TDI participates in the VRS Demo in the US Capitol. L-R Andrew Phillips, Jim House, Scott Recht, Marlee Matlin, Claude Stout, and Gloria Carter





L-R Claude Stout, Ken Glickman, Jim House, and Allie Friends in early 2000.

L-R Claude Stout, Carol Yeh, Ken Samson, Terry Berrigan, and Fadi Abu-Shaaban, in the late 1990's.



Staff

Implementing TDI's Goals Via Programs and Services

These individuals have been the face of TDI's office operations and advocacy activities over the years. Their efforts have been reflected in the annual Blue

Book Directory and Resource Guide, and the quarterly TDI World magazines. They have given the Executive Directors their full support to produce/deliver TDI's programs and services in the most efficient manner possible.



TDI Staff

1968 TO 1978:

H. Latham Breunig,
Executive Director
Nancy Breunig

1979 TO 1983:

Barry Strassler,
Executive Director
Denise Hanlon
Diane Hoke
Sharon Legler

1984 TO 1986:

Tom Mentkowski,
Executive Director
Mitch Travers
Susie Wilding (O'Hara)

1987 TO 1996:

Alfred Sonnenstrahl,
Executive Director
Nancy Abbott
Linda Bachman
Eugene Bergman
Terry Berrigan
Steve Brenner

Anne Edwards
Paula Holbrook
Elaine Montgomery
Ken Samson
John Skjeveland
Barry Solomon
Gail Steever (Masek)
Mitch Travers

1997 TO 2018:

Claude Stout,
Executive Director
Fadi Abu-Shaaban
Sharon Applegate
Linda Bachman
Terry Berrigan
Lisa Bothwell
James Brune
Gloria Carter
Erin Casler
Stephanie Clark
Glenna Cooper
Don Cullen
John Egbert
Alice Friends

John Garner
Ken Glickman
Kristina Hakey
Lise Hamlin
Byron Hampton
Cheryl Heppner
Jim House
Eric Kaika
Tayler Mayer
Robert McConnell
Neil McDevitt
Dr. Roy Miller
Suleiman Notta
Andrew Perlman
Scott Recht
Michele Roseman
Ken Samson
Helena Schmitt
Christine Seymour
John Skjeveland
Trudy Suggs
Robert Triana
Jenny Witteborg
Carol Yeh



Congratulations TDI on **50** years OF TELECOMMUNICATIONS ADVOCACY.

*Thank you for
letting us be a
part of the journey.*



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VIP COMMUNICATOR



1980
SUPERPHONE



1985
SUPERPRINT



1990
UNIPH



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P L E W I T H P E O P L E



1993
PHONE



1998
COMPACT/C



2003
CAPTEL 200



2012
CAPTEL 840i

From this...



...to this...



...to today.



Repackaging TDI

Editor's Note: This article was adapted from an article by Dr. Roy Miller that appeared in TDI World, Volume 38, Issue 2.

Some of you may remember the antiquated TDI logos at the top and on the left that we had used for many years. The second logo was created at a time when TDI was promoting access to TTYs for deaf and hard of hearing people.

After many new draft logo versions were considered by the TDI Board, a new logo was selected in 2007. That logo is shown above on the right, and here is how the Board came to decide on the new logo. The letters “TDI” have a forward slope greater than standard italics. This is to represent the fact that TDI is a forward leaning organization, always looking to the future. We are constantly trying to be proactive and promote the resolution of technology access issues in the design stage, rather than having to seek some retrofit solution. The circle of dots of increasing size surrounding “TDI” represents the world around us, and indicates that the amount of accessible technology in the world is continually increasing — in part due to the efforts of TDI. The dots increase in size

as one moves clockwise around the circle (rather than counter-clockwise), suggesting that the world is moving “forward” (not backward) on the long journey of providing access to people with hearing loss. And finally, the dot over the “I” is a different color (red) to remind us that TDI serves “individuals” who are deaf and hard of hearing. Our focus is not on the bottom line of industry (making a profit), nor on the partisan politics that often play such an important role in the lives of government officials, nor on preserving a culture, nor on promoting the preferred communication method of one group over another. Rather, our focus is on the individual, and our efforts are guided by a sincere desire to see that all telecommunications, media, and information technologies are accessible to every single person with a hearing loss.

We have been asked “With all the changes, what does ‘TDI’ mean now?” And our response is that TDI is an organization that is: Working For...

Telecommunications
access to meet the

Daily needs of

Individuals who are deaf
and hard of hearing

TDI GROWS IN STATURE

2008 – PRESENT



TDI GROWS IN STATURE

2008 — TDI offered weekend Consumer Advisory Training seminars sponsored by Hamilton Relay in Fairfax, VA, Boston, MA, Madison, WI and Sacramento, CA. The seminar participants learned about different disability rights laws and how to advocate effectively, with lessons from leading advocates in TDI history.



E-911 Stakeholder Council from L-R Patrick Halley, Sheri Farinha, Cheryl King, Jenny Hansen, Dr. Judy Harkins, and Claude Stout – 2008.

The efforts of TDI's E-9-1-1 Stakeholder Council have begun to bear fruit. The U.S. Department of Transportation

(DOT) tested proof of concept for the Next Generation 9-1-1 (NG-9-1-1) services. The testing sites were in Rochester, NY, St. Paul, MN, Seattle, WA and the states of Indiana and Montana. Among other things, the goals of the test included determining the ability of Public Safety Answering Points (PSAPs) to accept voice, data, video, and text via Instant Messaging (IM) and Short Messaging Service (SMS), and thus improve 9-1-1 access for deaf and hard of hearing people. TDI also filed comments in the FCC's Wireless E-9-1-1 Location Accuracy Requirements proceeding to ensure that the E-9-1-1 system is designed to include users that are deaf or hard of hearing.

TDI participated in national election activities by sponsoring local delegates at the Democratic convention in Denver, CO and the Republican convention in Minneapolis, MN.



TDI led an ad-hoc coalition of more than ten consumer organizations in drafting a list of over 60 recommendations for President Barack Obama's Transition Team agenda. The nation's video relay and IP-relay service providers prepared for the implementation of the FCC-mandated 10-Digit Numbering Plan implementation that would connect users of Internet-based relay services with each other, with hearing people and with 9-1-1 services using just one local telephone number.

ABC led as the first major network to caption all of its prime-time programming online as competitors followed suit with partial listings. The transition to digital television progressed as analog broadcasts began to cease. Captioning tools for online user-generated media proliferated on major video streaming sites such as YouTube.com.

TDI received funding from the Leadership Conference on Civil Rights to promote the digital television transition to deaf and hard of hearing people across the nation and participated in Digital TV (DTV) Transition summits and workshops at the FCC. Jim House gave a presentation with Greg Hlibok about the DTV Transition as well as captioning issues to the Virginia Association of the Deaf Conference in Fairfax, Virginia, where the electrical power went out half-way through the presentation.

2009 — “Washington, D.C.: Where Access Begins” was the theme of the



In 2009, U.S. Representative Edward Markey, D-MA poses with Claude Stout, Karen Peltz Strauss, and Dr. Roy Miller after receiving the Karen Peltz Strauss Public Policy Award from TDI during its 18th Biennial International Conference in Washington, D.C.

18th Biennial TDI International Conference. Conference participants met with their Congressional representatives and advocated support of the 21st Century Telecommunications and Video Accessibility Act (CVAA) or H.R. 3101 at the United States Capitol. Despite the massive national attention devoted to other issues, such as the wars in Iraq and Afghanistan, the economy and health care reform, the CVAA bill garnered more than 20 co-sponsors since its introduction by Representative Edward J. Markey (D-MA).



TDI and consumer groups filed a Petition for Partial Reconsideration of the December 19, 2008 Second Report and Order and Order on Reconsideration to not authorize individuals without a hearing or speech disability to obtain ten-digit numbers from the VRS Providers Report and Order. A Notice of Inquiry, a Further Notice of Proposed Rulemaking, and Order was also issued that would take steps to further improve VRS quality, authorize skills-based routing and deaf-interpreter trials; and seek further VRS reforms. This was followed by an Emergency Petition For Stay of requirements in the August 11, 2009 Public Notice governing the use of toll-free numbers for Internet-based Telecommunications Relay Services Report and Order that adopted rules to improve assignment of telephone numbers associated with Internet-based Telecommunications Relay Services (iTRS).

Videophone users were able to easily switch to ten-digit local telephone numbers in a move designed to link physical addresses and phone numbers, simplify calling among deaf videophone users and between users and video relay services and emergency call centers. Real-Time Text (RTT) emerged as a viable alternative to the TTY in the digital age where users could see the other party type character-by-character without having to wait for blocks of text to be sent at once when pressing the Return key.

Online captioning appeared on many more websites as Google announced automatic captioning for uploaded YouTube video using speech recognition. This solution addressed the massive scale of

videos uploaded to YouTube at a rate of 20 hours per minute. At first the captions were run-on strings of words with no punctuation or capitalizations to separate sentences. Since then the auto-captioning technology has improved with the use of artificial intelligence. In some colleges, professors can now give lectures and their PowerPoint will display captioning with improved accuracy.

Local TV news stations turned to voice captioning as a lower-cost alternative to steno-captioning. Professional sports and college stadiums began to install captioning systems delivering text to message boards and handheld devices. The FCC formed a task force with representatives from broadcasters, captioning providers and consumer groups to work on digital television closed captioning technical issues. On this task force was Ron Bibler, a financial advisor from Montana, and an early adopter of HDTV technology who discovered that some networks were captioning their analog programming, yet they were avoiding captioning identical shows in digital format on a “different network”.

Congratulations to TDI on
50 years of advocacy for
accessible communications.

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Subject Matter Experts (SMEs) on CEPIN's second course, 'Collaboration Works' pilot online training, included several leaders from the disability and access and functional needs community. This online training was intended to familiarize emergency responder personnel with the resources available to them in the access and functional needs and disability community. The project was coordinated, designed, and developed in collaboration with TDI, the CEPIN project, and St. Petersburg College's Center for Public Safety Innovation in Florida. (Front, L-R): Jenifer Simpson (Washington, DC), Mary Goepfert (New Jersey), Michele Roseman (Maryland), Mary Anyan (Florida-Administrative Assistant for Center of Public Safety Innovation at St. Petersburg College) and Neil McDevitt (Pennsylvania) (Rear, L-R): Chris Littlewood (Florida – Project Coordinator for NTPI at St. Petersburg College), Mike Monge (Minnesota), Leighton Jones (New York), Bruce McFarlane (Virginia) and Bentley Lipscomb (Florida).

Neil McDevitt and Michele Roseman developed CEPIN's second training program at the National Terrorism Preparedness Institute in St. Petersburg, FL. "Collaboration Works" is an online course offered by FEMA to educate first



FCC recognized with a framed Chuck Baird US flag paintbrush artwork for its 75th Anniversary by TDI and other Consumer Groups Front (L-R): Brenda Battat (HLAA); Karen Peltz Strauss (KPS Consulting); Julius Genachowski, Chairman of the FCC; Jamie Pope (AADB); Cheryl Heppner (DHHCAN) and "Galaxy". Back (L-R): Sherrese Smith, Legal Adviser to the FCC Chairman for Media, Consumer and Enforcement Issues; Dr. Judy Harkins (Gallaudet University); Dr. Roy Miller (TDI); Claude Stout (TDI); Joe Duarte (TDI); Shane Feldman (NAD); and Jim House, TDI. (Credit: TDI)

responders and shelter management about dealing with the disability and the access/functional needs populations.

TDI participated in developing the National Broadband Plan to ensure that people with disabilities including those who are deaf have resources that empower them to call 9-1-1 in case of an emergency. Waterloo, Iowa was the first jurisdiction to accept 9-1-1 text calls from T-Mobile customers.

After several meetings between TDI and other consumer groups, the US Depart-



President Obama signs The Twenty-first Communications and Video Accessibility Act of 2010.

ment of Transportation released the Airline Carrier Accessibility Act's (ACA) first major regulatory overhaul, which resulted in positive changes for deaf and hard of hearing air travelers, including captioning for in-flight entertainment.

2010 — TDI and other disability organizations celebrated at the White House ceremony marking the passage of the CVAA as President Barack Obama signed the bill into law in the East Room on October 8, 2010. Among other things, the CVAA requires television programming shown on the Internet to carry captions and makes it easier for people to access the captioning controls on television remotes.

TDI testified before the US Access Board during its hearings on revised standards and guidelines for Section 508 of the Rehabilitation Act and Section 255 of the Telecommunications Act, praising the focus on the abilities of the end users rather than on any device or transmission

protocols that could be outdated as technology evolves.

TDI assisted HLAA on making captioned telephone relay services mandatory in all 50 states. Hamilton Relay and Sprint Relay released their mobile apps for captioned telephone users on the go. HLAA was founded in 1979 as Self-Help for Hard of Hearing by Rocky Stone, a retired CIA operative who discovered that services for hard of hearing people were scarce even though they rank high in disability populations.

With support from TDI, the FCC removed personal toll-free numbers from the ITRS database and imposed monetary restrictions on calls made by employees who work for a VRS provider.

The implementation of the National Broadband Plan Comments spurred numerous comments to public notices concerning access to 9-1-1 and emergency alerting services on broadband networks. More government agencies and hospitals turned to video technology in an effort to enhance access for employees and patients. The DC Metropolitan Police installed video interpreting software in police cruisers in pilot program to improve access to deaf residents.

With the advent of mobile two-way video calls and the prevalence of texting, deaf and hard of hearing people were no longer tethered to videophones at home or at the workplace. After Apple unveiled iPhone 4 and other products with video calling features, VRS providers released

new versions of their videophone software and mobile applications or “apps” for Apple products using FaceTime.

The American Association of the Deaf Blind (AADB) received assistance from TDI on filing comments to set up the National Deaf Blind Equipment Distribution Program as required by the CVAA.

TDI assisted in a successful lawsuit where a deaf WalMart pharmacist was barred by the Alabama State Board of Pharmacy from accepting prescription orders over the phone through the relay because the CA was not licensed to dispense medicine.

TDI and other deaf and hard of hearing organizations filed a Petition for Rulemaking with comments supporting this higher standard to eliminate the class exemptions that have impaired the effectiveness of universal captioning rules. The FCC streamlined captioning complaint procedures and required video distributors to post contact information online for quicker handling of captioning complaints by viewers.

2011 — The 21st Century Communications and Video Accessibility Act (CVAA): Challenges and Opportunities was the theme for the 19th Biennial TDI International Conference in Austin, Texas during the first week of June. Outgoing FCC Commissioner Michael J. Copps presented the keynote at his second TDI Conference. As Copps looks back over the past ten years since his’ first keynote speech

at the 2001 TDI Conference, he said, “As many of you know, I am completing my time at the Commission this year. But I also want you to know this: I am going to continue speaking out and working on these issues in the years ahead. Your voices inspired me as I walked through the doors of the Commission ten years ago and they continue to inspire me today. Your work, my work—our work—is not done. But we’re on the march, we’re making progress, and we shall overcome.”



Judy Viera discusses her presentation with Phil Jacob, Jim House, and Robert McConnell at the TDI Conference in Austin, Texas.

TDI and other consumer groups filed the Universal Captioning Petition that asked the FCC to eliminate some of the long-standing exemptions to captioning of certain TV programs. Several exemptions include late-night programming airing from 2am to 6am local time; commercials under five minutes; locally produced non-news programming, interstitials, PSAs and station promos; channels with a budget of less than \$3M, and TV news programming in smaller cities under the

Top 25 Designated Market Areas..

TDI assisted American Association of the DeafBlind (AADB) in filing a petition for rulemaking with the FCC proposing rules governing communication facilitators that will physically assist deaf blind callers using video relay services by relaying the other party's dialogue during the call.

TDI filed comments with the US Department of Justice (DOJ) in its advanced notice of proposed rulemaking (ANPRM) that will update the Americans with Disabilities Act (ADA) regulations on movie captioning and video description and opposed DOJ's proposal for requiring access on 50% of the screens within five years, and advised on captioning standards for

movie theaters. TDI also filed comments with DOJ in a second ANPRM that will update ADA regulations on accessibility of websites operated by state and local government offices and public accommodations, encouraging captions on all videos. In addition, TDI filed comments with DOJ in its third ANPRM that will update ADA regulations on equipment and furniture, specifically those that provide electronic information technology such as access to information kiosks and other communication devices such as restaurant drive thrus, ATMs, building intercom systems and other audio-centric communication systems. Lastly, TDI filed its fourth comments with DOJ in its ANPRM that will update ADA regulations on access to the Next Generation 9-1-1 Access to emergency services operated by state and local government entities, expanding communication options for people who are deaf or hard of hearing to include Internet based communication such as SMS, email and video calls.

TDI and other Consumer Groups presented the TRS Policy Statement - Functional Equivalency of Telecommunications Relay Services: Meeting the Mandate of the Americans with Disabilities Act" to the FCC. The statement defines functional equivalency as "Persons receiving or making relay calls are able to participate equally in the entire conversation with the other party or parties and they experience the same activity, emotional context, purpose, operation, work,



service, or role (function) within the call as if the call is between individuals who are not using relay services on any end of the call.”

The FCC overturned the Anglers Order, eliminating nearly 300 closed captioning exemptions and requiring many religious and small nonprofit producers to start captioning or reapply for continued economic burdensome exemptions. The FCC also proposed a higher standard for future exemptions.

TDI submitted a proposal with the United States Copyright Office to exempt the addition and improvement of accessibility features, like closed captions, for online videos, DVDs, and Blu-ray from the anti-circumvention measures of the Digital Millennium Copyright Act (DMCA). The DMCA forbids users of copyrighted works from circumventing technological protection measures designed to control access to the works. TDI also drafted and filed reply comments regarding the proposal and testified in support of the proposal at the Copyright Office. The Copyright Office granted the exemption in 2012.

TDI increased its online presence through numerous eNotes and social media postings through Constant Contact on social media outlets such as FaceBook and Twitter, acknowledging significant accessibility milestones, additions to FCC regulations, TDI sponsors, surveys, action alerts and many other topics.

2012 — A coalition of consumer groups led by TDI and Gallaudet TAP filed a complaint against Amazon for noncompliance with captioning rules. The Consumer Groups also petitioned the FCC to reconsider its exemption of online video clips from the IP captioning rules that was adopted requiring that full-length online Internet Protocol-delivered programming be captioned. The same order also required substantial improvements to the captioning capabilities of various video playback and recording devices. The FCC incorporated many of the proposals and interpretations advocated for by TDI and other deaf and hard of hearing organizations. FCC regulations for captioning on the Internet go into effect for new pre recorded programming shown on the Internet after airing on television. The leadership work by TDI and one of its pro-bono law firms, the Institute of Public Representation (IPR) on Internet captioning garner awards from TDI’s sister advocacy organization, NAD, along with Computer Prompting and Captioning.

TDI filed a Petition for Reconsideration on FCC rules to implement access to advanced communications services as applied to stand-alone software. TDI also drafted oppositions to two industry petitions for waiver of the CVAA rules and succeeded in persuading the FCC to deny one and partially deny the other.

TDI drafted and filed an amicus brief, joining more than 15 other accessibility organizations and researchers in Authors

Guild v. Hathitrust, a Second Circuit Court of Appeals case concerning efforts by university libraries to make their collections accessible to patrons with disabilities. IPR chronicled the extensive history of Congress's efforts to make copyrighted works accessible to people with disabilities, and urged the Court to conclude that the accessibility efforts of libraries constituted non-infringing fair uses. In 2014, the Second Circuit Court of Appeals ruled in favor for the libraries, concluding that the accessibility efforts of libraries on copyrighted media constituted non-infringing fair use.

In a partnership with AT&T, TDI provided online resources for a deaf and hard of hearing driver safety campaign at <http://ItCanWait.com>. Four videos were made in sign language with open captions advising deaf and hard of hearing drivers of the dangers of texting while driving.

New public videophones placed at hospitals, libraries, schools and community service centers for low-income people who cannot afford Internet access at home.

A federal judge ruled that the ADA is applicable to online services, which led to a settlement between NAD and Netflix where the vendor commits to captioning its entire online library of streaming videos within two years. Amazon and Hulu follow with similar agreements.

2013 — Areas offering Text-To-9-1-1 grew as jurisdictions upgrade their PSAPs or 9-1-1 call centers. Meanwhile,

automatic bounceback error messages warn callers who attempt to text 9-1-1 in areas not providing that service to call a different way using the TTY or relay services.

The FCC implemented new rules for IP Captioning that required all television programming to carry captions when displayed online through the Internet. TDI, with the help of Dr. Christian Vogler and the Technology Access Program (TAP) at Gallaudet University, filed a report on compliance with FCC's Internet captioning rules, noting non-compliance by Amazon. The FCC issues the User Interfaces Order, improving the ease of turning closed captions on and off on various devices.

With the collaboration of TAP, TDI hosted the International Telecommunications Union (ITU) meeting at Gallaudet University on media accessibility.. ITU is the global telecommunications standard-setting body headquartered in Geneva, Switzerland, Andrea Saks represents TDI in ITU and other international telecommunications groups.



From left to right: Kathy Evans, Claude Stout, Dr. Lauren Storck, Bill Graham, and John Waldo during the 2013 Joint TDI-ALDA Conference in Albuquerque, NM. The panel focused on the power of citizen advocacy, that of how we best harness our passions, fortify planning for advocacy, and ways to persevere by pooling and sharing.

During October, TDI held its 20th conference jointly with Association of Late Deafened Adults (ALDA) in Albuquerque, New Mexico, a historical first conference hosted by two national organizations serving deaf and hard of hearing people. ALDA's history began in a Chicago pizzeria. Over pizza and beer, Bill Graham and several other late-deafened friends founded ALDA in 1987. With the tagline "Whatever Works" its members have made their preferences known loud and clear to have real-time captions as a support service for meetings and other live events. The joint conference was chaired by Dr. Roy Miller who was also the TDI President and a retired political science professor at Southern Illinois University.

Thanks to the CVAA, several state telecommunication equipment distribution programs began distributing new technology to help deafblind users as part of the new National Deaf Blind Equipment Distribution Program, also known as, "ICanConnect".

Responding to reports of limited or no access, the Federal Emergency Man-

agement Agency (FEMA) rolled out new tools to help aid deaf and hard of hearing people in obtaining access to services in disaster recovery centers, such as enhanced listening devices, iPads with real-time video remote sign language interpreting apps and captioned telephones, while also promoting participation in local Community Emergency Response Teams (CERT). In collaboration with Homeland Security and FEMA, NPR Labs tested its widely acclaimed emergency alerting system project for deaf and hard of hearing population, starting with pilot tests along the Gulf Coast states. Press conferences that include sign language interpreters and closed captioning help spread emergency information that deals with response and recovery from winter storms, summer wildfires, and other natural or manmade hazards. FEMA rolls out Wireless Emergency Alerts (WEA) to send timely notifications to all devices within targeted disaster zones.

The FCC adopted comprehensive reforms to protect and strengthen video relay services to support innovation and competition, drive down ratepayer and provider costs, and eliminate incentives for waste, fraud, and abuse.

TDI and other consumer groups participated in meetings with industry and proceedings with the FCC to address one of the "big picture" issues facing telecom regulation: the evolution of the Public Switched Telephone Network ("PSTN") from "legacy" time-division multiplexing ("TDM") systems toward an Internet



protocol (“IP”) based network.

TDI filed a Petition For Stay of the requirement that low income IP CTS users pay \$75 for software or hardware pending outcome of the Final Notice of Proposed Rulemaking. Instead the FCC will rely on IPCTS rules on user registration and self-certification.

TDI filed an amicus brief in Greater Los Angeles Agency on Deafness (GLAAD) v. Cable News Network, Inc. (CNN), a Ninth Circuit Court of Appeals case where CNN claimed that its failure to caption its videos was protected by the First Amendment. The amicus brief argued that the closed captioning regulations were actually consistent with the First Amendment. The court ruled against CNN in 2014.

TDI also drafted comments asking the FCC to adopt new rules to allow parties submitting documents related to closed captioning exemptions to file electronically. In the spring of 2014, the FCC adopted an order to allow electronic filing.



From L-R: Andrew Phillips, Tom Wlodkowski, Cheryl Heppner, Claude Stout and Jim House at Comcast Center, Philadelphia, PA, April 22, 2013.

2014 — Efforts from TDI and other leading advocacy organizations suc-

cessfully prompted the FCC to improve closed captioning. TDI filed opposition to dozens of requests for captioning waivers. TDI also filed an ex parte letter calling on the FCC to eliminate certain categorical closed-caption exemptions from their rules and FCC’s setting groundbreaking TV closed captioning quality standards. In addition to the FCC requirement that full-length programming that appears with closed-captioning on TV also include captioning when the video is posted online, is extended to short clips of that same TV content.

The FCC issued a Second Report and Order that amended rules to hold video programmers responsible for ensuring the insertion of closed captions on all their nonexempt programming; concluded that the obligations associated with compliance with the closed captioning quality rules shall be divided between Video Programming Distributors (VPD) and video programmers, the responsibilities associated with ensuring the provision of closed captions on television shall remain primarily with VPDs.

TDI advocated for strong location accuracy measures with the National Emergency Number Association (NENA), the Association of Public-Safety Communications Officials (APCO) and the four nationwide wireless carriers in the U.S.—AT&T, Verizon, Sprint and T-Mobile – to form a location accuracy accord that calls for leveraging location information from distributed antenna systems (DAS), small

cells, Wi-Fi access points and Bluetooth beacons that are becoming increasingly prevalent in today's indoor environments. As part of the agreement, which the FCC approved, the carriers said they will obtain a location fix using heightened location accuracy technologies for 50 percent of all wireless 9-1-1 calls within three years; 75 percent within five years and 80 percent within six years.

Vermont and Maine became the first two states to fully enable text-to-9-1-1 via all four major carriers. The FCC adopted an order that requires all wireless carriers and other text messaging providers that enable consumers to send text messages to and from U.S. phone numbers to deliver emergency texts to PSAPs that request them by the end of the year. Sprint, Verizon Wireless, T-Mobile and AT&T voluntarily committed to providing text-to-9-1-1 service capability.

2015 — More than 350 attended the 21st Biennial TDI Conference in Baltimore on August 20-22 where FCC Chairman Tom Wheeler gave a keynote

address. He said, “With the broadband revolution, we have an opportunity to get in on the ground floor as technologies are being developed. Accessibility must be a first thought, not an afterthought. At the FCC, we are determined to seize this new opportunity.”

AT&T filed a petition for rulemaking on replacing TTYs with Real Time Text (RTT). The FCC granted AT&T and Verizon two temporary, limited waivers of the Commission's requirements to support text telephony (TTY) technology on wireless networks to the extent that they use Internet Protocol (IP) technologies such as RTT.

TDI, NAD, and HLAA (collectively, the Consumer Groups) and the Technology Access Program at Gallaudet University (TAP) jointly filed a response to a filing by the National Association of Broadcasters (NAB) regarding the experiences they have had in following the new Electronic Newsroom Technique (ENT) rules and the extent to which the new ENT rules have been successful in providing full



Claude Stout, TDI Executive Director of Telecommunications for the Deaf and Hard of Hearing, spoke on Thursday at the Senate Committee on Commerce, Science, and Transportation in its Communications, Technology and Internet Subcommittee hearing regarding "Locating 9-1-1 Callers in a Wireless World." - 1/16/2014 (Credit: NVRC)

and equal access to live programming on television (ENT Report). We differ with NAB on whether substantial problems remain with the quality of captioning using electronic newsroom technology (ENT); on evidence that ‘enhanced’ ENT procedures implemented over the past year have yielded meaningful improvements; on whether the issues raised

during a transition to real-time captioning pale in comparison to the significant problems that remain with ENT; whether despite quality problems with real-time captioning, that the appropriate response is to address those problems head-on by requiring functional standards for high-quality real-time captions, and not to continue allowing the use of ENT cap-

Andrea Saks



L-R: Gary Ferenzo and Andrea Saks, TDI’s Representative in one of the meetings during the 1990’s at International Telecommunications Union (ITU). Gary Ferenzo from the US State Department was then the head of the US delegation to the ITU. Dick Brandt, a technical advisor to TDI, not pictured, was also a member of that delegation for the meeting.



L-R: Andrea Saks, TDI Representative, Malcolm Johnson, current Deputy Secretary General of International Telecommunications Union (ITU), and Hiroshi Kawamura in one of the ITU meetings at Cairo, Egypt in 2008. Hailing from Tokyo, Japan, Mr. Kawamura promotes access for persons with disabilities to information given in disaster preparedness. There, Ms. Saks and Mr. Kawamura were awarded the ITU World Telecommunications and Information Society Award.



Houlin Zhao, now the current Secretary General of the International Telecommunications Union (ITU) was the first person to allow Andrea Saks to have sign language interpreters for some ITU functions in 2003. The interpreting services were provided in three languages.

Over the years, Andrea Saks has followed in the footsteps of both parents, Andrew and Jean Saks. After introducing the TTY to England, she continues her involvement in pushing for telecommunications access on an international scale. She currently

attends various International Telecommunications Union (ITU) meetings around the world. ITU is a global standards setting body is fortunate to have Andrea as a subject matter expert in promoting access by people with disabilities in the telecommunication network.

tions with substantial quality problems of their own.

The FCC granted Entertainment Software Association (ESA) a partial extension of the class waiver from the Commission's accessibility requirements for advanced communications services (ACS) for video game software until January 1, 2017.

The US Department of Transportation issued new regulations that require "high contrast" captions to be displayed on all public TV sets in airports. "High contrast" captions are settings that optimize the display of captioning in response to sightings of TV sets that are displaying captions, but rendered unreadable.

TDI Executive Director Claude Stout was appointed by FCC Chairman Tom Wheeler to serve as one of the two Co-Chairs of the Disability Advisory Committee. DAC is a federal advisory committee that provides advice and recommendations to the Commission on a wide array of disability issues within the FCC's jurisdiction and reports to the Chair of the FCC.

The FCC made the National Deaf-Blind Equipment Distribution Program permanent. The FCC issued the Open Internet Order, imposing net neutrality requirements, including transparency requirements to assist consumers who are deaf or hard of hearing in acquiring accessible services. DOJ revised the ADA rules to improve and ensure effective communication.

2016 — TDI received a \$500,000 two-year grant from Google for a captioning correction project called uCaption.



TDI Board updated governance and operational documents, such as its bylaws, investment policy manual, financial operations manual, and employee manual.

TDI and other deaf and hard of hearing organizations held a series of meetings with the FCC commissioners' offices regarding a draft order apportioning the responsibility for the quality of closed captioning among video programmers and video program distributors. The coalition advocated a number of points to ensure that both groups remain fully engaged and diligent in their closed captioning responsibilities. The FCC issued an order agreeing with and incorporating many of the positions advocated for by TDI and the consumer group coalition throughout the proceeding. The FCC adopts amendments to its rules on closed captioning of televised video programming to ensure that millions of Americans who are deaf and hard of hearing have full access to programming. The Order clarifies that responsibility for the quality of closed captioning falls on video programmers that prepare or make arrangements for the captions on their television shows, while the delivery and technical aspects of captioning remains the responsibility of distributors (such as cable or satellite companies). The Commission allocates the responsibilities for addressing and resolving closed captioning provision and quality control issues between video programmers and distributors, based on which

entity has primary control for each issue. The Order also modifies and improves the captioning complaint procedures and certification process.

As of December 21, 2016, 828 local jurisdictions across America (12 percent of a total of 6,800 PSAPs) were able to accept and process text-to-9-1-1 calls.

The FCC undertook several steps to implement new rules to ensure that people with hearing loss have full access to innovative wireless devices. It amended the hearing aid compatibility requirements that are generally applicable to wireless service providers and manufacturers of digital wireless handsets. Specifically, the Commission increased the number of hearing aid compatible handsets that service providers and manufacturers are required to offer as per the two new benchmarks. The first benchmark is that 66 percent of handset models must be compliant following a two-year transition period for manufacturers, with additional compliance time for service providers, and then it ramps up to 85 percent of handset models must be compliant following a five-year transition period for manufacturers, with additional compliance time for service providers. Last, but not least it reconfirmed its commitment to pursuing 100 percent compatibility within eight years.

Suzy Rosen Singleton became the new Chief of Disability Rights Office, Consumer and Governmental Affairs Bureau at the FCC. In one of her first-year achievements, the FCC hosted a showcase event which demonstrates direct video calling, which enables consumers with hearing

disabilities and use ASL to make video calls directly to business and government call centers.

TDI submitted a Letter & Proposal for Leadership and Public Policy to Ensure Equal Access and Opportunity for Deaf, Hard of Hearing, Late-Deafened, Deaf-Blind, and Deaf-Mobile Disabled Americans to Vice President Michael Pence who led the Trump Transition Team outlining recommendations in seven life activities such as Civil Rights Protection & Enforcement, Education, Employment, Health Care, Housing, Transportation, and Telecommunications, Information Services, and Video Programming.

The FCC amended its rules to allow phone companies to replace support for the TTY, an outdated form of analog text telephone communications with support for real-time text (RTT), to provide reliable digital telephone communications for Americans who are deaf, hard of hearing, deaf-blind, or who have a speech disability. The FCC initiated a rulemaking seeking comment on replacing its TTY requirements with rules for the RTT technology. TDI filed reply comments in the proceeding advocating a common implementation standard to achieve RTT interoperability across communications platforms, networks, and devices and for ensuring that RTT be interoperable with telephone relay services. After the presidential election in November 2016, the FCC announced that it would not take action on the proposal without unanimous support from the commissioners. In a hastily arranged series of meetings with FCC Commissioners and staff, TDI and sister consumer groups

with the support of Gallaudet TAP and the TRACE Center urged the Commission not to delay their vote on RTT. In December 2016, the FCC unanimously adopted an order implementing the proposed RTT rules.



FCC Commissioner Mignon Clyburn, and FCC Chairman Tom Wheeler are shown with Claude Stout at TDI's Holiday Party in December 2016.

After the FCC granted RTT the green light, Chairman Tom Wheeler and Commissioner Mignon Clyburn attended

TDI's annual holiday party.

2017 — The 22nd Biennial TDI Conference was held in Bethesda, MD. Ajit Pai was the first Republican-appointed FCC Chairman ever to give a keynote address at the Conference. As Pai described the FCC accessibility agenda, he concluded by saying, “The fourth and final piece of our accessibility agenda might not strike you at first as relevant to accessibility. But our work to bridge the digital divide is critically important to Americans with disabilities. We are aiming to connect every American with digital opportunity regardless of who they are or where they live.”

The FCC approved updates to its various rules for hearing aid compatibility and volume controls on wireline and wireless telephones. The Order also implements

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for all you do to
support the deaf
& hard of hearing
communities.**

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GAINING STATURE



a provision of the CVAA to apply all the Commission's hearing aid compatibility requirements to wireline telephones used with advanced communication services, including phones with Voice-over-Internet-Protocol (VoIP) services. Recognizing the increased reliance on wireless phones, the Order further required that, within the next three years, all wireless handsets newly certified as hearing aid compatible must include volume control suitable for consumers with hearing loss.

The FCC approved new rules to improve the quality and efficiency of video relay services with specialized interpreters for medical, legal, or technical calls; allowing comparison shopping for VRS companies; allowing hearing people who are fluent in ASL to have direct video calls using videophones; and allowing VRS providers to let some interpreters work from home.

The FCC adopted new rules to let television broadcasters use the Next Generation broadcast television transmission standard, also called ATSC 3.0, on a voluntary, market-driven basis while maintaining accessibility requirements.

The Entertainment Software Association (ESA) met the consumer groups led by TDI with support from Gallaudet TAP to

discuss the state of accessibility in gaming and recent strides. The FCC granted ESA what is expected to be the final one-year extension of its current waiver of the Commission's accessibility requirements for advanced communications services (ACS) and equipment for video game software.

Amid the controversy surrounding the rollback of net neutrality rules, the FCC maintained its transparency requirements, letting users know what happens when they use the Internet.

TDI Executive Director Claude Stout was appointed by FCC Chairman Tom Wheeler to serve as one of the two Co-Chairs of the Disability Advisory Committee (DAC). DAC is a federal advisory committee that provides advice and recommendations to the Commission on a wide array of disability issues within the FCC's jurisdiction and reports to the Chair of the FCC.

As of January 26, 2018, 1531 local jurisdictions across America (23 percent of a total of 6,800 PSAPs) were able to accept and process text-to-9-1-1 calls.

CONCLUSION

For an organization of this size, the power of TDI's achievements reach far and



Members of the FCC Disability Advisory Committee (2017).

wide. The visionary foresight of Robert H. Weitbrecht has touched all of us over the years. TDI's collective expertise has brought a human face to technology, and inspired individuals and groups to change the world in their own communities.

Before TDI, each new technology created barriers for deaf and hard of hearing people. Some of us who have lived long enough remember the days when the telephone was attached to the wall with a cord. The TTY was a breakthrough in uniting deaf and hard of hearing people with each other, but by itself, it did not go far enough in connecting us to our communities until relay services came along. Step by step the cord disappeared, and today we can call anyone from almost anywhere, even with video and text.

Many of us remember the days when our TVs were bulky and heavy, just like a TTY. They only showed black and white pictures on three or four channels. At least that was a big improvement over radio where there was sound but no picture. Captioning came along, and it was hailed as the greatest equalizer as we can follow along whatever programs we want to watch. Televisions became flat and skinny, but with impressive video quality.

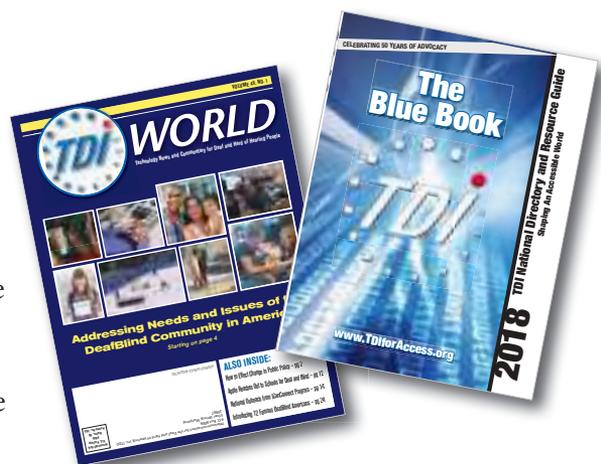
TDI is often called to advise and consult with various industries to ensure that people with disabilities are able to use different products and services. Every step of the way, TDI looked at the barriers and saw opportunity. An opportunity to develop new accessibility features in products while they are in the planning stages rather than an "oops" afterthought.



In the picture, the quote on the slide behind Claude Stout says it all. "Access and functional needs integration is no longer a question, or viewed as "special", but just what we do. Barriers are eliminated one by one in every new product. "



Eric Kaika talking to a group of Gallaudet students participating in a focus group with Entertainment Software Association and Sony Interactive Entertainment on May 7, 2018. Students played several video games and shared ideas to improve gaming accessibility.



TDI Publications today.

A Tale of Two Roberts:

Robert Engelke and Robert Weitbrecht

In 1979, Steve Brenner introduced his friend and fellow TTY agent Robert (Bob) Weitbrecht to Robert Engelke, a young engineer from Madison, Wisconsin who had an interest in assistive technology.

Engelke remembers, “We got to know each other quite well and shared a number of similar experiences and interests (physics, electronics, communication technology, astronomy, and flying to name a few). We also enjoyed a beer together once in a while!”¹

Engelke continues, “I loved talking with Bob especially about his interest in improving the communications capabilities of the deaf community. We spent many hours talking about new ideas and ways to enable text communication in the world of “Ma Bell”. Recall that at that time the telephone network was completely controlled by AT&T. You could not just “hook up” to the telephone network. No, no. It had to be done acoustically and even that was highly regulated. Eventually we were able to break through the AT&T barrier and connect directly to the phone system which allowed a lot of new and better communications technologies to be developed.”²

The tight bond formed during Weitbrecht and Engelke’s friendship continued through the establishment of Ultratec, the company Engelke started



to manufacture affordable, electronic TTYs. Ultratec was the first and only TTY manufacturer to recognize and honor Dr. Weitbrecht’s patent. To this day, every single Ultratec TTY user manual printed includes an acknowledgement to Dr. Weitbrecht’s contributions to TTY technology

At the time, large mechanical text teletype machines, the earliest “TTYs”, were becoming obsolete and spare parts were becoming hard to find. Many companies went into business to manufacture electronic TTYs that at the time cost anywhere between \$650 to one thousand dollars, many of which were not well received by the deaf community because they did not all work well together as promised.

Recognizing that TTYs were a necessity, not a luxury, Ultratec offered a line

of basic text telephones such as the first Minicom TTY, which retailed for \$159. For the first time, individuals who were deaf could afford to communicate more easily with family members via TTYs. More advanced TTYs were loaded with features like printers, Voice Carry Over, Direct Connect that bypassed the use of acoustic modems, ASCII communications, Turbo Code, and auto-answer answering machines. Engelke ensured access for the deaf/blind community with TTYs that featured large-print displays or Brailers. Other Ultratec products included payphone TTYs for access at public facilities and Intellemodems that allowed computers to function as TTYs. More recently, Ultratec released CapTel, a telephone and a service that allows users who can speak well to call directly to family and friends, and read their responses transcribed on a screen through a service using automatic speech recognition.

In the later years of Weitbrecht's career, Engelke hired Weitbrecht as part of Ultratec's engineering team to continue collaborating on innovations to improve telephone access for people who are deaf. Ultratec's national distributor, Weitbrecht Communications Inc (also known today as WCI) is named in honor of Dr. Weitbrecht.

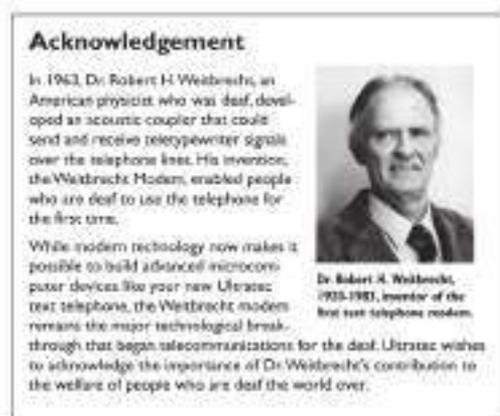
Upon Weitbrecht's retirement in 1983, Engelke asked him to stay on as a consultant at half the salary in addition to patent royalties. On one of their final projects together, they worked on a new modem for Bob's "Dial-a-News" system that for years provided deaf TTY users

with access to a text-news service via telephone.

Weitbrecht was planning to move from his Redwood City home to the Sierra mountains so he could spend more time with his beloved Irish setter, Mickey, and a brand new telescope. Unfortunately, Bob was hit by a car while walking Mickey one balmy California night near his home. The driver apparently saw the dog and while he swerved, he hit Bob instead.

People who knew Robert Weitbrecht were shocked at his untimely death. Some of us barely knew him at the time, but have grown to appreciate his lifetime of contributions, inspiring us to become innovators and advocates. His spirit lives on as the spirit of TDI.

From an example of this partnership, TDI has collaborated with industry to improve their products and make it more accessible and usable by a greater number of people. When you include accessibility features, everyone wins.



Technology Changing Over the Years

Life with Mr. Qwerty

When the TTY became available in the mid-60's, many of us used recycled TeleType machines of various models. The photos below show the evolution of the keyboard, affectionately known as MR. QWERTY from mechanical TTYs to electronic TTY devices, computers, wireless pagers, and now smartphones.



TTYs (Teletypewriters aka the Green Monster)



Desktop TTY



Compact TTY



PayPhone TTY



Computers



Pagers



Smart Phones/Tablets

Technology Changing Over the Years

Relay Services

The original telecommunication relay services (TRS) that predate the ADA were primarily for TTY users with hearing or speech disabilities to communicate with hearing people and vice versa. The state relay services are easy to access by dialing 7-1-1 or a ten-digit toll-free number. As the Internet became prevalent, new technologies were incorporated into TRS, so now we can all use different types of relay services to accommodate our communication preferences using the Internet, captioned telephone, speech-to-text, and even video relay. Some TRS providers offer specialized services targeted toward deaf and hard of hearing users with vision and mobility disabilities, and those who speak Spanish and other languages.



TTY-Voice



Internet Protocol (IP) Relay



Speech-to-Speech (STS) TRS



Video Relay Service (VRS)



Captioned Telephone Service (CTS), then IP-CTS



Special TRS Features for:

- Individuals who are deafblind
- Individuals who are deaf & have a mobility disability
- Individuals who use English as a Second Language



Movie/TV/Internet Captioning

Captioning adds a new dimension to films and video programming. When silent movies ended in the late 1920's, deaf people were cut off from a common entertainment venue. Then in the 1950's the US Department of Health, Education, and Welfare (HEW) started a program to insert subtitles into Hollywood movies and educational films on 16mm film reels. The HEW films were popular with deaf clubs and schools around the country. When open and closed captioning appeared on TV, the number of organizations showing open captioned films dwindled. As public acceptance of captioning grew, we begin to see captioning everywhere, including many Internet videos.



1968 - Reels of 16mm Captioned Films were distributed on loan to schools and deaf clubs from HEW.



1978 - Open captions on TV from WGBH - The Caption Center.



1988 - Line 21 closed captioning.



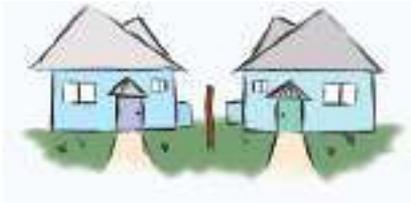
1998 - Live news captioning.



2008 - Internet captioning has become widespread. Many rely on automatic captioning systems to cut costs, but ignore the steps to make the video more readable. A better way would be to review the caption file, edit as needed before posting the video online.

Technology Changing Over the Years

Emergency Communications



1968 - As the first 9-1-1 phone call took place in Haleyville, Alabama, deaf people everywhere had to run to their neighbors for help because the phone system was not accessible to deaf people.



1978 - In the early years, we were taught to dial 9-1-1, and then leave our phone off the hook. This kept the line open for the dispatcher to hear background sounds. Automatic Number Identifier and Automatic Location Identifier were being put into place that tells the dispatcher where each call was coming from.



1988 - When Title II of the ADA required direct access to 9-1-1 Public Safety Answering Points (PSAPs), TDI trained call-takers around the country on how to recognize and handle incoming calls from TTY users. (Photo: TDI)



1998 - BlackBerrys, Sidekick, and Nokia wireless phones raise the need for direct access through TTYs, and eventually Text-to-9-1-1.



2008 - The US Department of Transportation is coordinating the NG9-1-1 Project that will enhance PSAPs' ability to handle text, video, and data through the Internet, even from Automatic Collision Notification Systems (AACN). Language barriers will be resolved using multi language services, including trained ASL interpreters and other translators.

Technology Changing Over the Years

Emergency Notifications

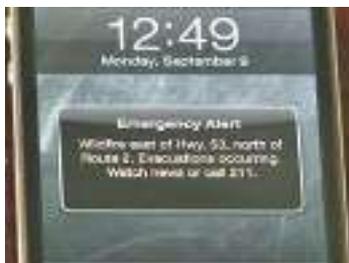
Our best chances of survival is when communities provide effective communications before, during, and after a disaster. Below are several ways we can stay informed.



Coordinate our needs with family, neighbors, and others in the community. Work with local officials so they know where we live, and make inclusive emergency plans.



Some cities have their own community notification services such as Reverse 9-1-1, that sends out messages to our cell phones



Your local community may use Weather and Emergency Alerts that will automatically send messages to all cell phones near the disaster zone.



Graphic messages crawls across your TV during emergency announcements.



If you are within the top 25 television markets, you can get real-time captions with the weather reports on your local newscast.



Monica McGee interprets for the Governor of North Carolina, Roy Cooper on TV in a press briefing during Hurricane Florence.

Technology Changing Over the Years

Hearing Aid Compatibility

Before TDI, telephones were insurmountable barriers to our participation in society. Most jobs require the ability to use the phone and it was the easiest way to get in touch with someone. In the past 50 years, here are some technology that has helped people with sufficient residual hearing be able to use the phone with just a few tweaks. TDI has supported advocacy efforts by Hearing Loss Association of America and technical assistance from the Rehabilitation Engineering Research Center on Hearing Enhancement regarding hearing aid compatibility issues.



Amplifiers handsets with analog phones



Hearing aids with built-in telecoils



Cordless phone with audio clarity controls



Smartphones with hearing aid compatibility features



Hearing aid features built in smartphones (volume, background noise blocking).



Helpful smartphone apps that can help you find restaurants that have low levels of ambient noise distractions

Technology Changing Over the Years

Consumer Advocacy Tools

In the United States, we have the constitutional right to freedom of expression. When you see something that is unfair or has an effect of discrimination against you, you can seek to make a change. In the old days we would just write a letter to the editor, and hope it gets printed. Now today we have a variety of tools at our disposal on the Internet. If you see something, say something and make the change. Be persistent until change happens.



Send a letter of inquiry, a letter to the newspaper editor, or to request a meeting.



File a letter of complaint.



Have a Town Hall meeting or a workshop to learn about consumer advocacy.



Form a coalition.



Conduct a protest like those that were done for Section 504, Deaf President Now (DPN), etc.



Make a direct call to the FCC or another federal agency.



Make a regulatory filing, send out an action alert, or create a petition at www.change.org



Accessibility Initiatives from the Corporate World and Academia

TDI acknowledges the work on shaping an accessible world in telecommunications, media, and information technology is at best a collaborative effort between consumers, researchers, professionals, and regulators. Consumer advocacy groups express a need. Educational research confirm its feasibility. Industry professionals and engineers follow suit seeking to make their products and services more accessible and usable. Government regulators put their stamp of approval by building it into policy.

From Michael Warnecke, Chief Counsel,
Tech Policy, Entertainment Software Association:



Accessible Products and Services Provided:

1. Reaching out to the deaf and hard of hearing community to better understand their accessibility needs
2. Sharing industry progress on the ongoing efforts to make games accessible
3. Meetings with consumer groups and the FCC on industry's efforts to comply with the advanced communications services provision

Special Projects Achieved in Partnership with TDI:

4. Worked with TDI to propose an accessibility-related challenge at Global Game Jam, where a number of teams of coders incorporated haptic feedback

into their games in an effort to make them more accessible for deaf and hard of hearing individuals.

5. Collaborated with TDI, Gallaudet University, and Sony Interactive Entertainment to hold a VR event at Gallaudet University, where students and faculty learned more about the PlayStation VR, played some of the latest VR games, and discussed accessibility with a senior engineer.
6. Invited TDI and gamers from the deaf and hard of hearing community to ESA's annual E3 conference for one-on-one meetings with game creators and industry executives, who had the opportunity to learn more about the needs and wants of deaf and hard of hearing gamers.



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For more than 150 years, Gallaudet University has led advances in the education of deaf and hard of hearing students and deaf rights worldwide. A comprehensive university designed for deaf, hard of hearing, and hearing individuals, in a global capital. Experience Gallaudet for yourself during one of our upcoming open houses.

For 50 years, TDI has led the fight for equal access, with eyes to the future and hearts focused on the Deaf community.

Verizon proudly supports partners who envision a world embracing diversity in all its forms.



GAINING STATURE



From Robert Engelke, President, Ultratec, Inc.:

Accessible Products and Services Provided:

1. TTYs – Over 180 different models, 27 countries, 13 languages. Starting in 1974 with the ultra low-cost VIP and Minicom (the first TTYs available for under \$200) to the 80-column printing SuperPrint Pro 80 and including the Uniphone – a combination TTY and telephone – the first phone for use by everyone and the payphone TTY (10s of thousands installed all over the USA).
2. Communications products for the DeafBlind. Working in collaboration with Telesensory Systems, Ultratec developed the first TeleBraille – a TTY combined with a dynamic Braille so that DeafBlind people could use the telephone and relay service. Ultratec also developed TTYs with very large and bright displays and the LVD (Large Visual Display) that attached to a TTY and allowed persons with limited vision to read what was being said.
3. CapTel – the First Captioned Telephone. Back in the mid 1980s the concept first came up at Ultratec to make a telephone and service that allowed a

deaf or hard of hearing person to be able to use the telephone just like anyone else. No typing. No operator on the call. Just pick up the handset and dial like anyone else. When a breakthrough in voice recognition technology was finally achieved, Ultratec set to work and developed the first captioned telephone. CapTel service was introduced to the public in 2000. Since then hundreds of thousands of people in four countries have become CapTel users, making CapTel the world's most popular relay service.



Special Projects Achieved in Partnership with TDI:

1. Consultation on key topics addressed with the FCC and other regulatory bodies
2. Participation on panels at biennial TDI Conferences
3. Key resource support for the Consumer Groups TRS Policy Statement

From Malcom Glenn, Strategic Partnerships Manager, Uber:

Accessible Products and Services Provided:

1. driving opportunities for the deaf and

hard of hearing, (today's number is now over 5,000)

2. ease of commuting/travel in large metropolitan areas



for deaf and hard of hearing Americans. Also, some of the Uber riders who are hearing find travel with deaf and hard of hearing drivers more suitable/calm for their hectic schedule “on the go.”

3. apps for communication/requests for rides - totally accessible/inclusive design (over 40,000 activations)

Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Consultation on key topics and future potential related to accessible local transportation
3. Dissemination of news regarding Uber’s impact on the community

From Dr. Gerard Buckley, President - NTID and Vice President/Dean - RIT:



Accessible Products and Services Provided:

1. its’ Center on Access Technology Innovation Laboratory
2. post-secondary education for its students, and high-caliber preparation for their employment post-graduation
3. a key resource on disability access inside/outside the classroom for other colleges and universities.

Special Projects Achieved in Partnership with TDI:

1. Support with audio-visual equipment and services for our biennial TDI Conferences
2. Consultation with consumer groups on key topics addressed with the FCC
3. Consultation with unique expertise and experience to industry, government, and research entities on needs and issues of individuals who are deaf and hard of hearing



From Sarah Herrlinger, Director of Global Accessibility Policy & Initiatives, Apple:



Accessible Products and Services Provided:

1. Every Apple product comes with important assistive technology built right in.
2. This includes features like FaceTime

which enables richer communication for people using sign language so they can catch every gesture and facial expression.



3. There are customizable visible and haptic notifications, Type to Siri func-

tionality on iOS, and on-device RTT and TTY phone call capability without the need for separate hardware.

4. Apple was the first to create a seamless, direct streaming connection between a smartphone and hearing devices for people who are hard of hearing.
5. Apple also is a leader in advancing captioning. Not only does iOS support open captions and subtitles, you can even customize captions with different styles, fonts, and sizes. For

those who are deaf-blind, iPhone lets VoiceOver users access closed caption and subtitle tracks through their braille displays.

Special Projects Achieved in Partnership with TDI:

1. Consultation on key topics addressed with the FCC
2. Presentations at biennial TDI Conference
3. Needs assessment for its products and services

From Lance Pickett, Vice President of Corporate Marketing, Sorenson Communications:

Accessible Products and Services Provided:

1. Sorenson Video Relay Service® (SVRS®) is the only relay technology developed for the Deaf. To date, Sorenson videophones and apps on different platforms provide the most functionally-equivalent technology to that used by hearing people, as mandated by the Americans with Disabilities Act (ADA). The technology revolutionized communication for Deaf people and “leveled the playing field” in terms of access to communication.
2. Sorenson Communications, LLC is the leading provider of Video Relay Service (VRS). Sorenson processes more calls than all other VRS providers combined. Sorenson pioneered enhanced emergency 911 VRS services, offering a model to the Federal Com-

munications Commission (FCC) in establishing enhanced 911 services so that Deaf Americans would have access to this essential service through VRS, a right mandated by the ADA.

3. CaptionCall is Sorenson’s provider of Internet Protocol Captioned Telephone Service (IP CTS). CaptionCall is the leading provider of IP CTS, a service that aids hard-of-hearing people to stay socially connected, empowering them to conduct important business and maintain confident communication for longer, happier lives.



Special Projects Achieved in Partnership with TDI:

1. Support and sponsorship of TDI initiatives and conferences - and partic-



- ipation on panels addressing relevant issues at biennial TDI conferences
- 2. Discussion and consultation about important and critical topics addressed with the FCC
- 3. Key resource support for the Consumer Groups' TRS Policy Statement. Sorenson continually cites the policy statement in its filings with the FCC.

From Angela Roth, President & CEO, Global VRS:

Accessible Products and Services Provided:

1. Provision of Video Relay Service
2. Gives additional support in VRS to Americans who are DeafBlind (Retinitis Pigmentosa [RP], Macular Degeneration, Glaucoma, Diabetic Retinopathy, Completely DeafBlind. Also, we service and support individuals with Auditory Processing Disorder [APD], Traumatic Brain Injury [TBI] and/or Binocular Vision Disorder [BVD])
3. Gives additional support in VRS to

Deaf and Hard of Hearing Americans/immigrants from the Spanish Language/Culturally Diverse populations/communities



Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Consultation on critical topics addressed with the FCC
3. Essential resources support for the Consumer Groups TRS Policy Statement

From Sherri Turpin, CEO, ZVRS and Purple Communications:



Accessible Products and Services Provided:

- Leading Provider in Enterprise/Corporate Partnerships.
- Innovative hardware and software communication solutions for VRS, point-to-point, and VRI.
- Top of the industry in interpreting services, both in the community and online.

Special Projects Achieved in Partnership with TDI:

- Participation on panels at biennial TDI Conferences
- Consultation on key topics addressed by the FCC
- Key resource support for the Consumer Groups TRS Policy Statement

From Jarrod Musano, Chief Executive Officer, Convo Relay:



Accessible Products and Services Provided:

1. Deaf-owned VRS provider with a signing-centric approach to communication solutions and interpreting philosophy.
2. Marketing efforts heavily intertwined with supporting the Deaf Ecosystem.
3. Offers free VRS apps designed by signers for iOS, macOS, Android, and

Windows platforms.

Special Projects Achieved in Partnership with TDI:



1. Participation on panels at biennial TDI Conferences
2. Consultation on key topics addressed with the FCC
3. Key resource support for the Consumer Groups TRS Policy Statement

From Matt Gerst, Assistant Vice President, Regulatory Affairs, CTIA:



Accessible Products and Services Provided:

1. Accessible emergency services via Text-to-9-1-1, Real-Time Text and Wireless Emergency Alerts (WEA)
2. AccessWireless.Org, a central hub for consumers to find accessible wireless products and services
3. Most wireless handsets available today are hearing aid-compatible.

Special Projects Achieved in Partnership with TDI:



1. CTIA's Participation on panels at biennial TDI Conferences
2. CTIA and TDI consult on key topics that are addressed at the FCC's Disability Advisory Committee.
3. TDI's Participation on its CTIA's 9-1-1 Location Accuracy Advisory Group that meets quarterly to learn about enhancements to wireless 9-1-1 location accuracy

From Dixie Ziegler, Vice President of Relay - Hamilton Telecommunications:



Accessible Products and Services Provided:

1. provision of 711 and captioned telephone relay services in 18 states, the District of Columbia and the Island of Saipan
2. provision of IP-CTS, including offering service through an app
3. incorporation of Real Time Text (RTT) support, which will allow Hamilton Relay users to take advantage of the latest, and most function-

ally equivalent, communication technology.

Special Projects Achieved in Partnership with TDI:

1. Sponsorship, Exhibition and Participation on panels at biennial TDI Conferences
2. Consultation on key topics addressed with the FCC
3. Sponsorship of TDI's Consumer Advocacy Training



From Jenny Lay-Flurrie, Chief Accessibility Officer, Microsoft:



Accessible Products and Services Provided:

1. Offering services for captioning/subtitles like Presentation Translator, and Microsoft Stream
2. Advertising campaigns including deaf and hard of hearing Americans
3. Provides a special feature called Mono Audio in Windows 10 operating system to help one hear more from his or her computer.
4. Visual notifications
5. Game chat transcription

Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Consultation on key topics addressed with the FCC
3. Needs assessment for its products and services



From Robert Rae, President & CEO of ClearCaptions:



Accessible Products and Services Provided:

1. Provider of Internet Protocol Captioned Telephone Services (IP-CTS) that improves independence and connectedness for individuals with hearing loss.
2. Providing outreach and training on how to use its brand name Clear Captions service.

Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Consultation on key topics addressed by the FCC
3. Key resource support for the Consumer Groups TRS Policy Statement

From Dr. Gregg Vanderheiden, Director, Trace R&D Center and Professor, School of Information Studies, University of Maryland - College Park:



Accessible Products and Services Provided:

1. Telecom and Caption provisions in Section 255 and 508 - and CVAA
2. Real-Time Text Technology
3. Raising the Floor and auto-personalization of ICT

Special Projects Achieved in Partnership with TDI:

1. Joint Comments with TDI to the FCC and Access Board on deaf and hard-of-hearing matters
2. Live Caption Correction
3. Helping TDI anticipate future trends with unique expertise and proven record in predicting technology trends and disability impact

from Linda Vandeloop, Assistant Vice President
External Affairs/Regulatory,
AT&T Communications, Inc.:



**Accessible Products
and Services Provided:**

1. Corporate Accessibility Technology Office
2. Accessibility Plan (TAP), U-Verse and DirecTV with captions, and hearing aid compatible phones
3. Real-Time Text technology (regulatory initiative, then deployment)

**Special Projects Achieved
in Partnership with TDI:**

1. Telephone Pioneers of America
2. Don't Text, Don't Drive Project
3. AT&T Advisory Panel on Access and Aging
4. Collaboration during the development phase of RTT



From Joseph Duarte, Chief Executive Officer,
MezmoCorp (dba InnoCaption):



**Accessible Products
and Services Provided:**

1. Provision of Internet Protocol captioned telephone services (IP-CTS)
2. Providing outreach for the community on the InnoCaption App, TRS services, and accessing 911



**Special Projects Achieved in
Partnership with TDI:**

1. Connecting with the Community at TDI Conference Exhibits
2. Consultation on key topics addressed by the FCC
3. Key resource support for the Consumer Groups TRS Policy Statement



From Joseph Duarte, Principal, and Laurie Dowling, Operations Manager, Duartek, Inc.:



Accessible Products and Services Provided:

1. Customized design and installation of accessible audio-visual systems for the deaf and hard of hearing
2. Providing education, outreach, and training on assistive listening technologies

Special Projects Achieved in Partnership with TDI:

1. Consultation with unique expertise

and experience to industry, government, and research entities on needs and issues of individuals who are deaf and hard of hearing

2. Joint filings with TDI and other consumer groups to FCC on key issues in telecommunications and others
3. Participation on panels/presentations at biennial TDI Conferences



From Laura Berrocal, Senior Director, Policy & External Affairs, Charter Communications



Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Consultation on key policy issues that impact the accessibility community



From Monica Desai, Director, Global Connectivity Policy, Facebook:



Accessible Products and Services Provided:

1. Automatic Alternative Text and Face Recognition accessibility tools
2. Open source tools for accessibility that helps developers debug accessibility issues
3. Captioning support for video on FB, including Automatic Video Captioning (for US advertisers and pages)

and captioning tools for
Facebook Live

Special Projects Achieved in Partnership with TDI:



1. Participation at biennial TDI Conferences
2. Collaboration on a variety of accessibility topics.

From Darren Achord, Amazon:



Accessible Products and Services Provided:

1. Accessibility Advisory Board with Dr. Christian Vogler as a member
2. Accessible offerings of its Alexa and Echo products
3. Convenient online shopping on its Prime/Smile platforms

Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Consultation on key topics addressed with the FCC
3. Needs assessment for its products and services



From Adrienne Biddings, Policy Counsel, Google:



Accessible Products and Services Provided:

1. Biennial Accessibility Summit for leaders of the disability community
2. Auto-Captioning software tool for the YouTube videos

3. Google Drive features (including Hangouts) - commendable for their accessibility and office production efficiency



Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Expertise in Accessibility (thanks to

Adrienne's law school internship at IPR via filings with FCC for TDI)

3. TDI was awarded a grant for captioning and captioning correction service project, uCaption.

From Shellie N. Blakeney, Director, Federal Regulatory Affairs, T-Mobile:



Accessible Products and Services Provided:

1. Sidekick pagers, a big hit during the early 2000's
2. T-Mobile's Accessibility Queue to customize customer service needs
3. Hearing aid compatible phones, numerous handsets with accessibility features
4. Service plans designed to support accessibility handset features
5. We support Text-to-9-1-1 and Real Time Text services that will help individuals with hearing loss to better communicate with emergency service providers.

Special Projects Achieved in Partnership with TDI:



1. Consultation on key topics addressed with the FCC
2. Participation at Biennial TDI Conferences
3. General assessments of products and services

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www.DeafLawCenter.com
646-807-4096 (Videophone)
212-353-8700 (Voice)



From Mark J. Turits, Vice President, Captioning and Video Description, CBS Television Network:



Accessible Products and Services Provided:

1. A trusted advisor to TDI from the TV broadcast industry for quality closed captions on TV
2. In the 1980's, it developed an alternate captioning technology, called Teletext, no longer in use today, but it opened up our thinking to pursuing new approaches in TV captioning.
3. A key player in the regulatory pro-

cess that led to FCC's formal action in 2014 for quality TV captions



Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Consultation on key topics addressed with the FCC

From Christopher J. Soukup, Chief Executive Officer, Communication Service for the Deaf:



Accessible Products and Services Provided:

1. CSD was one of the very first companies to provide TTY relay services, and the first company to provide video relay services;
2. CSD was the first company to commercially provide Deaf-owned and operated direct ASL call centers;
3. CSD launched the first and only Deaf-owned and operated learning management system with multiple courses and ASL assessments.

Special Projects Achieved in Partnership with TDI:

1. CSD and TDI co-hosted the 2001 TDI Biennial Conference in Sioux Falls, SD;
2. CSD and TDI, along with many others, worked together to pass the 21st Century Communications and Video Accessibility Act;
3. CSD and TDI worked together on Project Endeavor, an initiative to bring broadband Internet access to the Deaf community.

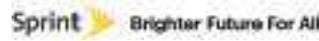
From Michael J. Ellis, National Director, Sprint Accessibility:

Accessible Products and Service Provided:

Sprint Accessibility is the nation's largest Telecommunications Relay Service (TRS) provider and is currently awarded 35 TRS state contracts (including Puerto Rico and the U.S. Virgin Islands), the federal government, and the Commonwealth of New Zealand.

Sprint offers a wide range of communication products and services for customers who are Deaf, Hard of Hearing, DeafBlind, or have a speech disability.

Accessible communication for everyone is woven into Sprint's culture. We build our products and our networks to ensure connectivity. We solicit information from consumers and business customers about how to better provide connectivity. We believe by focusing on connectivity and accessibility that all Sprint customers can communicate with anyone at any time. By empowering people with disabilities through accessible wireless solutions, we're demonstrating how good technology works to connect people and improve lives.



Special Projects Achieved in Partnership with TDI:

1. Participation on panels at biennial TDI Conferences
2. Consultation on key topics addressed with the Federal Communications Commission (FCC) and with deaf/hard of hearing consumers
3. Key visibility at American Association of People with Disabilities (AAPD), M-Enabling Summit, and US Business Leadership Network
4. Provided sponsorships for TDI conferences, TDI Blue Books and TDI World Magazines



From Dr. Christian Vogler, Director, Technology Access Program, Gallaudet University:



Accessible Products and Services Provided:

1. Improving quality of relay services (research and development)
2. Access to emergency calls and Next-Generation 9-1-1.
3. Real-Time Text technology
4. Representing the academia community from USA in ITU circles
5. Research, testing, and advisement in Federal advisory groups and international standards groups on text telephony, text-based emergency alerting, and accessibility of communication equipment and networks.

Special Projects Achieved in Partnership with TDI:

1. Consultation with unique expertise and experience to industry, government, and research entities on needs and issues of individuals who are deaf and hard of hearing
2. Joint filings with TDI and other consumer groups to FCC on key issues in telecommunications and others
3. Participation on panels/presentations at biennial TDI Conferences
4. Co-sponsorship of special activities like E9-1-1 Stakeholder Council and the high-level ITU standards meeting on relay services



The Geniuses Behind TDI

Some of us at TDI are policy wonks, we help Congress, the FCC, DOJ, and other agencies develop inclusive policies and regulations.

Although we are consumers and use technology every day, we do not always understand how they work. The barriers in analog technologies such as TTYs have given way to increased functionality and quicker access in newer digital counterparts such as Real Time Text (RTT). To gain a better understanding of the evolution to newer and emerging technologies, we turn to these technical advisers, our geniuses and subject matter experts who have the knack for converting binary codes into policy.

With a \$240,000 grant from the US Department of Health, Education, and

Welfare (HEW), the National Center on Law and the Deaf (NCLD) was established at Gallaudet College in the late 1970's. NCLD's line-up of attorneys included Karen Peltz Strauss, Sheila Conlon Mentkowski, E. Elaine Gardner, and Sy Dubow, who were the first pro-bono attorneys to work with TDI and other consumer groups serving people who are deaf and hard of hearing. Marc Charmatz, Rosaline Crawford, and Sarah Geer of the NAD Legal Defense Fund also helped out with some of the telecommunications policy development. Sarah introduced Sheila to David Saks and Latham Breunig when she first started out at NCLD as a staff attorney in 1980 after completing an internship as a third year law student at NCLD in '79-'80.



National Center on Law and the Deaf alumni - From left to right:
**Elaine Gardner, Sheila Conlon-Mentkowski,
and Karen Peltz Strauss**



Dick Brandt
A private practice
consultant - v.18



Dr. Benjamin J. Soukup
Formerly with CSD -
relay services



Fred Weiner
Formerly with NAD,
AT&T, and now
Gallaudet Asst. VP
Administration /
Business Development
- federal relay services



Linda Kozma-Spytek
Gallaudet
Technology Access
Program - Hearing
Aid Compatibility
and IP-CTS



Paula Tucker
Gallaudet
Technology
Access Program -
telecommunications
access issues



Norman Williams
Gallaudet Technology
Access Program -
Real-Time Text, TTY
answering machine
technology, and V.18



Dr. Christian Vogler
Current Director of
Gallaudet's Technology
Access Program - all
forms of TRS, RTT, and
Next Generation 9-1-1



Dr. Judy Harkins
Director of Gallaudet's
Technology Access
Program, retired - all
forms of TRS, Real-Time
Text, TTYs and cell
phones, and closed
captioning



Gary Behm
Director of RIT/NTID's
Center on Access
Technology Innovation
Laboratory - all forms
of TRS, and captioning
access in the classroom



Brenda Kelly-Frey
Telecommunications
Access of Maryland
- statewide relay
services and equipment
distribution programs



Harvey Goodstein
Relay Services



Greg Hlibok (former) and **Suzy
Rosen Singleton** (current), FCC -
Disability Rights Office





**Dr. Malcolm Norwood
Ernest Hairston
and Jo Ann McCann**
US Department of Education
- television closed captioning



**Dr. Gregg
Vanderheiden**
The TRACE Center,
University of Maryland -
Real-Time Text, human
engineering, Universal
Design, Raising the
Floor (the Internet
of Things), real-time
captioning, caption
correction, HD audio,
and NG9-1-1



Gunnar Hellström
Omnitor - RFC 4103
(Real-Time Text), Total
Conversation (audio,
video and real-time text),
and 1-1-2 emergency
service dialing number
(Europe's equivalent of
9-1-1 in America)



Karen Peltz Strauss,
legal counsel for NCLD,
NAD, FCC, CSD, and
RERCs - drafted federal
laws on TRS, closed
captioning, hearing aid
compatibility, real-time
text, 711, and accessible
telephone and TV
equipment.



**David Capozzi, Timothy Creagan, and
David Baquis (former)**
U.S. Access Board - website accessibility, Section
508, telecommunications access, and ADA
effective communications guidelines



Dale Hatfield
Formerly of the TRACE/
Gallaudet RERC and
the FCC, and now
University of Colorado,
Boulder - hearing aid
compatibility and TTY
compatibility with
digital wireless devices



**Dr. Aaron
Bangor**
AT&T - Real-
Time Text and
development
of accessibility
standards



Steve Jacobs
The IDEAL Group
- apps accessibility,
and the uCaption
project



Ed Bosson
Texas Public
Utilities
Commission
- Video Relay
Service



Rob Engelke and Kevin Colwell
TTYs, accessory technology for
deafblind, and captioned telephone
service





Jim Tobias
Inclusive Technologies
 - Raising the Floor,
 Interactive Voice
 Response technology,
 and Sections 255 and 508



Andrea Saks
International
 Representative for TDI
 at ITU



**Larry Goldberg,
 Heather York,
 Mark J. Turits,
 Tom Wlodkowski,
 and Margaret Tobey**
TV/Internet captioning



Dr. Carl Jensema
Research on our ability
 to read and watch
 captions on TV



Dr. Frank G. Bowe
Television Decoder
 Circuitry Act of 1990
 and Universal Design



**Donna Sorkin,
 Brenda Battat,
 and Lise Hamlin**
Hearing aid compatibility



David H. Pierce
Captions for first-run
 movies in theaters, and
 also TV programs in
 sign language (Silent
 Network) and with
 captions



Brian Rosen
Independent consultant
 and with Neustar -
 emergency, NG9-1-1,
 NENA, VRS on SIP and
 ten-digit-numbering



Robert Mather
Civil Rights Division,
 U.S. Department
 of Justice - direct
 emergency
 communications with
 PSAPs



Toni Dunne
Hamilton
 Telecommunications
 - direct access
 to emergency
 communications with
 PSAPs



Donna Platt
NC Division of
 Services for the
 Deaf and Hard
 of Hearing -
 911 Training,
 Emergency
 Notification,
 direct access
 to emergency
 communications
 with PSAPs



Richard Ray
City of Los Angeles
 Mayor's Office with
 Disabilities - direct
 access to emergency
 communications
 with PSAPs



David Nelson
Amtrak -
 transportation
 issue

Pro Bono Attorneys and Their Filings for TDI and Other Consumer Groups

TDI would not be the powerful force for change if it were not for the attorneys who devoted their passion for access to technology. Having a lawyer by your side can make a world of difference in accessible telecommunications policy.

In 1998, TDI signed a pro-bono agreement with Swidler Berlin Shereff & Friedman, LLP, one of DC's foremost telecommunications law firms to represent the organization in its filings with the FCC, DOJ, and other federal agencies on various access issues. When Swidler Berlin Shereff Friedman merged with Bingham McCutcheon, the acquisition created an awkward situation because several media clients were part of the package, and created the potential for conflicts of interest in captioning filings. One attorney, Elliot Greenwald moved on to work at the FCC in the Disability Rights Office. One other attorney, Tamar Finn continues to represent TDI and other consumer groups on issues involving telecommunications. Today, this same firm is now known as Morgan Lewis.

When the captioning issue arose at Bingham McCutcheon, TDI looked to Angela Campbell, Director of the Institute of Public Representation (IPR) at the Georgetown School of Law. IPR has had a long relationship with TDI and NCLD. IPR gladly joined forces and supported TDI's advocacy efforts in media access, especially with requests for waivers from small producers seeking to avoid their captioning obligations. One of IPR's leading attor-

neys, Blake Reid, with a background in intellectual property law took on many of TDI's advocacy efforts not only in captioning, but also access to copyrighted digital media content. He continues to work with TDI from Colorado.

Today, TDI uses the finest pro-bono legal talents from three distinguished firms: Morgan Lewis, the Institute for Public Representation (IPR) at Georgetown School of Law, and the Samuelson-Glushko Legal Clinic at University of Colorado in Boulder.

Since 2000, TDI has been fortunate to have pro bono legal services to develop drafts, and to coordinate with our other sister consumer groups, two Rehabilitation Engineering Resource Centers, and a few national and state professional associations to file various documents with the Federal Communications Commission and a few other agencies within the federal government. TDI has received services from the Telecommunications Media and Technology Practice Group at Morgan Lewis and Bockius, LLP (previously with Swidler, Berlin Shereff, Friedman, LLP, and then Bingham-McCutcheon, LLP) (the TMP Group) since the year 2000, then from the Institute for Public Representation, Georgetown University (IPR) since 2010, and the Samuelson-Glushko Technology Law & Policy Clinic, University of Colorado—Boulder (TLPC), since 2013. Here below is a list of three entities' selected key pro bono legal activities for TDI that have resulted in significant outcomes from the FCC and



Morgan Lewis



GEORGETOWN LAW
INSTITUTE FOR PUBLIC REPRESENTATION



samuelsonglushko
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clinic

others in accordance with TDI’s mission and advocacy.

Telecommunications Relay Services

- For over 15 years, the TMT Group has worked with TDI and the FCC to improve Video Relay Service (“VRS”) and other Telecommunications Relay Services (“TRS”) to achieve functional equivalency in communications. Our work with TDI has included making recommendations on issues that impact the day-to-day use of TRS services, the transition to next generation services, access to advanced communications services, and access to emergency alerts. The TMT Group assisted TDI and other consumer groups in the development of the “Consumer Groups’ TRS Policy Statement – Functional Equivalency of Telecommunications Relay Services: Meeting the Mandate of the Americans with Disabilities Act” (the “Policy Statement”) which was filed with the FCC on April 12, 2011. The Policy Statement provides the Consumer Groups’ perspectives on the core principles of TRS and identifies the objectives to achieve the

Consumer Groups’ goal of functional equivalency in relay services. *The FCC has used the Policy Statement as a guide in various decisions, rulemakings and reports on TRS and routinely cites the Policy Statement in such actions, including in its 2017 Order that took steps to improve the quality of VRS by authorizing skills-based routing and deaf-interpreter trials and seeking comment on metrics and further VRS reforms. The Policy Statement had origins in various prior filings that the TMT Group filed including a Petition for Mandatory Video Relay Service that was filed on October 19, 2004, on behalf of the National Video Relay Service Coalition, which included TDI.* Some of the key filings the TMT Group has made that resulted in FCC action to advance functional equivalency are summarized below.

- On July 20, 2004, the TMT Group filed an Application for Review and Petition for Emergency Stay of a Consumer and Government Affairs Bureau (CGB) decision decreasing the interim reimbursement rate for VRS to per minute rate of \$7.293 from \$8.854. *On December 30, 2004, the FCC released an Order that retro-*

actively revised the decreased per minute rate to \$7.596.

- On October 1, 2004, the TMT Group filed Petition for Reconsideration requesting that the Commission reconsider its decision not to authorize TRS reimbursement for ASL to Spanish VRS. *The FCC granted the Petition and reversed its conclusion that translation from ASL into Spanish is not eligible for compensation from the Interstate TRS Fund.*
- On January 29, 2009, the TMT Group filed a Petition for Partial Reconsideration of the FCC's decision not to authorize individuals without a hearing or speech disability to obtain ten-digit numbers from VRS Providers. *In March 2017, the FCC amended its rules to permit VRS providers to assign iTRS numbers to hearing individuals upon their request.*
- On October 27, 2009, the TMT Group filed an Emergency Petition For Stay of FCC requirements governing the use of toll-free numbers for iTRS. *On August 4, 2011, the FCC adopted rules addressing the concerns in the Emergency Petition by improving assignment of telephone numbers associated with iTRS.*
- The TMT Group filed multiple Requests to Extend Waivers regarding the removal of toll free numbers from the iTRS database, *which were granted by FCC, thus giving consumers more time to transition to ten-digit iTRS numbers.*
- On September 30, 2013, the TMT

Group filed with the FCC a Petition For Stay of the requirement that low income IP CTS users pay \$75 for software or hardware pending outcome of FNPRM. *While the FCC did not act on the Petition, the requirement was stayed and ultimately vacated by the Court of Appeals for the District of Columbia Circuit in response to a motion filed by Sorenson.*

- In addition to the specific results summarized above, the TMT Group has advocated for policy changes and accountability to the community. Examples of such additional work include: (1) a Petition to Initiate a Notice and Comment Rulemaking Proceeding on Limiting or Restricting Certain Types of VRS Calls; (2) an Application for Review of Declaratory Ruling that found VRS calls placed to and from a VRS Employee are not eligible for compensation; (3) a Petition for Rulemaking to amend rules to allow for a cost-recovery methodology for the provision of Communication Facilitator services when offered in conjunction with VRS or Point-to-Point services; and (4) a Petition for Reconsideration of FCC rules to implement access to advanced communications services as applied to stand-alone software.

Television Closed Captioning

- On July 23, 2004, the TMT Group filed a Petition for Rulemaking requesting the FCC to establish captioning quality standards and enforcement mechanisms. *In 2008, the FCC*

responded, in part, to the Petition by amending the captioning complaint process and requiring providers to make contact information available. In 2014, the FCC adopted captioning quality standards and technical compliance rules to ensure that video programming is fully accessible.

- On October 12, 2006, the TMT Group filed an Application for Review of the Anglers Exemption Order seeking review and rescission of (1) the Bureau's decision that a non-profit organization satisfies the "undue burden" showing merely by asserting that it does not receive compensation for airing its programming and that it may terminate or substantially curtail its programming or other activities important to its mission if required to

caption its programming and (2) the Bureau's grant of 297 exemption petitions based on the new "standard" established in the Anglers Exemption Order. *On October 20, 2011, the FCC granted the Application for Review and reversed the closed captioning exemptions granted to Anglers for Christ Ministries, Inc., New Beginning Ministries and another 296 petitioners and provided guidance on the documentation required to demonstrate that providing closed captioning would be "economically burdensome."*

- On January 27, 2011, the TMT Group filed a Petition for Rulemaking to eliminate the class exemptions that have impaired the effectiveness of universal captioning rules. *On*



February 19, 2016, the FCC amended rules to hold video programmers responsible for ensuring the insertion of closed captions on all their nonexempt programming and concluded that the obligations associated with compliance with the closed captioning quality rules shall be divided between video programming distributors (VPDs) and video programmers, but the responsibilities associated with ensuring the provision of closed captions on television shall remain primarily with VPDs.

- In 2010, IPR began supporting TDI and other deaf and hard of hearing organizations in their efforts to have the Federal Communications Commission (FCC) eliminate numerous exemptions from the FCC's requirements for closed captioning on television, including in advocacy meetings with FCC commissioners and staff. *In the fall of 2011, the FCC reversed nearly 300 exemptions. The FCC also proposed a higher standard for future exemptions. IPR filed comments on behalf of TDI supporting this standard, which the FCC ultimately adopted.*
- Between 2012 and 2016, IPR filed comments or oppositions on behalf of TDI with the FCC concerning more than 130 petitions for exemption of the television closed captioning rules. *Over that period, the FCC denied or dismissed over 60 petitions that TDI opposed.*
- In the fall of 2013, IPR drafted comments for TDI asking the FCC to adopt new rules to allow parties submitting documents related to

closed captioning exemptions to file electronically. *In the spring of 2014, the FCC adopted an order to allow electronic filing.*

- In 2013, IPR filed an amicus brief for TDI and other consumer groups in Greater Los Angeles Agency on Deafness v. Cable News Network, Inc. (CNN), a Ninth Circuit Court of Appeals case where CNN claimed that its failure to caption its videos was protected by the First Amendment. The amicus brief explained why closed captioning regulations are consistent with the First Amendment. *The court ruled against CNN's constitutional challenges in 2014.*
- From 2013-2017, IPR and the TLPC submitted numerous comments and other filings and held more than a dozen meetings on behalf of TDI and other deaf and hard of hearing organizations urging the FCC to address long-standing problems with closed captions. *In February 2014, the FCC adopted a landmark order setting comprehensive closed caption quality standards and best practices for television programming.*
- In January 2016, IPR and the TLPC organized and led meetings on behalf of TDI and other deaf and hard of hearing organizations with the FCC commissioners' offices regarding a draft order apportioning the responsibility for the quality of closed captioning among video programmers and video program distributors. The coalition advocated a number of points to ensure that both groups

remain fully engaged and diligent in their closed captioning responsibilities. *In February 2016, the Commission adopted an order agreeing with and incorporating many of the positions advocated for by TDI and the consumer group coalition throughout the proceeding.*

- Over the course of 2017, TLPC filed several comments urging the FCC to retain closed captioning protections for “next-generation” television broadcasting systems using the ATSC 3.0 standard. *In November 2017, the FCC voted to confirm the applicability of its closed captioning rules to next-generation broadcasting systems.*

Online Video Closed Captioning/CVAA

- In the fall of 2011, IPR represented TDI in its advocacy efforts concerning the FCC’s rulemaking efforts to implement the CVAA’s captioning requirements for online videos, including by drafting and filing comments and reply comments and by meeting with FCC staff and industry representatives. *In January 2012, the FCC adopted rules requiring that online videos be captioned and requiring substantial improvements to the captioning capabilities of various video playback and recording devices. The FCC incorporated many of the proposals and interpretations advocated for by TDI and other deaf and hard of hearing organizations.*
- In 2012, IPR drafted oppositions to two industry petitions for waiver of the CVAA rules and *succeeded in persuading the FCC to deny one and*

partially deny the other.

- In 2012, IPR drafted a petition for reconsideration on behalf of TDI and other consumer groups urging the FCC to reverse its initial decision not to include short video clips in the rules. From 2013 to 2014, IPR and the TLPC drafted multiple reports and held many ex parte meetings with FCC staff on the missing coverage of video clips with captions. *In 2014, the FCC reversed its earlier decision and incorporated video clips into the rules.*
- In 2013, IPR filed a complaint on behalf of TDI and other consumer groups against Amazon for systemic violations of the IP captioning rules, and IPR and TDI supported the complaint with numerous followup filings in 2013 and 2014. *In 2014, the FCC agreed with TDI that Amazon had violated the rules and Amazon changed its practices.*

Copyright and the DMCA

- In the fall of 2011, IPR drafted and submitted a proposal on behalf of TDI with the United States Copyright Office to exempt the addition and improvement of accessibility features, like closed captions, for online videos, DVDs, and Blu-ray from the anti-circumvention measures of the Digital Millennium Copyright Act (DMCA). The DMCA forbids users of copyrighted works from circumventing technological protection measures designed to control access to the works. IPR also drafted and filed reply comments regarding the proposal and testified in support of the proposal at the Copyright Office. *The Copyright Office granted the exemption in 2012.*

- In the spring of 2012, IPR drafted and filed an amicus brief on behalf of TDI and more than 15 other accessibility organizations and researchers in *Authors Guild v. Hathitrust*, a Second Circuit Court of Appeals case concerning efforts by university libraries to scan their book collections in to make them accessible to patrons with disabilities, among other things. IPR chronicled the extensive history of Congress's efforts to make copyrighted works accessible to people with disabilities, and urged the Court to conclude that the accessibility efforts of libraries constituted non-infringing fair uses. *In 2013, the court ruled that efforts to make copyrighted works accessible were non-infringing fair uses.*

Transition from TTY to RTT

- In April 2016, the FCC initiated a rulemaking seeking comment on replacing its TTY requirements with rules for real-time text (RTT) technology. In July 2016, IPR filed reply comments in the proceeding on behalf of TDI, advocating for, among other things, a common implementation standard to achieve RTT interoperability across communications platforms, networks, and devices and for ensuring that RTT be interoperable with telephone relay services. After the presidential election in November 2016, the FCC announced that it would not take action on the proposal without unanimous support from the commissioners. IPR and TLPC worked with TDI and a coalition of consumer groups to urge the Commission not to delay, including organizing and leading a series of

meetings with FCC commissioners' offices and FCC staff. *In December 2016, the FCC unanimously adopted an order implementing the proposed RTT rules.*

Net Neutrality

- In 2014, the TLPC filed comments on behalf of TDI and other deaf and hard of hearing consumer groups and accessibility researchers urging the FCC to protect deaf and hard of hearing consumers from losing the ability to operate video calling and other applications of their choices. *In March 2015, the FCC adopted landmark network neutrality rules that cited TDI's comments.*
- In 2017, the TLPC filed comments on behalf of TDI urging the FCC to retain net neutrality rules, including important transparency rules that allow deaf and hard of hearing consumers to choose wireless plans that work for their needs. In 2018, the FCC retained the transparency rules.

Disability Advisory Committee

- From 2015-2018, the TLPC's director served as an alternate representative for TDI on the FCC's Disability Advisory Committee. *During that time, TDI led the DAC in drafting and adopting resolutions regarding video accessibility in public accommodations, the accessibility of the Internet of Things, and closed caption capitalization practices.*

Special Note of Gratitude:

TDI thanks the following list of coordinators and pro bono legal services attorneys, law student attorneys, and paralegals with the three entities, which worked on the regulatory filings with TDI:

**TMT Group at Morgan
Lewis and Bockius, LLP:**

*(selected professionals
from prior firms are also
included in list below):*

Tamar Finn,
Coordinator

Paul Gagnier, Past
Coordinator

Priscilla Whitehead,
Past Coordinator

Katie Besha

Russell Blau

Joshua Bobeck

Eric Branfman

Timothy Bransford

Renee Britt

Danielle Burt

Patricia Cave

Robin Cohn

Ronald Del Sesto, Jr.

Stephany Fan

Brett Ferenchak

Jonathan Frankel

Eliot Greenwald

Jean Kiddoo

Edward Kirsch

Catherine Kuersten

Kimberly Lacey

Frank Lamancusa

Andrew Lipman

Philip Macres

Douglas Orvis, II

Ulises Pin

Michael Romano

Jeffrey Strenkowski

Troy Tanner

Nguyen Vu

Catherine Wang

Willam Wilhelm, Jr.

Denise Wood

Institute for Public

Representation

Georgetown

University Law School:

Angela Campbell,

Director

Adrienne Biddings, Past

Fellow

Blake E. Reid,
Past Fellow

Aaron Mackey,
Past Fellow

Drew Simshaw,
Past Fellow

Chris Laughlin,
Past Fellow

Lindsay Barrett,
Fellow (current)

**Samuelson-Glushko
Technology Law &
Policy Clinic University
of Colorado – Boulder
Law School:**

Blake E. Reid, Director

Arielle Brown

Christopher Gray

Reggie Nubine

Lindsey Knapton

Casey Warsh

Emily Caditz

Corian Zacher

Elliott Browning

Colleen McCroskey

Allies with TDI in the Trenches

For fifty years, TDI has built and maintained positive, working partnerships with sister consumer advocacy organizations, rehabilitation engineering research centers, and trade associations on a range of issues before the Federal Communications Commission (FCC) and other federal agencies. By working with these entities, TDI was able to submit hundreds and hundreds of filings to express any one coalition's more inclu-

sive position on a wide range of issues, and sometimes, to propose solutions for the FCC to consider as it makes final regulatory decisions, etc. TDI has been deeply grateful for the diverse input and expertise from the entities below, and only with their support, could we possibly submit reliable information that would best meet our deaf and hard of hearing constituents' needs and issues in telecommunications, media, and information services before the Commission and others.



From Top Left:
 National Association of the Deaf (NAD); Hearing Loss Association of America (HLAA); Association of Late-Deafened Adults (ALDA); Registry of Interpreters for the Deaf, Inc. (RID); American Deafness and Rehabilitation Association (ADARA); Conference of Educational Administrators of Schools & Programs for the Deaf (CEASD); Deaf Seniors of America (DSA); Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN); National Association for State Relay Administration (NASRA); Telecommunications Equipment Distribution Program Association (TEDPA); National Association of State Agencies of the Deaf and Hard of Hearing (NASADHH); California Coalition of Agencies Serving the Deaf and Hard of Hearing (CCASDHH); Cerebral Palsy and Deaf Organization (CPADO); American Association of the DeafBlind (AADB); Communication Service for the Deaf (CSD); Speech Communications Assistance by Telephone (SCAT); Deaf/Hard of Hearing Technology Rehabilitation Engineering Research Center (DHH-RERC); Rehabilitation Engineering Research Center on Universal Interface & Information Technology Access (IT-RERC)

GAINING STATURE

The Power of One, Two, Three, or More

During the past 50 years while TDI worked on behalf of 48 million deaf and hard of hearing Americans, a number of consumer advocates have emerged to help shape an accessible world, individually or in small groups. Their grassroots campaigns brought about small steps toward accessibility in their communities. Here are their stories.



Sheila Conlon Mentkowski

In the mid 1970's Sheila Conlon Mentkowski got her first TTY, the big teletype through Massachusetts Rehabilitation Services with Al Sonnenstrahl's assistance. Her hearing mother really enjoyed the machine and being able to call her daughter and save their conversations for later reference. When Sheila went off to law school in the fall of 1977, her parents bought a blue MCM TTY so she could call home from time to time.

While in her third year at Georgetown University Law Center, one of Sheila's

courses was to spend some time in a legal clinic where she could volunteer with the National Center for Law and the Deaf (NCLD). Once employed by NCLD as a staff attorney, one of her first ongoing tasks was to monitor and read the Federal Register to see if the FCC had published any regulatory or proposed rules. In those years the Federal Register was published daily, and a certain day of the week was devoted to certain federal agencies. The Federal Register paper was rather thin and the print copy was small. These were the days before the internet became available and widely used.

At NCLD, Sheila worked closely with Sarah Geer who worked with Marc Char-matz of the NAD. Sarah helped Sheila ease into telecommunications issues and introduced her to people like David Saks and Latham Breunig. At that time, there was an organization called Telecommuni-cations for Hearing Impaired Consumers (THIC) which focused on telephone issues for hard of hearing and deaf consumers. There was also an organization that David Saks formed, called Organization for Use of the Telephone (OUT).

In the fall of 1986, the FCC issued a notice of their intent to hold a public hearing on issues of interest to the deaf and hard of hearing community in telephone mat-

ters. There was nothing in the notice indicating whether accommodations would be provided. There was no TTY number listed for the FCC. With the assistance of her secretary at NCLD, Sheila called the FCC number on the notice and spoke with the FCC representative arranging the meeting. He tried to persuade her to bring her own interpreter. She said, no and firmly told him that the FCC has the responsibility under the Rehabilitation Act to provide interpreters. The FCC representative told Sheila he would have to check into this. He did call her back and told her there would be an interpreter present.

Sheila then went to the meeting at the FCC, but she was running a bit late. When she got to the meeting, she learned that she would be the first person to speak on the record, and there was only one interpreter present. She decided to tell the audience what had happened prior to the meeting when she had called through her secretary to find out if a sign language interpreter would be provided. She also spoke on issues that NCLD felt should be addressed in telecommunications matters for deaf, hard of hearing, and late deafened consumers. Other speakers came up to address the FCC. Halfway through the hearing, an FCC official attempted to stop the hearing because he said the interpreter needed a break but the meeting will still continue during the break. All of the participants in the room were aghast, and they all said, but how are the deaf and hard of hearing members going to be able

to participate without the interpreter? The FCC representative was embarrassed and said, let's all break for 15 minutes and then return to resume the hearing.

Looking back, Sheila was proud that her statements had empowered the audience, except for the FCC representative. Now today, deaf and hard of hearing people can participate equally in all FCC public hearings because access is now the norm, including live video streaming with captions.



Barbara Chertok

Barbara Chertok lost her hearing suddenly in 1957 at age 21 due to an autoimmune disease, but she was not going to let her deafness stop her from living her life to the fullest. To advocate for communication access for deaf and hard of hearing people, she joined TDI soon after its founding in 1968.

In 1971, while on sabbatical leave at Stanford with her family, she contacted Bob Weitbrecht, a deaf Stanford scientist, and bought two of the first acoustic couplers he invented, which worked together with the two TTYs donated by the telephone company. This allowed her and her husband to use the telephone for the first

time since her deafness by typing messages back and forth over the telephone lines. Years later, frustrated by not being able to reach the medical and professional people she needed to call, Chertok decided to sell TTYs for a local distributor, and even sold one to the White House! By that time, TTYs had become smaller and portable electronic devices. Decades later, when state telecommunication relays came into being, she discontinued this practice.

Chertok received her first cochlear implant in 1997 and her second in 2008. Having studied operatic voice before losing her hearing, she now enjoys attending the opera at the Sarasota Opera House. Chertok is currently involved with the Sarasota / Manatee chapter of the Hearing Loss Association of America and writes for *Hearing Life* (formerly *Hearing Loss*) magazine.



Malcolm J. Norwood

Malcolm J. (“Mac”) Norwood has been revered in the deaf and hard of hearing community as “the father of closed captioning.” Born in Hartford, Connecticut, Norwood became deaf when he was five years old from measles and scarlet

fever. He graduated from the American School for the Deaf (ASD) in 1943 at the age of 16. “Mac” Norwood earned his bachelor's degree from Gallaudet College in 1949. He taught first at the Texas School for the Deaf for one year, then at ASD for two years, and later worked as a teacher, administrator, and coach at the West Virginia School for the Deaf and Blind (WVSDB). There he built up a large library of filmstrips and regularly ordered foreign subtitled films for students. He believed that children would benefit from watching and comprehending media with subtitles or open captions.

Norwood joined the Captioned Films for the Deaf program (now the Described and Captioned Media Program) in 1960 and eventually became its mainstay and leader, serving as chief from 1971 until his retirement in 1988. As the head of this organization, Norwood became a leading advocate for the development of closed captioning on television. Norwood's pioneering work on television and film captioning improved access to media for deaf and hard of hearing Americans.

Norwood was the first deaf professional to work at the U.S. Department of Education and head a major program there. Norwood was at the forefront of almost every research and development program related to captioned media for the deaf. Most importantly, Norwood was the first to envision the possibilities of closed captioning on television. Norwood explored the possibility of captioning television

programs at a time when hearing viewers rejected the prospect of embedding open captions on television networks: the solution was to produce closed captions—captions that could be turned on by people who want to view them.



Art Roehrig

Art Roehrig has spent his career advocating for people who are deafblind, often presenting workshops on mental health issues. He began to participate in the activities of the National Association of the Deaf-Blind of America in 1975 which is now the American Association of the Deaf-Blind (AADB). While representing AADB, he has attended every single meeting of the Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN) since its founding.



Alfred Weinrib

In 1986, Alfred Weinrib, a captioning columnist for 'The Silent News' pays an impromptu visit to Hollywood from New York City, and meets with studio executives - leading to widespread captioning of home video movies. One year later when NBC stopped captioning its popular soap opera, "Search for Tomorrow," fearing similar action by other broadcasters, Mr. Weinrib again led efforts to convince the Peacock Network to restore captioning on the daytime serial.



One Thing Led to the Next - The Real History of TTYs.

Bill Graham

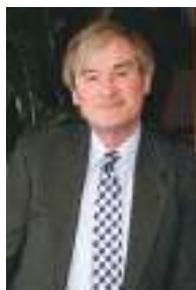
Bill Graham and his friends founded Association of Late-Deafened Adults (ALDA) at his apartment in 1987

during a party featuring some well-known Chicago pizza. ALDA members have made it clear that they prefer to have real-time captions as a communication support service for assembly meetings. For a time, Bill worked as an editor at Microsoft for Encarta CD program in the days before Google, and he made sure that the digital encyclopedia had captions on all of its embedded video clips. He also published a children's book, *One Thing Led to the Next - The Real History of TTYs*



Jim House

In September of 1987, Jim House and John Long, a vice president (father of a deaf son), succeed in their efforts to begin Washington, DC's first local real-time news captioning on WJLA TV-7, an ABC affiliate. After many months of research and fundraising, the captioned news show was nearly ready to go on the air. Jim recruited local deaf and hard of hearing community leaders to form an ad hoc committee, and guide the station in their local community outreach efforts.



Dr. Frank G. Bowe

As a well-respected national disability advocate, the late Dr. Frank G. Bowe flew to Japan and South Korea, in 1989, and successfully persuaded TV manufacturers to include built-in closed captioning chip to replace the old set-top TeleCaption decoder. Congress then passed the TV Decoder Circuitry Act in 1990, requiring every television set manufactured or sold in the U.S. with screens measuring 13" or more diagonally to have built-in captioning capabilities. The Act has since been amended by the CVAA to apply to any digital devices that play back video. In addition to televisions, this includes iPads, smartphones, and other devices.



Toby Rae Silver

In 1990, when the downturn in the

economy began to affect the television industry, WJLA Channel 7, an ABC-affiliate in Washington, D.C. “downgraded” its captioned news from real-time to electronic newsroom captioning. As predicted, this move spurred angry howls from deaf and hard of hearing viewers. To address this critical problem, these viewers who depended on captioning banded together to create the Television for All (TVFA) Coalition, chaired by Toby Rae Silver. TVFA included representatives from more than 20 local, state, and national organizations based in the Washington, D.C. area, including TDI.

NBC’s flagship station, WRC-TV Channel 4 was the first newscaster to provide real-time local news captioning due to TVFA’s advocacy. To honor Toby’s advocacy efforts, WRC named a new captioning placement control system called “Television Online Bi-Screen Information”, or TOBI for short, to ensure that captions do not block or interfere with emergency text crawls in the same area on the screen. WJLA then returned to real-time captioning, and two other DC newscasters followed suit: W*USA (CBS) and WTTG (FOX). WJZ (CBS) in Baltimore also began captioning their news live. In 1998, the FCC required real-time local news captioning for newscasters located in the top 25 TV markets.

Later in 2009, the Internal Revenue Service implemented a dedicated IRS

YouTube Channel in American Sign Language, and with captioning and voiceover, for America’s Deaf and Hard of Hearing taxpayers. It now continues into its 10th year. TDI commended the IRS for producing online video clips sharing tax tips produced by IRS Producer/Director Toby.



Sean Markel

In 1998, Sean Markel pushed for



live event captioning at the Baltimore Ravens NFL football stadium. He also worked with the Maryland Association of the Deaf to install highway signage with the TTY symbol, noting which rest areas had a payphone TTY. He followed up with the installation of captioning for live events at the University of Maryland - College Park (UMD) Xfinity Center, and the Capital One Field to ensure captioning on all screens at UMD sports facilities and online videos of Terrapin (Terp) sports games, and other live events.



Robert J. Smithdas

Robert and Michelle Smithdas have a conversation during a 1998 Barbara Walters interview on ABC News 20/20. (Credit: ABC News)

Born in Pennsylvania, Robert J. Smithdas was the director of Services for the Deaf-Blind at the "Industrial Home for the Blind" in New York for a long time. He began his career there in 1950 after graduating with a Bachelor of Arts Degree, cum laude, from St. John's University in New York. Three years later, he became the first deaf-blind

person to earn a master's degree at New York University where he specialized in vocational guidance and rehabilitation. During his tenure at the Helen Keller National Center (HKNC), Smithdas was an advocate for deaf-blind education and employment, retiring in December 2008. Barbara Walters considered her time in 1998 with Robert and his wife, Michelle Smithdas her "most memorable interview".



**Pam Holmes
Sheila Conlon Mentkowski**

In 1997, Pam Holmes, Chair of the NAD Telecommunications Committee established a thriving online chat group for the NAD Telecommunications Advocacy Network (NAD-TAN). She found and recruited over 80 key communication access leaders around the country. The committee met entirely online with year-round action, responding to US Access Board and FCC and DOJ proceedings as rules and regulations were being written for the ADA, TRS and TV captioning. The role of members was to take action when proposed rules were released for comment. NAD-TAN was often cited in final rule documents noting comments submit-

ted and decisions that supported those advocacy comments.

In February 2005, the NAD renamed the group to the NAD Technology Group [NAD_TC] and asked Sheila Conlon Mentkowski to become chair, a task that she continues today. This online group on Yahoo also discuss policy changes in relay services and captioning, share their experiences in trying out new products and services, as well as keep up with FCC announcements. There are about 70 NAD members in the group at the present time.



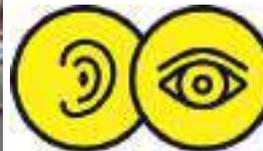
Carol Finkle

A passionate mother of two deaf children, Carol Finkle, Founder and Executive Director of Creative Access, organized a protest where more than one hundred people assembled in front of a United Artist theater in Philadelphia. Actors, disability activists supported deaf patrons to exercise their rights to have access to movies at their neighborhood cinema. Carol now has a different crusade where she keeps school administrators on their toes when it comes to bilingual education and early language acquisition without deprivation.



Dr. Jeff Bohrman

A chemist-turned-vocational rehab counselor and advocate, lent TDI his expertise with Braille machines as TDI worked with Washington State during 2001, in an attempt to develop an electronic Braille TTY that can stand up to the daily wear and tear from using the device to communicate on the phone and talk face to face with other people.



Randy Pope

Randy Pope is a widely acclaimed deaf-blind advocate for a nationwide program for support service providers (SSPs), and more communication facilitators (CFs) to help deafblind callers when they use the video phone. A CF reads the other party's signs on the screen and relays it to the deafblind caller who could not see the screen. The deafblind person signs direct-

ly back to the other party. Randy was also an invaluable resource who provided great insights on deafblind issues in emergency preparedness as a subject matter expert for CEPIN in 2005.



Russ Boltz

During the mid-2000s when Russ Boltz tried to rent some DVD movies, he often found that in many DVDs, only the movie itself was captioned, but not the special features, such as director interview or comments from the cast and crew. He sued five major studios, and settled out-of-court. The studios agreed they would ensure the DVDs come out with either captions for both the movie and other special features, or be accurate in labeling for five years if the features were not captioned.

Congratulations TDI on your 50th Anniversary!



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Dr. Roy Miller

Late deafened at age 47 from surgeries removing tumors on his hearing nerves, Dr. Roy Miller, who has Neurofibromatosis Type II, made the transition from teaching political science at Southern Illinois University to administering the state Commission for the Deaf and Hard of Hearing in Missouri. Now retired, as a result of his leadership and active networking with state legislators, Missourians who are deaf and hard of hearing benefited from a streak of extraordinary legislative accomplishments that included laws that allowed people with hearing loss to have a “J88” placed on their driver’s license to indicate that they used alternative communication (2001), required that interpreters be provided to individuals who are deaf in juvenile detention and correction proceedings and facilities in Missouri, (2002), required auxiliary aids and services to be provided so that deaf and hard of hearing people could serve on petit and grand juries (2004), mandated that American Sign Language (ASL) be counted toward satisfaction of any foreign language or language requirements in any public school or public institution of higher education in Missouri and that ASL be accepted for meeting any for-

eign language entrance and graduation requirements in any public institution of higher education in Missouri (2005).



Nancy Linke Ellis

Nancy Linke Ellis was the driving force to get Hollywood to provide open-captioned films for showings throughout the country. In 2009, as more movie theaters began to provide closed captioning, she helped set up a website, Captionfish, that lists open and closed captioned movie showings all around the country.



Sheri Farinha

In 1993, Sheri Farinha, a deaf mother from Northern California became desperate when her three-year-old son fell and sustained a severe cut on his head. Holding her son, she called and connected to 9-1-1 but was hung up several times. Finally she gave up when no one came and drove her son to the hospital

not knowing the police would arrive at her home 15 minutes after she left. Sheri filed a complaint with the US Department of Justice alleging a Title II violation for being denied direct access to city emergency services. Richard Ray was then involved in providing technical assistance to the Los Angeles Police Department on how the 9-1-1 system should be implemented - a TTY in each position. After her complaint was settled, Bob Mather, an attorney at the Civil Rights Division went on to make settlements with many Public Safety Answering Points around the country for failed 911 calls by deaf people using TTYs.

Twenty years later, in 2014, Sheri was frustrated with many glitches while making video calls to people that had different videophones. She made a vlog rallying the deaf community and urging that the FCC make VRS a standard relay service. Within two weeks, more than 5,000 signed the petition asking the FCC to provide VRS 24/7, validating vlogs as a powerful advocacy tool.



John Waldo, Wash-CAP

John Waldo is another attorney who has won a string of landmark ADA lawsuits throughout the country that

brought about more captions at the movie theaters, as well as live captioning at stadiums and other venues. He and other advocates set up the Washington State Communication Access Project (WashCAP), and a similar group in Oregon (OR-CAP). WashCAP has about 200 members at the present time and it works on behalf of people with hearing loss to try to create greater accessibility. It's easier for an individual to be a member of Wash CAP and have the organization file a lawsuit against movie theaters than for one person to file a lawsuit as a named individual. It can also be more effective because you have a structure in place that can monitor continued compliance with the outcome of what you have done.



Jim House, Carol Studenmund, David Viers



"Portland: Turn on the Captions Now" stickers used to show support for the captioning activation

ordinance requiring public televisions to display captions during business hours.

A grassroot effort led by Jim House, Carol Studenmund, the owner of LNS Captioning, and David Viers, a prominent advocate, persuaded the Portland, Ore-

gon City Council to enact an ordinance requiring televisions in public places to display closed captioning during business hours, or risk a hefty fine. During a town hall forum to discuss the captioning ordinance, nearly all the spectators in the room wore "Portland: Turn on the Captions Now" stickers made by Phillip J. Wolfe, with a rose and the CC symbol that were passed out by the group. The visible endorsement in the room ensured the passage of the ordinance in the City of Roses, despite the sole opposition of the local restaurant association. Another compelling reason was that by having captions on all the time was so that everyone would have timely access to emergency bulletins announcing severe weather or wildfires.

The Portland City Council members were strong proponents of equity than equality. Equality is when you can ask someone in a bar to turn on the captions, and they will gladly do it. Equity is when you can just walk in the door and watch any TV set on the premises, and you wouldn't have to ask. Jim House said that advocacy runs in his blood (from his many years in Washington, DC and his work at TDI), and he wanted to give something back to his native city. Since the ordinance was passed in 2015, the cities of Ann Arbor, Michigan and Rochester, New York also followed with similar "turn on the captions" ordinances. The state of Minnesota also passed legislation requiring television sets in public areas of medical facilities to show captioning during the hours they are open.



Mark Hill

As President of the Cerebral Palsy and Deaf Organization (CPADO) Mark Hill trains video interpreters on how to relay calls for deaf people living with cerebral palsy when signs sometimes become more difficult to comprehend. Mark also volunteers his time on establishing an Office for the Deaf and Hard of Hearing in Oregon.



Darlene Ewan on Facebook Live video giving updates about Hurricane Lane that posed a threat to the islands.

Darlene Ewan

In May 2018, Darlene Ewan, President of the Aloha Association of the Deaf

(ASAD) attempted to contact the local TV stations to alert them they needed to have live captions for emergency alerts or warnings in Hawai'i. At first, it seemed the TV stations attempted to tell her Hawai'i is not in the top 25 market and therefore were not required to provide captioning for weather or emergency alerts. Darlene contacted various organizations including TDI and the FCC. She was informed the top 25 market rule only applied to regular newscasts and not emergency alerts. She also learned to file consumer complaints with the FCC related to the lack of captioning during Hawai'i's severe weather events such as hurricanes, volcano eruptions, that happened in 2018. Meanwhile, as her complaints were being processed at the FCC, she and other ASAD members took it upon themselves to produce vlogs in ASL on ASAD's Facebook page to alert deaf residents in Hawai'i of the various disasters and the proper precautions they need to take in response to each alert.

Looking Ahead...

There are many more advocates and activists who have not been recognized, yet their contributions to access in telecommunications, media, and information services are very much appreciated. Do share your story with TDI. TDI hopes that the advocates of yesteryear and today will help inspire the advocates during the next 50 years. Who knows what an accessible world will look like in 2068?

“ ”

THE FUTURE ALWAYS COMES TOO FAST AND IN THE WRONG ORDER.

– ALVIN TOFFLER

Our Future Depends on the Never-Ending Advocacy from TDI

Our future depends on the never-ending advocacy from TDI. It seems like new technology is always immediately in front of us. Sometimes new products and services are accessible the minute you take them out of the box. Many manufacturers build in accessibility by involving users with disabilities, especially those who are deaf and hard of hearing, from the concept stage through development by asking for guidance in building products the right way.

However, the advent of new technologies can come at a dizzying pace, and at times without any accessible features. This reminds me of Alvin Toffler, who wrote the classic book *Future Shock*, and remarked, “The future always comes too fast and in the wrong order.”

This quote alone justifies TDI’s existence for the next 50 years.

Several years ago when keyless ignition were available in some new cars, it became easy for a deaf person to leave the car, even though the engine was still running. In theory, the engine could continue to idle until it runs out of gas. If the car was parked in a garage attached to the house, the occupants are at high risk of inhaling the exhaust from the car, which can be odorless, and there have been tragic reports of people succumbing to carbon monoxide poisoning. TDI contacted some car manufacturers to point out the deadly problem, and collaborated with them to find a solution.

Below are some of the areas you, your children, and grandchildren can expect to see from the fruits of TDI’s dedicated advocacy. None of this will happen without ongoing support from the government, industry, and most of all, you - the consumers and the community.



Figure 2. Internet of Things. L&N/Air/Albuquerque Post

Internet of Things

The Internet is no longer just a network of computers connected to each other. If you have a printer, chances are that it has its own connection to the Internet and can print from your computer or smart-phone anywhere in the world. Refrigerators with an online connection can keep track of what food you use and let you know when it is time to buy more food at the grocery store. Transportation shelters have screens that let you know when the next bus will arrive.



Self-Driving Vehicles

Someday you will not need to actually drive your car. The car does all the driving for you!



Smart Cities

Cities are developing what is being called smart infrastructure. Highway systems are monitored at a control center by staff who are always on the alert for accidents and congestion. Utility companies are rolling out smart electrical grids that can help optimize energy consumption. Soon every aspect of our daily routine while we are downtown will become automated.



Access to Video Games and Virtual Reality

A virtual world of excitement and fantasy awaits you! During certain games, multiple players can talk AND type to their teammates to discuss strategy.



Glass Touch Technology

See how your day begins and ends with glass. From the moment you wake up and through your day at work, school, medical appointments, and evening entertainment, glass is becoming a part of our day-to-day information technology.



Next Generation 9-1-1

We hope it never happens to you, but if you ever need to call for help, the Next Generation 9-1-1 system will connect you to emergency responders through voice, text, and video on your smartphone, tablet or on your computer. If you need an interpreter, the public safety answering point (PSAP) or 9-1-1 call center will summon one for you. Text-to-9-1-1 is being rolled out across the country as an interim first step to restore direct access to 9-1-1 services.



Multi-Modal TRS

There is one type of telephone relay for every user. But some users use more than one type of TRS. Some that use ASL as a primary language might want to refer to a text screen to capture important information that can be hard to follow such as phone numbers and credit card accounts that can be conveyed, understood, and retained if they were typed out. Global VRS has the distinction of being the only VRS provider that allows the video interpreter to type the message to a deafblind caller to read in large print or Braille, then the deafblind person can sign back to the interpreter. People who use speechreading can see the other person's facial expressions and also read text.

We envision a future when for any VRS call we make, we can read captions created by automatic speech recognition (ASR) based on what the interpreter receives from us and relay to the hearing party, as well as confirming what the hearing party says against the interpreter's translation in sign language.

For captioned telephone users, real time text can be added as a feature, for

the hard of hearing person who wants to ensure a phone number, a social security number, or a credit card number is correctly exchanged during the telephone transaction.



Automatic Speech Recognition

Automatic Speech Recognition (ASR) in some forms may be the solution to bring access to telephone calls and streaming videos. Most captioned phone services rely on ASR to transcribe responses from hearing speakers so the hard of hearing or deaf viewer can read the text on the screen. TV broadcasters and online streaming video producers looking to cut costs associated with captioning look to “voice-writing” where a trained speaker will revoice whatever is being said to be converted to captioning at a lower cost.

In 2010, YouTube launched its auto captioning feature. The first videos showed run on sentences without punctuation or capitalization. The captioning was hard to read by many viewers because of its high error rate. However, the captions were in close synchronization with the audio, and it will match if you upload a transcript when you upload the video.

Since then, the quality of auto captioning has improved, only if best practices were followed, and humans are there to ensure that quality remains high. Improved algorithms can detect speech patterns and tell sentences apart. In NTID/RIT teachers now generate their own captions through Microsoft Translator where the captions show in the PowerPoint slide. The error rates have declined, but the captions are not considered broadcast quality where the best steno captioners can hope for a 98 or 99 percent accuracy rate. If it was 90 percent, then ten words can be spelled wrong for every 100 words transcribed.

We can applaud the ASR industry for making progress, but we cannot be satisfied with the status quo. TDI as our watchdog organization, needs to work with industry to maintain high quality of access in the absence of federal regulations.

At any time, we must not accept suggestions for a lower level of accuracy if the information is not critical, thus we must not give license to program developers to permit haphazard “captioning”. Where does one draw the line, on whether any one piece of information is important or not?

Welcome to the Future

...and there is a whole lot more more beyond our imagination! From all of us at TDI, thank you to industry for your innovation and support, and welcome to the future!

Acknowledgements

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ClearCaptions

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About the Authors

Jim House



Jim House is the Disability Integration Manager for the Coalition on Inclusive Emergency Preparedness at the Washington State Independent Living Council. Jim was the former Director of Public Relations at TDI from 1998 to 2013. During his tenure, he started as the guest editor for the TDI GA-SK 30th Anniversary Issue, and then brought sophistication to TDI's publications, the annual National Directory and Resource Guide, and the quarterly GA-SK, then TDI World magazine, with a layman's understanding of "how things work". Jim is the 2013 recipient of the Robert H. Weitbrecht Telecommunications Access Award.

Claude Stout



Claude Stout has served as the fifth and current TDI Executive Director since January 1997. For more of his bio, go to page 60.



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Voice and data plans may be required when using Hamilton CapTel on a smartphone or tablet.

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FEDERAL LAW PROHIBITS ANYONE BUT REGISTERED USERS WITH HEARING LOSS FROM USING INTERNET PROTOCOL (IP) CAPTIONED TELEPHONES WITH THE CAPTIONS TURNED ON. IP Captioned Telephone Service may use a live operator. The operator generates captions of what the other party to the call says. These captions are then sent to your phone. There is a cost for each minute of captions generated, paid from a federally administered fund. To learn more, visit fcc.gov. • Hamilton CapTel may be used to make 911 calls, but may not function the same as traditional 911 services. For more information about the benefits and limitations of Hamilton CapTel and Emergency 911 calling, visit HamiltonCapTel.com/911. • Copyright



First TDI Board Meeting

1972

"America is well into the so-called "Information Age." The best-paying and some of the fastest-growing jobs and careers involve collection, analysis, and interpretation of information. All of us are bombarded daily with more information than were our parents; sifting the wheat of knowledge from the chaff of information is a crucial skill in daily life today."

Dr. Frank G. Bowe - Winter 1997 GA-SK Newsletter

"We want that little hand-held gizmo with perfect speech recognition capabilities that we can point to a speaker and be able to read the text of what he or she is saying instantly. We'd like CART (computer-aided real time translation) to be within a hair of 100% accurate and give us ALL the information going on around us, including sound effects ... I'm just getting warmed up. Stop me now!"

Cheryl Heppner 1998.1 GA-SK Newsletter

"The original founders of APCOM (the company formed to manufacture acoustic couplers) and TDI were pioneers in advocacy. Their communication methods were different - some of them were fluent in sign language, the rest did not sign for one reason or another. In spite of this difference (remember - diversity!), they all learned to work together to plead their cause before federal agencies and industry. Not only did they talk about their situation, they also came up with possible solutions to problems and acted on them. As their network grew, they cultivated friends and allies who then helped make things happen."

Jim House 1998.4 GA-SK Newsletter

From a Board Views column, titled "We Want You!" by in Volume 47, Issue 4 (2017) - "It is important to welcome new members of all ages and hearing loss while retaining loyal members so we can more fully represent the great diversity of our country. We need a larger base of younger members to carry out our mission and vision."

Sheila Conlon-Mentkowski, Board President TDI World Magazine Volume 47, Issue 2

"There are some times, when we try to convince industry and government that our access needs can be met as readily achievable, simply through extra effort, and with much less expense. Equally important, we have to take into account some constraints that industry has had with its resources, or government with its regulatory responsibility."

Claude Stout, Executive Director TDI World Magazine Volume 48, Issue 3