



# WORLD

Technology News and Commentary for Deaf and Hard of Hearing People



## *Memories*

October 25, 2018

**Starting on page 7**



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Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI)  
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**#Thanks TDI50 testimonials – pg 21**

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### Thursday

Registration  
Opening Ceremony  
Plenary Sessions  
Workshops  
Breakout Sessions  
President's  
Reception

### Friday

Registration  
Plenary Sessions  
Workshops  
Motivational Lunch  
Products / Service  
Demonstrations  
Exhibits  
Forums  
TDI Awards

### Saturday

Registration  
Products / Service  
Demonstrations  
Exhibits  
TDI Dinner &  
Entertainment

Schedule subject to change



# 23RD TDI BIENNIAL CONFERENCE 2019

**With Access, Everyone Wins!**

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## TDI'S MISSION

**"TDI provides leadership in achieving equal access to telecommunications, media, and information technologies for deaf and hard of hearing people."**

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# WORLD

**Volume 49.3**

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**Managing Editor:** Eric Kaika

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**Shaping An Accessible World**

## Board Views



**SHEILA**

**CONLON-MENTKOWSKI**

*TDI President and  
Board Member, West Region*

*"We firmly believe  
that decisions related  
to products involving  
us must include  
our input from the  
drawing board to the  
final design"*

## Within 50 Years, TDI Becomes a True Force

**W**e are extremely pleased, delighted, and awed to have achieved this auspicious milestone in TDI's history. From a small relatively unknown organization in 1968, TDI has become a true force for consumer advocacy 50 years later in 2018. We have made an incredible leap from huge teletypes to products that can be held in one's hands to communicate with others, receive messages and alerts regarding natural disasters and the like, and to reach out to the world around us.

In June 1968, when TDI was being formally organized by a small group of oral and manual deaf leaders, I was graduating from my small all girls' hearing Catholic high school in western Massachusetts. I had no inkling that 50 years later, I would be honored to have an active part in celebrating the 50th year of TDI's establishment as well as my 50th year from high school! At that time, there was no way I could directly use the telephone, TV programming had no captions, and I still wore the boxy hearing aid with the long wire from my ear to my hearing aid. I did not know American Sign Language and was not aware there was a deaf community. I did not know about Gallaudet College or the National Technical Institute of the Deaf even though that was being established in my neighboring state of New York.

Today, I have my own deaf family, a deaf husband, and a deaf son who is currently attending graduate school at Gallaudet University. We rely on captions, VRS, visual emergency alerts, vibrating alarm clocks, and visual cues to live independently.

Over the past 50 years, TDI has had active board members representing all of our great nation. We represent you, the deaf, hard of hearing, deafened, deaf blind and mobility disabled population as well as your families and colleagues. We strive to keep abreast of technology and not let it leave us out. We firmly believe that decisions related to products involving us must include our input from the drawing board to the final design. We keep up with regulations and laws that involve us, whether it be emergency broadcasts, alerts, Relay services for deaf, hard of hearing, late deafened, deaf blind, and mobility impaired.

TDI firmly intends to continue its strong and determined advocacy role for the next 50 years and beyond with your support and advocacy as well.

We are all for access,



Sheila Conlon Mentkowski

President, TDI





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## Capitol Commentary



BY CLAUDE STOUT  
TDI Executive Director

**“Shaping an accessible world in telecommunications, media, and information technology is a collaborative effort between consumers, researchers, technical advisors and regulators.”**

## Our Thanks for 50 Years

*Dear Friends of TDI,*

Thank you for joining us tonight for the historic TDI's 50th Anniversary Gala celebration, Fighting for Your Access!

TDI got its start in 1968. Our first thanks must go to APCOM (Weitbrecht, Marsters, and Saks) for connecting us to the telephone network with the green monster TTYs. We pay homage to AGBell and NAD (Dr. H. Latham Breunig, and his wife, Nancy, and Jess Smith) for the founding of the Association. We take the occasion tonight to honor our first group of volunteers, fondly called TDI Agents. As the TTYs were distributed, they spent many hours installing them, and training individuals and businesses how to use them, and selling TDI memberships.

In fifty years, we have had 14 individuals who honored TDI with their leadership, vision, and guidance as President. They worked with 64 other individuals who lent their talent, expertise, and resources on the governing Board of Directors to guide TDI via policies, procedures, budgets, and strategic plans. They have our deepest appreciation.

Four individuals (Dr. Breunig, Barry Strassler, Thomas Mentkowski, and Alfred Sonnenstrahl) have preceded me in the first twenty-eight years serving as Executive Director. We thank them very much for their visionary leadership and efficient management of TDI daily operations. We are grateful to over fifty staff members who were the face of TDI operations and advocacy operations. We would not be as effective if it were not for the three pro bono law entities (Morgan Lewis, Institute for Public Representation, & Samuelson-Glushko Technology Law and Policy Clinic). Having lawyers on our side, and sharing them with our partner consumer groups, rehabilitation engineering research centers, and trade groups has made a world of difference in accessible telecommunications policy.

Shaping an accessible world in telecommunications, media, and information technology is at best a collaborative effort between consumers, researchers, professionals (technical advisors), and regulators. Consumer advocacy groups express a need. Research confirms 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. TDI truly values its partnerships with all the key players here.

Kudos go to twenty-five sponsors of the Gala. A great amount of thanks goes to John Kinstler, Chair, and members of the Gala Planning Committee for producing this historic event. Last, but not least, we thank the TDI Board of Directors, staff, and volunteers for their support. May you have a safe trip back home!

Sincerely yours,

Claude L. Stout  
Executive Director

# Reflections on the Tdi 50th Anniversary Gala



by Sheila Conlon  
Mentkowski

It is hard to believe that the TDI 50th Anniversary Gala is over with! All the people involved worked diligently to achieve a successful event, from the program, to the video, and the publication of TDI's five decades of accomplishments on behalf of deaf, hard of hearing, deafened, and deaf-blind individuals. Separate pieces came together well during

the Gala with the overall goal to recognize and honor those who labored to connect deaf callers to the telecommunications network in the USA in the past 50 years.

While at the Gala, it was a pleasure to meet and greet many people from the past who were part of these efforts. People came from as far as England and all over the USA.

I was very pleased to be able to be part of the Gala, accompanied by my immediate family, my husband

Tom, a former TDI Director in the mid 1980's, and our son, Alex, now a graduate student at Gallaudet University. We enjoyed the evening, mingling with people we knew and meeting new people.

Toward the end of the program, the TDI Board, Claude Stout, our Executive Director, and staff and volunteers all joined in to give a toast to those who had gone before us, who were with us at the event, and to those who will carry out TDI's mission in the future.

## Memories of the Gala



by Claude Stout

This issue will give spotlight to the key highlights from the Gala on October 25, 2018. It was a

historical event to be remembered by all those who attended.

About 470 people were at the Gala. Everyone looked good and well dressed for the occasion. Thanks to all for coming to the Gala.

Everyone loved the new TDI lapel pin. I was busy all night giving out the lapel pins. They are "badges of honor" to all whom that have supported TDI over the years.

Many commented on how well the keynote address was from Alex Abenchuchan, the anchorman with the nationally acclaimed Daily Moth online news program. They said his comments on the importance in the future for a reliable, valid relationship between the general

media profession and the deaf and hard of hearing community were right on target. They felt it was a good positive step toward planning for the future while we celebrated our 50 years of success.

We were deeply honored to have four Gallaudet Presidents – one current and three former. We thank Roberta Cordano, Dr. T. Alan Hurwitz, Dr. Robert Davila, and Dr. I. King Jordan attending the Gala, and for their crucial support for the key strategic partnership between Gallaudet and TDI. Also, we thank NTID for having Bernard Hurwitz represent Dr. Gerald Buckley, President, NTID at the Gala. We cherish the close working relationship with NTID as well. We also thank our friends in government and industry for celebrating the night with us at the Gala.

Hope you have enjoyed the 152-page commemorative edition of the TDI World magazine, called "A Path Toward An Accessible Future." If

you have a copy, great, and if not, ask from us for a copy. If you are a member of TDI, we will send it to you for free. If you are not a member, the book is on sale for \$50 a copy.

Equally important, hope you have watched "Shaping An Accessible World," a thirty-seven documentary film on TDI's 50 years of service and contributions to the community. Check for it on our website or via Facebook.

Last but not least, the celebration was for everyone who contributed small or large to TDI's success in its first 50 years. We want to pat everyone on the back for his or her support toward us having a higher quality of life, and living in a more accessible, inclusive America. Thank you, thank you from the bottom of our hearts! Our work is far from being done, and we must commit ourselves to produce well for our national community in the next 50 years.

## Our Quest for Access



BY ERIC KAIKA  
Managing Editor

*“Witnessing this celebration and seeing the nearly 500 people gathered to pay homage to TDI for its years of advocacy and raising the bar in terms of accessibility in telecommunications is nothing short of incredible.”*

## Thanks for the Memories

*Editor note: Part two of the column is held until issue 50.1. This column will focus on TDI's 50th Anniversary Gala.*

**A**lthough a decade shy of being a true semicentennial celebrator, my memories from the birth of the TTY to modern day telecommunications still rings strong. TDI celebratory gala reminded me of my time from hosting imaginary calls on the “Green Monster” to the TTY-a-thons hosted by Gallaudet Alumni House to today’s face-to-face phone conversations using VRS.

In a short span of 50 years, the deaf and hard of hearing community witnessed a rapid transformation from relying on family, friends, and neighbors to make personal, intimate phone calls for us, to now having the phone fully accessible at our disposal. And the technological changes the phone went through those years is amazing.

Witnessing this celebration and seeing the nearly 500 people gathered to pay homage to TDI for its years of advocacy and raising the bar in terms of accessibility in telecommunications is nothing short of incredible. It makes me further appreciate TDI’s work over the years and want to see it become a stronger household name for years to come.

Congratulations TDI, and thank you everyone, for your support.



### Check Out Our Website!

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# Individual Membership Application Form

As a TDI Member, you will automatically receive a copy of the Blue Book, our quarterly TDI World, and e-Notes. You can opt-out of any of these subscriptions at anytime, just let us know by emailing: [PubRel@TDIforAccess.org](mailto:PubRel@TDIforAccess.org)

Save time and postage! Renew online: [TDIforAccess.org/eMembership](http://TDIforAccess.org/eMembership)

**Bold** indicates *required* information.

**Name** (first, middle, last): \_\_\_\_\_

**Mailing Address:**

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(street) (city) (state) (zip code)

**Email Address:** \_\_\_\_\_ **Fax:** \_\_\_\_\_

Home Phone: Web:

Mobile Phone: \_\_\_\_\_ Birthdate: \_\_\_\_\_

Alternate Phone: \_\_\_\_\_

**Check items you permit to be listed in the TDI Blue Book**

- ☐ Name ☐ Home Phone ☐ Fax
- ☐ Mailing Address ☐ Mobile Phone ☐ Website
- ☐ Email Address ☐ Alt. Phone
- ☐ *Unlisted (Name, Address, etc. will not be published)*



<b>Membership fees</b>	<b>1-Year</b>	<b>2-Year</b>	<b>Lifetime</b>
Regular:	\$40	\$75	\$1000
Senior Citizen (60+) birthdate field required	\$30	\$55	\$1000

Membership fee: \$

Donation (optional) \$

TOTAL \$

Donations to TDI are Tax-Deductible Contributions (#35-1146784). You will receive a formal letter at the end of the year totaling your contributions.

Credit card number: \_\_\_\_\_ Expiration: \_\_\_\_\_

If paying by check, make payable to: **TDI** (bounced checks will incur \$35 fee)

Mail form & payment to: **TDI, P.O. Box 8009, Silver Spring, MD, 20907**

***Thank you for supporting TDI !***



# *Memories*

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October 25, 2018

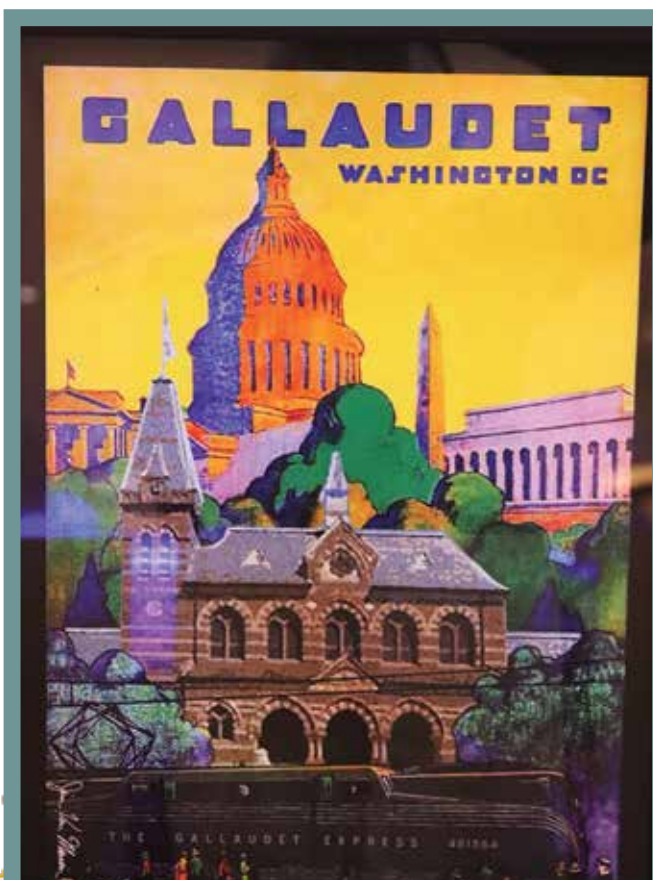




From Top to Bottom, Left to Right:

- a) Cristina Duarte shakes it loose during the YouthQuake. b) attendees mingle about in the ballroom before YouthQuake starts. c.) Jo Rose Benfield dances with Ría Takeuchi Kaika. d) attendees a line dance to a song played by DJ Nico DiMarco. d) a panoramic view of the Gala. e) John Kinster, the co-emcee announces the start of YouthQuake, while Angie Officer watches. f) The TDI champagne drink, the red cherry highlights the red circle in TDI's logo. g) DJ Nico DiMarco preparing to kick-start YouthQuake

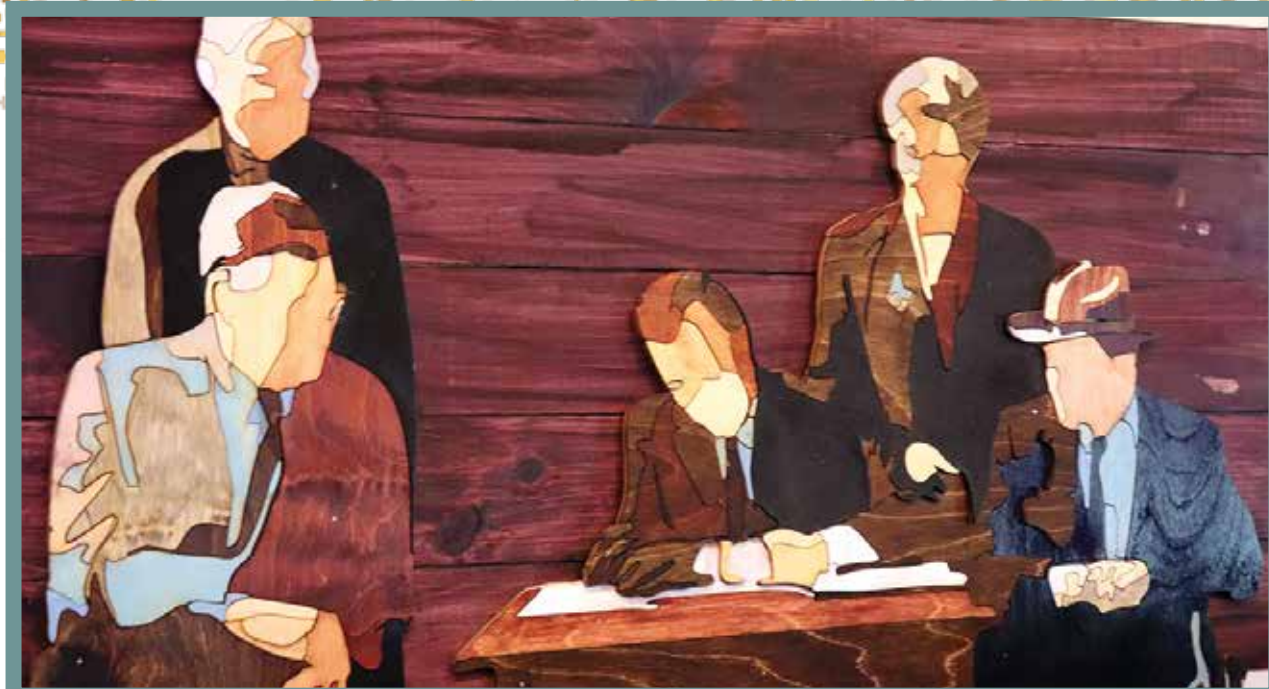




THIS PAGE | From Top to Bottom, Left to Right: a) John Kinstler and Angie Officer, Gala co-Emcees b) Sally and Paul Taylor watching the program unfold c) "The Deaf Mecca" by Silver Moon Brand (Ann Silver and Jim Van Manen) d) Claude Stout greeting Dr. I. King Jordan e) Phil Bravin of ZVRS mingles with the crowd)

PAGE 16 | From Top to Bottom, Left to Right: a) "Signing of American with Disabilities Act of 1990" wood-art by Deafroot (Sheri Youens-Un) b) Some TDI Board and staff members posing for a picture c) Bob Mather enjoying the reception d) Clifford Rowley, a former TDI President shakes hands with a guest e) The special 152-page 50th Anniversary commemorative book and Gala program book





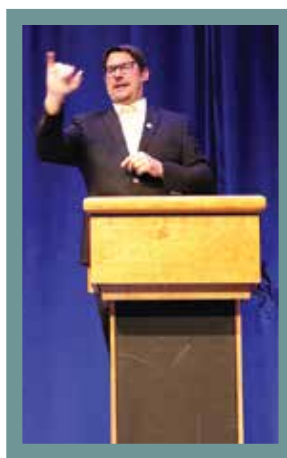
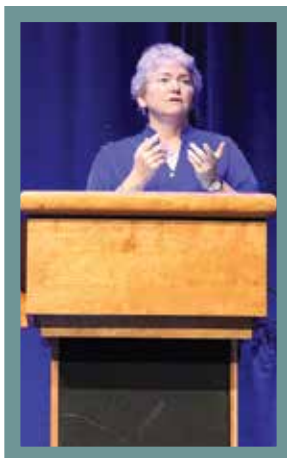




From Top to Bottom, Left to Right:

- a) Gala table setting.
- b) Gala keynote speaker: Alex Abenchuchan of Daily Moth.
- c) Claude Stout, Executive Director, TDI makes remarks.
- d) attendees give applause to Gala committee, co-chairs, and other TDI players.
- e) the co-emcees introducing a brief video remarks from FCC Chairman Ajit Pai.
- f) Claude and Judy Stout; Bobbi Cordano, Gallaudet President; Barbara Kelley, HLAA Executive Director; and Howard Rosenblum, NAD Executive Director.
- g) attendees watch a short promo of a TDI Documentary: 50 Years of Shaping an Accessible World





From Top to Bottom, Left to Right:

- a) Rob Engelke featured in TDI Documentary. b) Tamar Finn of Morgan Lewis toasts with Judy Stout. c) Jan Withers prepares to introduce the TDI Documentary.
- d) Matt Myrick introduces Alfred Sonnenstrahl to introduce his movie, "A Lifeline for Deaf People." e) Jarvis Grindstaff and CM Boryslawskij prepare to show highlights of the #ThanksTDI50 campaign. d) Mark Seeger announces a new youth initiative by TDI, a national scholarship contest commencing in 2019.
- e.) Sheila Conlon-Mentkowski, TDI Board President leads the TDI Board members, co-emcees, and audience to toast to TDI's 50th Anniversary.

## The 50th Anniversary Gala:

# *A Night to Remember*

BY JIM HOUSE

Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI) recently celebrated 50 years of providing leadership in achieving equal access to telecommunications, media, and information technologies for deaf and hard of hearing people with a “star-studded” gala full of individuals who either had a part in TDI’s advocacy work, or benefitted from some of TDI’s many achievements.

The 50th Anniversary Gala on October 25, 2018 was a night to remember for nearly 500 attendees as they witnessed the “stars” of TDI, the many movers and shakers receive recognition for their work over the years. Held at the Bethesda North Hotel and Conference Center in Rockville, Maryland, the Gala brought together various individuals that played a part in shaping an accessible world.

Once the attendees found their assigned seats and chatted with others at their tables, the emcees, John Kinstler and Angie Officer called different groups of people to walk up the aisle to the stage so everyone could

acknowledge their presence. First up were the nine Honorary Co-Chairs who provided inspiration for the Gala. Those who walked the red carpet aisle were: Stephen Brenner, Roberta Cordano, Robert Engelke, Tamar Finn, Dr. T. Alan Hurwitz, Andrea Saks, and Judy Viera. The other two who could not attend the Gala were Cheryl Heppner and The Honorable U.S. Senator Edward J. Markey (D-MA).

All TDI Agents present at the Gala then walked up the aisle, followed by the current and former TDI Board Presidents and Board Members. Next came the Executive Directors, staff members and pro-bono attorneys who helped implement TDI’s vision of shaping an accessible world over the years.

After dinner, TDI Board President, Sheila Conlon Mentkowski took the floor and shared how TDI’s history intertwined with her personal life. “One thing that really struck me. You know that TDI was founded on June 10th, 1968, which was my high school graduation date. So now you know how old I am.”

At this point, the emcees asked the audience to wave so they could be captured on video where untold numbers of viewers were watching on TDI’s YouTube Live Stream channel. An archived copy of the entire Gala can be seen at <https://www.youtube.com/watch?v=Xy-vId36eUA&t=3708s>

Once the waving hands subsided, Claude Stout, TDI Executive Director expressed his gratitude on behalf of TDI. “TDI is deeply honored tonight to ever have here such an incredible, unique gathering of individuals who have shared with us their talent, consumer advocacy, industry support, technical knowledge, and/or legal expertise toward a better future for an accessible world, with the possible exception of when Dr. Robert Weitbrecht worked on his TTY technology patent alone. TDI salutes you all for going on “the road not taken, or less traveled”. Thank you for not accepting the notion of maintaining a status quo. Thank you for your resolve, perseverance, and resilience. Because of your courage, innovation, and

Continued on page 15



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**A NIGHT TO REMEMBER** Continued from page 14

optimism, today the world is becoming a much better place for us."

For the highlight of the Gala, Alex Abenchuchan, host of The Daily Moth online news service presented an inspiring keynote speech titled, "Media and the Deaf Community". Alex gave examples of media portrayals of deaf people over the years in news and entertainment along with changing perspectives of the deaf and hard of hearing community. As he concluded, he said, "We have you TDI as a giant in our community. TDI has done the big work to make sure that the little guys get forward in society. So I do want to commend TDI for the work that they have done, for allowing me to become a giant myself because I was propelled by the work that they have done and I owe a lot to TDI and all of the partners here tonight who have helped to ensure that I am here with you and I want to do what I can to keep the momentum going. I do want to say, again, thank you to TDI for everything you have done for the Deaf community throughout the years!"

Everyone who had a seat at the Gala found a copy of "A Path Toward An Accessible World", a 154-page book full of previously unpublished photos of movers and shakers all over America. Co-authors, Jim House, former TDI Director of

Public Relations and Claude Stout, Executive Director of TDI researched the TDI archives and found new materials to supplement the Blue Book chronologies. We appreciate the hours of proofreading and fact-checking by Sheila Conlon-Mentkowski, formerly of the National Center on Law and the Deaf.

"TDI Documentary: 50 years of Shaping an Accessible World" a YouTube video was also produced in conjunction with the book by Bad Cats Entertainment. The documentary shows vintage photos of technology and leads up to scenes of TDI leading consumer advocacy work with government officials at the FCC and with industry leaders during various TDI Biennial Conferences. This 38-minute video can be found at <https://www.youtube.com/watch?v=L7yi0bON0Vs>

A second video, produced by former Executive Director, Alfred Sonnenstrahl and former TDI Agent, Steve Brenner, showcased the TTY as a "Lifeline for Deaf People" during TDI's early years thanks to a sponsorship by Ultratec and Sprint Relay. The video pointed out that it is taught in deaf school programs that Alexander Graham Bell patented the telephone, but no one knew who Robert Weitbrecht was although he was the one who brought the TTY to the deaf

community. This 28-minute video can be found at <https://www.youtube.com/watch?v=71trvQCtSeI>

A third short video showed highlights of #ThanksTDI50, an online Facebook campaign where friends of TDI thanked the organization for bringing about access to telecommunications, media, and information technology to deaf and hard of hearing people throughout the United States. At this point, the emcees asked the audience to wave so they could be captured on video where untold numbers of viewers were watching on TDI's Facebook Live Stream. This and several other videos are posted on TDI's Facebook page at <https://www.facebook.com/TDIForAccess/>

The Gala concluded with an announcement of A New Youth Initiative with TDI, outlining incentives for young people to take up different projects that would further TDI's agenda with future technologies such as autonomous vehicles, gaming, the Internet of Things, that many of us can expect to see in the next 50 years. After a champagne toast, Nico DiMarco, the fraternal twin brother of Nyle DiMarco and professional deejay (DJ) stirred up the crowd with music and dance for the YouthQuake party that lasted well into the night.

## TDI Chronicles Its Journey in Shaping An Accessible World

BY JIM HOUSE

**O**n October 25, 2018, Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI) celebrated 50 years of providing leadership in achieving equal access to telecommunications, media, and information technologies for deaf and hard of hearing people with a “star-studded” gala attended by nearly 500 people who either had a part in TDI’s advocacy work, or benefitted from some of TDI’s many achievements.

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While doing research for the book, TDI reached out to Dr. Harry G. Lang,

author of *A Phone of Our Own* and Karen Peltz Strauss, author of *A New Civil Right*, both published by Gallaudet Press. Both books documented the birth and growth of the TTY network, and the legislations that brought about increased accessibility, respectively. TDI also received some never-before-published photos of our TDI Agents hard at work on old TTYs around the country from Ed Sharpe, an archivist at the Southwest Museum of Engineering, Communications, and Computation. Thanks also to Anna Terrazzino and Bob Brody for sharing I. Lee Brody’s pioneering work under the NY/NJ Phone-TTY organization. Paul and Sally Taylor shared their scrapbook about their memories in building the TTY network in St. Louis, MO and Rochester, NY.

The book began with a brief story of three men: Dr. Robert H. Weitbrecht, Dr. James C. Marsters, and Andrew Saks. Weitbrecht developed the acoustic coupler (modem) that connected the TeleType machine to the telephone so the TTY Baudot tones can be transmitted as sounds instead of electrical impulses. Marsters, who requested that Weitbrecht come up with a way for them to communicate over the phone, became the mouthpiece of the TTY movement, arranging demonstrations around the country at major deaf conferences for people who had never used the telephone in their

lives. Saks brought his engineering and fundraising expertise to help grow the network.

This led to the birth of TDI in 1968. The organization had humble beginnings in a house owned by Latham and Nancy Breunig in Indianapolis. Latham worked as a chemist in the E. Lily Company, a chemical manufacturer and volunteered his services with Alexander Graham Bell Association. Jess M. Smith worked as an English teacher and edited the National Association of the Deaf’s Broadcaster Newsletter.

### 1st Decade - TDI Beginnings (1968-1977)

After several months operating out of the Breunig residence and printing an annual directory of people who use TTYs, TDI received a big boost from the Indiana Telephone Pioneers who donated office space and volunteers to help acquire, recondition, and distribute surplus TTYs to the homes of deaf and hard of hearing people around the country.

Several sidebars in this chapter took a closer look in the lives of the pioneers who blazed the TTY Network, which started the path toward an accessible world. Those featured were Weitbrecht, Marsters, Saks, Brody, and Breunig. A chapter within the first decade paid tribute to the TDI Agents, a cadre

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**TDI'S JOURNEY Continued from page 16**

of volunteers who help increased the Blue Book listings by going to people's homes and installed TTYs, and later TeleCaption decoders. The TDI Board Presidents and Board Members throughout its history were also highlighted in this chapter.

By the end of the first decade, TDI hosted several conferences, published a TTY repair manual, TeleTypewriters Made Easy! for its TDI agents with the help of Paul and Sally Taylor, made the first transatlantic TTY call, started advocating for closed captioning, which was at the time, an untried technology for TV broadcasting.

**2nd Decade - A New Era (1978-1987)**

During this decade, TDI grappled with the growing obsolescence of mechanical TTY machines. Several manufacturers attempted to produce electronic TTY devices, but many of them could not make them compatible with ASCII computers, which were becoming more common. The organization was one of the primary hosts for DEAF-NET, foreshadowing a common way of communication with anyone in the world who had an email address. Closed captioning begins on the small screen, bringing access for the first time on primetime TV network shows and news shows.

Two sidebars within this chapter covered the tenures of TDI Executive Directors Barry Strassler and Tom Mentkowski. Under their leadership, the push for a

nationwide telecommunication relay service (TRS) network begins to take shape.

**3rd Decade - A Powerful Force (1988-1997)**

This decade begins with the international news spotlight on people who are deaf and hard of hearing during the Deaf President Now movement at Gallaudet University in Washington, DC. This became the prelude to the one of the most significant civil rights legislation ever enacted into law, The Americans with Disabilities Act (ADA). Follow TDI's fourth Executive Director, Alfred Sonnenstrahl as he advocates on behalf of TDI. Working hand in hand with the National Center on Law and the Deaf, he and other advocates watch the legislative process on the ADA and several other bills and ensuing regulations to ensure that the access rights of deaf and hard of hearing people are being met. During his tenure as TDI Executive Director, Al oversaw the development of TRS regulations, access to 911 and other services provided by state and local governments, TV sets with built-in decoders, and the introduction of video relay services (VRS). This allowed TDI to develop collaborative relationships with the Federal Communications Commission (FCC), the US Department of Justice (DOJ), and other Federal agencies in developing regulations that brought about greater access and enhanced the quality of our lives.

In addition to the sidebar on

Sonnenstrahl, several other sidebars in this chapter covered the International TTY Logo, the White House TRS demonstration call between President William Clinton and Frank Harkin, the older brother of US Senator, Tom Harkin (IA-D), and Ed Bosson who is known as the Father of VRS. Two other chapters in this decade gave us a retrospective overview of TDI Conferences over the years, and some artwork by selected deaf artists on how we interact with technology.

**4th Decade - Going Digital (1998-2007)**

As we entered the internet age, TDI had to adapt to a promising new technology. As many of us know, the introduction of broadband services in online communications drastically changed and shattered the limitations of TTY and other legacy technologies. TDI branched out in collaboration with several small and large consumer coalitions such as the Coalition on Movie Captioning and the Deaf and Hard of Hearing Consumer Action Network. During this decade, TDI received nearly \$3M in Federal funding to develop training programs to help first responders and emergency managers communicate with people who are deaf, hard of hearing, deafblind, or have other access and functional needs in communication. TDI developed a new website which went through several versions over the years up to now, go and check [www.TDIforAccess.org](http://www.TDIforAccess.org)

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### TDI'S JOURNEY Continued from page 17

A sidebar in this chapter covers Claude Stout before he became TDI's fifth Executive Director. Also, two chapters cover TDI staff who helped the organization grow, and explained the rationale behind the changes in TDI logos.

### 5th Decade - Gaining Stature (2008-2017)

During the most recent decade covered in this book, we witness the growing influence of TDI in national policy, not only at the FCC, but also in Congress as TDI joined hands with more than 300 organizations in the Coalition of Organizations for Accessible Technology, advocating for the passage and implementation of The 21st Century Communications and Video Accessibility Act of 2010 (CVAA). The CVAA updated the accessibility rules of previous legislation that applied to analog legacy technologies to also apply to new and emerging digital technologies in TRS services and captioning among other things. The bulk of TDI's comments to the FCC covered Internet captioning, VRS Reform,

A sidebar in this chapter shone the spotlight on Andrea Saks, daughter of Andrew and Jean Saks as she followed their footsteps in introducing the TTY to England and other countries in Europe. Today she represents TDI at the International Telecommunications Union, a standards-setting body that develops global standards for

telecommunication technologies.

### Other Articles

Going forward, the book continues to justify the continued existence of TDI's advocacy in the years ahead. TDI will forge new paths to an accessible world by collaborating more with not only consumers, but also with industry groups as they recognize the value of accessibility and universal design principles.

TDI takes a few moments to recognize a friendship between Robert Weitbrecht and Bob Engelke that laid the foundation of Ultratec, the only TTY (and the first captioned telephone) manufacturer to recognize the specific contributions made by Weitbrecht who is known in the amateur radio world as W6NRM.

TDI takes a look at how we interacted with Mr. QWERTY (the keyboard from the TTY to mobile phones), relay services, captioning, emergency communications and notification services, hearing aid compatibility, and consumer advocacy tools over the years.

TDI reveals the relationship it has with industry and academia, listing the many accomplishments that came about with or without government intervention. We also acknowledge the many "subject matter experts" who advised TDI on technology and policy issues in efforts to create strong and robust legislation. Then we applaud two types of advocates, those who use their knowledge of the law to argue for and create forward looking policies, and those in the

trenches who on their own created change in their neighborhoods that sometimes have an impact across the country. The book concludes with a look to the future and TDI's role.

TDI Documentary: Shaping an Accessible World, a fifty-year documentary film on TDI's service and contributions to the Deaf and Hard of Hearing Community was also produced in conjunction with the book by Brad Nitko of Bad Cats Entertainment. The documentary shows vintage photos of people and technology and leads up to scenes of TDI leading consumer advocacy work with government officials at the FCC and with industry leaders during various TDI Biennial Conferences. Here you can see the early directories and compare them to today's Blue Book. Also we see the various iterations of The GA-SK quarterly newsletter which became the TDI World magazine. We also see how TDI Conferences have grown into biennial events where consumer advocates, industry professionals, and government officials share their recent achievements in access to telecommunications, media, and information technologies. This 38-minute video can be found at <https://www.youtube.com/watch?v=L7yi0bON0Vs>

In order to get the book *A Path Toward an Accessible World* by Jim House and Claude Stout, join TDI and become a member! We would love to have you with us as we work to shape an accessible world!





# Congratulatory Notes From Key Individuals in the Industry



"Many, many congratulations to TDI for your extraordinary achievements in advancing the communications rights of people with disabilities over the past five decades. Your hard work and commitment succeeded in reaching and surpassing milestones that improved the lives of people who are deaf and hard of hearing not only in America, but across the globe. At this wonderful time, I celebrate your success!" - **Karen Peltz Strauss**

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"Working with TDI has been a huge honor for Uber. They understand the role that technology can play in helping offer work opportunities to people who are deaf or hard of hearing, and we've been heartened to get their feedback to improve our products, to join in conversations they've convened with other industry leaders, and to work with them to share the positive stories of the people who are benefiting from their work on the Uber platform. We congratulate them on 50 years of amazing work and look forward to seeing what they'll do in the next half-century."

- **Malcom Glenn, Strategic Partnerships Manager, Uber**

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"Congratulations to TDI on 50 years of connecting people with disabilities to their world! TDI's leadership has strengthened collaborative efforts with the communications industry and policymakers to deliver the diverse range of accessible wireless communications services and equipment available today.

Wireless has been a cornerstone for groundbreaking accessible technologies that offers the deaf, hard of hearing and speech impaired the ability to call, text, and connect anywhere, anytime. As we led the world in 4G LTE, the wireless industry is working hard to deliver 5G services that will lead to even more breakthroughs for people of all different abilities.

CTIA has been proud to promote the progress that our member companies have made to deliver accessible wireless products and services. Our partnership and collaboration with TDI has led to communications breakthroughs for people with disabilities, including Text-to-911, Hearing Aid Compatibility, Real-Time Text and more. CTIA and our member companies look forward to continuing a close partnership and collaboration with TDI to deliver an even more accessible world!"

- **Matt Gerst, Assistant Vice President, Regulatory Affairs, CTIA**



"Hearing Loss Association of America extends our heartfelt congratulations to Claude Stout and the whole TDI team, past, present and future, who have built an astounding record of accomplishments and contributions to the community of people who are deaf and hard of hearing. We are pleased to be counted among TDI's friends and look forward to our continued collaboration on the critical issues that impact people with hearing loss across the country." - **Barbara Kelley, Executive Director, Hearing Loss Association of America**

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"AT&T values its long-standing partnership with TDI. Congratulations on 50 years of impressive achievements and I look forward to 50 more." - **Linda Vandeloop, Assistant Vice President External Affairs/Regulatory, AT&T Communications, Inc.**

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"We stand on the shoulders of giants like TDI where it comes to accessibility. Without TDI's work, I would not even be in my current position at Gallaudet University. TDI's tireless work has ensured that people like us can function in their jobs, and solve the really challenging, really interesting access problems that are popping up now and in the future." - **Christian Vogler, PhD, Professor, Director, Technology Access Program, Gallaudet University**

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"Facebook extends its sincere congratulations to Telecommunications for the Deaf and Hard of Hearing, Inc. on its 50th Anniversary. An incredible achievement! TDI is a leader in the effort to improve the life of anyone with a disability through communications and technology, and it's our privilege to support such important work!" - **Monica Desai, Director, Global Connectivity Policy, Facebook**

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"Google is proud to partner with TDI to help make the world's information universally accessible for all members of society. We salute TDI for 50 amazing years and we hope that TDI keeps up the good work for many years to come!" - **Adrienne Biddings, Policy Counsel, Google**

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"Amazon congratulates TDI for their many accomplishments and contributions to the Deaf and Hard of Hearing community over the last 50 years, and we look forward to many more in the decades to come." - **Peter Korn, Director of Accessibility, Amazon Lab 126**





Find TDI on Facebook!  
[www.facebook.com/TDIForAccess](http://www.facebook.com/TDIForAccess)





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AADB = American Association of the Deaf Blind  
 ALDA = Association of Late Deafened Adults, Inc.  
 ASDC = American Society of Deaf Children  
 CC – closed captioning  
 CCASDHH = California Coalition of Agencies Serving Deaf and Hard of Hearing, Inc.  
 CGB = Consumer and Governmental Affairs Bureau  
 CPADO = Cerebral Palsy and Deaf Organization  
 CTS – Captioned Telephone Service  
 DHHCAN = Deaf and Hard of Hearing Consumer Advocacy Network  
 DRO = Disability Rights Office  
 E-911 – Enhanced 911  
 FCC = Federal Communications Commission  
 FNPRM – Final Notice of Proposed Rulemaking  
 HLAA = Hearing Loss Association of America

IP – Internet Protocol  
 NAD = National Association of the Deaf  
 NBDA = National Black Deaf Advocates  
 NG-911 – Next Generation 911  
 RERC-TA = Rehabilitation Engineering Research Center on Telecommunication Access  
 SCAT/SCABT = Speech Communications Assistance By Telephone, Inc.  
 SoA = Speed of Answer  
 TAP = Technology Access Program at Gallaudet University  
 TDM = Time Division Multiplexing, a method of handling electronic communications  
 TIA = Telecommunications Industry Association  
 TLPC = Samuelson-Glushko Technology Law & Policy Clinic  
 TRS – Telecommunications Relay Service  
 VRS – Video Relay Service

## Telecommunications Relay Services

■ Ex Parte to Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities – Misuse of Internet Protocol (IP) Captioned Telephone Service • CG Dockets No. 03-123 & 13-24

(May 9) TDI and HLAA filed an ex parte letter with Zenji Nakazawa, Legal Advisor - Public Safety and Consumer Protection Advisor with the Office of FCC Chairman Ajit Pai urging the Commission to grant the request of Hamilton Relay, Inc. in the TRS dockets to pilot the public release of any pending draft item related to Internet Protocol (IP) Captioned Telephone Service (IP-CTS) slated to be voted on circulation rather than at an open Commission meeting on June 7, 2018 with sufficient time for the public to comment on elements of the draft. The Commission's 2013 Further Notice of Proposed Rulemaking in the dockets raises a number of significant issues about the structure and operation of IP-CTS and it is critical that the Commission afford stakeholders the opportunity to comment on any tentative conclusions in a draft item that may have significant implications for millions of Americans who are hard of hearing and rely on

IP CTS to communicate with friends, family, colleagues, and others on equal terms. We agree with Hamilton that allowing stakeholders to review and comment on any draft item would serve the public interest by promoting transparency and ensuring equal access to the administrative process.

<https://ecfsapi.fcc.gov/file/105092629528598/2018.05.09%20Pilot%20Release%20Ex%20Parte.pdf>

■ Ex Parte to Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities – Misuse of Internet Protocol (IP) Captioned Telephone Service • CG Dockets No. 03-123 & 13-24

(May 25) TDI, HLAA, and Gallaudet University TAP met with Nirali Patel of the Office of Chairman Pai and separately with Karen Peltz Strauss, Robert Aldrich, and Michael Scott of the Consumer and Governmental Affairs Bureau and David (Raster) Schmidt and Andrew Muiltz of the Office of the Managing Director regarding the draft item in the IP-CTS docket tentatively scheduled for the June 7, 2018 open Commission meeting. We expressed our general support for the Commission's efforts to ensure the sustainability of Internet Protocol (IP) Captioned Telephone Service (IP CTS) service and appreciate the Commission's

decision to make the draft item for public review in advance of the Open Meeting.

However, we join other stakeholders in expressing significant concerns about the item's Declaratory Ruling on the use of Automated Speech Recognition (ASR) technology. While we support in principle the Commission's efforts to shift to a technology-neutral framework for evaluating IP CTS providers, the Declaratory Ruling's approach of delegating to the Bureau the responsibility of applying the existing TRS minimum standards to IP CTS applicants proposing to use ASR does not acknowledge that the minimum standards are replete with explicit references to human communications assistants (CAs) and provides little guidance as to how the Bureau should evaluate compliance with those standards by machine-learning algorithms. We agree with Hamilton Relay that the Declaratory Ruling raises significant legal issues and are concerned that this approach will result in the Bureau issuing determinations that effectively result in the modification of the minimum standards without solicitation of public comment, potentially giving rise to violation of the notice and comment requirements of





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Administrative Procedure Act and miring the deployment of IP CTS improvements in litigation. Substantively, we expressed concern that the Declaratory Ruling opens the door for ASR solutions to widespread deployment without the implementation of quality standards or performance metrics.

While the Commission acknowledges that Section 225 of the Communications Act requires it ensure that IP CTS solutions provide functional equivalence to consumers with disabilities, the draft item relegates this task to a Notice of Inquiry with no obvious timeline while immediately opening the door to the deployment of ASR solutions with potentially serious quality shortcomings. These quality concerns are not mere speculation. For example, the Commission has already received IP CTS applications contemplating the use of ASR technology from MachineGenius and VTCSecure that do not adequately address the quality of the underlying technology. For example, VTCSecure's public application cursorily contends that "[a]dvancements in ASR allow it to be extremely accurate and almost on par with human speech recognition" and that it operates with "over 99% accuracy" while promising dramatic cost savings but does not appear to even reference ASR in its explanation of how its service will meet the minimum standards. Likewise, MachineGenius's public application is replete with vague promises of "high-quality" and lower-cost captions, but requests waivers of numerous minimum standards.

We are also concerned that the Declaratory Ruling leaves open serious questions about protecting the privacy of sensitive conversations conducted over IP CTS systems. For example, the Declaratory Ruling declares

that conversations must be "kept confidential" but appears to contemplate that ASR providers can use internet-based ASR engine providers, which inherently require transferring call recordings to third-party providers. Moreover, many engine providers collect and utilize audio recordings for the purpose of improving the accuracy of the underlying machine learning technology that powers their engines. The Declaratory Ruling leaves unclear the Commission's intent for how the Bureau should approach the complex tradeoffs between privacy and quality improvements inherent in the use of machine learning algorithms for voice transcription, the Commission's expectations for and approach to ensuring that the use of third-party voice engine providers does not result in the unlawful disclosure of sensitive call information, or whether and how particular practices and interactions between ASR-based IP CTS providers and ASR engine providers will comply with relevant legal regimes such as the Wiretap Act. As with quality, existing applications before the Commission fail to sufficiently address these concerns. For example, the VTCSecure public filing does not appear to specifically address confidentiality for the ASR portion of its proposed service. And the MachineGenius public filing vaguely states that "[a]udio and transcripts of calls are not stored remotely" but notes that the service is subject to unspecified privacy policies, including of an unidentified third-party engine provider.

Finally, we agree with Hamilton Relay that the Declaratory Ruling does not sufficiently address the interaction of ASR-based IP CTS providers with 9-1-1 to ensure their ability to safely handle emergency calls. To forge ahead with ASR-based solutions without confidence that they will work properly in an emergency could seriously jeopardize the lives and safety of consumers with

disabilities. While we believe these concerns can be overcome with the development of a detailed record and further dialogue among stakeholders in this proceeding, the Commission risks substantial harm to the civil rights of consumers who are hard of hearing by proceeding with the deployment of ASR technologies without developing a more rigorous approach to ensuring quality and privacy.

Accordingly, we urge the Commission:

- To convert the substance of the draft item's Declaratory Ruling on ASR into questions and migrate them to the Further Notice of Proposed Rulemaking (FNPRM);
- Alternatively, to leave the Declaratory Ruling intact but incorporate questions regarding ASR quality and privacy into the FNPRM and stay the consideration of ASR applications by the Bureau until an order implementing the FNPRM is issued; or
- At a bare minimum, to put out on public notice and solicit public comment on all IP CTS applications, specifically on quality and privacy issues, to ensure that quality and privacy issues are not overlooked when the Bureau considers ASR (and other) IP CTS applications, and insert specific language in the Declaratory Ruling making clear that the Commission will not approve ASR-based IP CTS services that do not deliver functionally equivalent quality and protect the privacy and confidentiality of consumers with disabilities.
- Relatedly, we agree with Hamilton Relay that the Commission should migrate the draft item's Notice of



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Inquiry into the Further Notice of Proposed Rulemaking to ensure that the critical development of performance goals and measures is not unnecessarily delayed, particularly if ASR-based offerings are approved in advance of the completion of those goals and measures. We also:

- Urged the Commission to make clear that proposed Rule 64.604(c)(13) in paragraph 44 of the draft item, which clarifies the scope of “unauthorized use” of IP CTS services, does not preclude the use of IP CTS services in emergency shelters, which is the subject of a pending recommendation before the Commission’s Disability Advisory Committee;
- Urged the Commission to reconsider the draft item’s approach to eligibility certifications, which we are concerned will disenfranchise consumers from acquiring access to necessary IP CTS while adding unnecessary complexity and cost; and
- Supported the Commission’s further investigation into the potentially significant cost of allowing potentially dubious intellectual property licensing fees to be billed to the fund.

<https://ecfsapi.fcc.gov/file/105252245210428/2018.05.25%20IP%20CTS%20Draft%20Item%20Ex%20Parte%20final.pdf>

■ Sprint Petition for Clarification or, in the Alternative, Reconsideration Pending Applications of MachineGenius and VTCSecure

(July 26) HLAA, TDI, NAD, and

DHH-RERC filed an ex parte urging the Commission to reconsider and take a more measured approach to the certification of applicants to provide Internet Protocol Captioned Telephone Service (IP CTS) laid out under its June 8 R&O, Declaratory Ruling, FNPRM, and NOI. We urge the Commission to grant in significant part Sprint’s July 9, 2018 petition for clarification or reconsideration, but also lay out below the contours of a framework that the Commission should use as a baseline for evaluating pending applications and others that are submitted in advance of resolving the NOI, should the Commission choose not to grant Sprint’s petition. We largely concur with and support Sprint’s request for the Commission to clarify or reconsider its approach to allowing and evaluating IP CTS applications using automatic speech recognition (ASR) technology. On a substantive basis, we agree with Sprint that accuracy—as well as speed, synchronicity, and other overall dimensions of quality—privacy, emergency capability, and resilience are important components of any evaluation framework. As we have noted, pending applications raise serious concerns about the privacy of consumers’ phone conversations. We have likewise noted that it is critical that all applicants be capable of providing robust performance in case of emergency. The Commission should carefully implement the Declaratory Ruling’s requirement that providers demonstrate they can handle “all types of calls” by requiring demonstrated proof from all applicants of the ability to handle calls involving male and female speakers, children, speakers who heavily use industry-specific jargon, speakers with thick accents, and speakers who speak different rates, volumes, and with varying reliance on colloquial and idiomatic language. In particular, we urge the Commission to adopt conditional certifications, ongoing monitoring, and independent audits.

<https://ecfsapi.fcc.gov/file/107271021711657/2018.07.26%20IP%20CTS%20Application%20Framework%20Final.pdf>

■ In the Matter of Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities re: Structure and Practice of the Video Relay Service Program \* CG Docket Nos. 03-123 and 10-51

(June 8) TDI, NAD, HLAA, DHHCAN, ALDA, CPADO, and CCASDHH submitted reply comments to the FCC to give input on the proposed compensation rates from Rolka Louke Associates (the TRS Fund Administrator) for various forms of interstate TRS for the period beginning July 1, 2018 through June 30, 2019. The share of communications

service revenue used to support programs for this 15% of the population is certainly well within the range of reasonable. The Commission has found that the companies currently obligated to contribute to the TRS Fund have a total revenue base of approximately \$53.4 billion. The Consumer Groups understand this revenue base is down from approximately \$72 billion at the beginning of the decade and \$58 billion in 2017. However, with the size of the TRS Fund now at \$1.6 billion, the Commission is managing the TRS Fund well, as the Fund is equivalent to approximately 3% of the contribution base. The Commission should adopt Sprint’s proposed IP relay rate of \$1.37, explore a new and sustainable rate methodology for IP Relay that will ensure continued services to those that rely on such service for functionally equivalent communications; and continue to explore ways to expand the contribution base to ensure viable TRS programs, continued competition and innovation to bring



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functionally equivalent communications services to TRS users.

[https://ecfsapi.fcc.gov/file/106081275116284/TDI%20et%20al.%20and%20Consumer%20Groups%20Reply%20Comments%20\\_2018%20TRS%20Fund%20Report.pdf](https://ecfsapi.fcc.gov/file/106081275116284/TDI%20et%20al.%20and%20Consumer%20Groups%20Reply%20Comments%20_2018%20TRS%20Fund%20Report.pdf)

■ (July 26) TDI, NAD, and CPADO submitted comments in response to the Petition for a Waiver filed June 20, 2018, by five providers of TRS – ASL Services Holdings, LLC, d/b/a Global VRS; Convo Communications, LLC; Purple Communications, Inc.; Sorenson Communications, LLC; and CSDVRS, LLC, d/b/a ZVRS. The VRS Providers seek a limited waiver permitting them to provide service to a new user or one ported from another provider while that user's telecommunications relay services User Registration Database (TRSURD) verification is pending. The Consumer Groups support the VRS Providers' Petition for a limited waiver and encourage the Federal Communications Commission to take rapid action on their request. The VRS Providers seek a waiver authorizing service to new or porting users for a period of up to two weeks while verification of that user's eligibility to use VRS services is pending. The VRS Providers would seek compensation for VRS calls to such users during that period once validation is, in fact, obtained. The Consumer Groups urge the Commission to adopt the VRS Providers' requested limited waiver to permit the use of VRS services for new users after their registration information has been submitted for validation.

<https://ecfsapi.fcc.gov/file/1072653647158/Consumer%20Group%20Comments%20on%20VRS%20Providers%20Petition%20for%20Waiver.pdf>

■ In the Matter of Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities re: Truth-in-Billing and Billing Format \* CG Dockets Nos. 03-123 and 98-170

(July 3) TDI, ALDA, CCASDHH, CPADO, and HLAA submitted these reply comments in response to comments filed with the Federal Communications Commission concerning the petition filed by ITTA – The Voice of America's Broadband Providers seeking a declaratory ruling that carriers can list Telecommunications Relay Services (TRS) along with other regulatory fees in a line item on customer bills. Consumer Groups also remain concerned that singling out TRS fees will result in discrimination. However, Consumer Groups support transparency and recognize that the Commission has promoted transparency in customer billing. Thus, on the specific question of whether carriers may list TRS on customer bills grouped together in a line item with other regulatory fees, Consumer Groups take no affirmative position. Regardless of the Commission's ultimate decision, Consumer Groups hope that the Commission, carriers, and other stakeholders will join accessibility organizations in making clear to the public that TRS is not just a regulatory fee, but a service that is beneficial to the general public because it allows all individuals to communicate with each other.

[https://ecfsapi.fcc.gov/file/10703550125218/18-07-03%20Reply%20Comment%20-%20ITTA%20TRS%20Petition%20\(final\).pdf](https://ecfsapi.fcc.gov/file/10703550125218/18-07-03%20Reply%20Comment%20-%20ITTA%20TRS%20Petition%20(final).pdf)

## Closed Captioning

■ Certification Requirements for PEG Programmers and Program Producers \* CG Docket No. 05-231

(June 26) TDI, NAD, HLAA, ALDA,

CPADO, CCASDHH, and DHHCAN filed an ex parte urging the Commission to carefully consider the needs of deaf and hard of hearing consumers in resolving issues raised in the Aug. 26, 2016 petition for waiver of the Alliance for Community Media. In particular, we reiterate that, in resolving the ACM Petition, the Commission should:

- Ensure that any exemption from the certification rules applies only to programming aired on public access, governmental, and educational access (PEG) channels that are actually exempt from the caption provision rules and disclaim any implication that PEG channels are exempt from the caption provision rules generally;
- Bearing in mind the importance of equal access to PEG programming, make clear that any exemption of PEG programmers from the certification rules will not preclude or prejudice in any way the narrowing or elimination of exemptions that may apply to PEG channels when the Commission acts on the Consumer Groups' petition to review and narrow or eliminate categorical exemptions;
- Clarify and emphasize that all PEG channels whose programs are all exempt must certify that all their programs are exempt and specify each category of exemption they claim applies; and
- Clarify and emphasize that all PEG channels carrying at least some non-exempt programming must certify which, if any, of their programs are exempt and which, if any, exemptions they claim apply.

We urge the Commission to verify that receiving certifications only from





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programmers (and not program producers) has and will continue to serve as a sufficient basis for the Commission to aggressively resolve captioning issues without being hamstrung by an inability to exercise jurisdiction over the responsible party.

<https://ecfsapi.fcc.gov/file/10626253916923/2018.06.26%20Consumer%20Groups%20PEG%20Ex%20Parte%20final.pdf>

## Emergency Communication

■ Comments to Wireless Emergency Alerts – Amendment of Part 11 of the Commission's Rules Regarding the Emergency Alert System • PS Dockets No 15-91 & 15-94

(May 29) TDI, NAD, HLAA, DHHCAN, ALDA, CPADO, CCASDHH, and DHH-RERC filed comments in response to the FCC's March 28, 2018 Public Notice regarding facilitating multimedia content in Wireless Emergency Alerts (WEA). The Wireless Emergency Alert (WEA) platform is an essential tool for individuals who are deaf or hard of hearing (as well as deafblind, and deaf with mobility issues). The Commission has recognized that "WEA's effectiveness depends on its ability to help all members of the public to close the thought-action gap, and . . . including multimedia content in Alert Messages themselves would hasten protective action taking, reduce milling, and improve Alert Message accessibility." While multimedia capabilities provide significant benefit to all recipients, they offer special and unique benefits to the deaf and hard of hearing population many of whom rely on visual information for emergency and nonemergency information. Some in this population rely on getting

information via audio, video, and/or textual means; other individuals who are deafblind or have low vision need to get information via tactile means. Multimedia capabilities offer critical public safety benefits to the deaf and hard of hearing community because photos, images, captioned images, and streaming video enable immediate comprehension and interpretation. Perhaps most important, multimedia WEA messaging would allow emergency information to be quickly and efficiently imparted to the deaf and hard of hearing community through American Sign Language (ASL). ASL is the "language of a sizeable minority," with minimum estimates ranging around 500,000 speakers in the United States alone. For many individuals who are deaf, deafblind, and deaf with mobility issues, there simply is no adequate substitute for ASL. Contrary to popular public perception, ASL is not derived from English, nor any spoken language. Instead, it is an independent linguistic system with morphological and grammatical complexity comparable to or exceeding that of spoken languages. Allowing for multimedia content in WEA messages would enable emergency information to be imparted quickly and accurately through ASL. By virtue of this instant comprehension of critical information, a deaf or hard of hearing individual who uses ASL will be positioned to respond to emergency instructions and take protective actions more quickly. Time is of the essence in any emergency situation, and every delay avoided in taking responsive action could mean the difference between life and death. Further, we need to ensure that multimedia content in WEA messages that are not provided in ASL but in video form with audio content are accessible to all, including with captioning for such videos.

The Commission's action in the 2016

R&O included the requirement for support for embedded references in WEA Alert Messages as "an important first step towards ensuring that WEA can be used to provide the public with actionable multimedia content during emergencies." These mandated advancements, as important as they are, cannot substitute for the enormous public value of enabling multimedia WEA messages. The Commission has previously considered but declined to require participating CMS providers to support multimedia WEA messages due to limitations of cellular broadcast technology. In the 2016 R&O the Commission considered the technical feasibility of including multimedia in Alert Messages in light of technological developments since WEA's deployment. The Commission there noted that although CMS providers and ATIS agreed that technology was then available to support multimedia alerting, "significant standards efforts would be required to determine the feasibility of integrating this technology into WEA." The Commission again declined to require support for multimedia WEA messaging and instead sought comment in the Further Notice "regarding the establishment of an appropriate regulatory framework and timeframe for incorporating multimedia capability into WEA Alert messages." In the Further Notice, the Commission specifically sought input on technical parameters, the potential for alert delivery latency, constraints on the size of multimedia files, the implementation of hazard symbols, and overall technical steps that would be required to integrate technology that supports the transmission of multimedia content into WEA. Now two years later, the FCC seeks to refresh the record with new information or arguments

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regarding multimedia alerting which were raised earlier but never resolved. The Public Notice seeks input on the technical feasibility of requiring multimedia content of WEA messages and the state of multimedia testing and standards development. The FCC also invites comments on the potential costs and benefits to public safety and carriers for supporting inclusion of multimedia contents in WEA messages given the other changes to WEA that are currently ongoing. As stated in its earlier comments, TDI and Consumer Groups, CCASDHH, and DHH-RERC strongly support the implementation of multimedia WEA messaging and urges the Commission to proceed expeditiously to require carriers to adopt all feasible measures to support multimedia alerting. The record in these proceedings is replete with discussion of the enormous public safety benefit of multimedia content in WEA messaging. Virtually all other aspects of society have been transformed by the near instant access to visual/audio information through the daily extensive use of multiple forms of social media; YouTube, Facebook, Twitter, Snapchat, Instagram, to name just a few applications, offer immediate access to visual nonemergency information. It is time that the benefits of visual information are made available in our wireless emergency alert system. TDI and Consumer Groups, CCASDHH, and DHH-RERC strongly urge the Commission to act now to require carriers to support multimedia WEA messages.

TDI and Consumer Groups, CCASDHH, and DHH-RERC are not in a position to provide a technical analysis of the challenges of transmitting multimedia content in WEA message but are

aware that industry has expressed concerns in the past about allowing links to videos to be made part of WEA alerts based on potential network costs and congestion. TDI and Consumer Groups, CCASDHH, and DHH-RERC urge carriers to confirm the extent to which these concerns remain true today as before. Further, TDI and Consumer Groups, CCASDHH, and DHH-RERC urge carriers to address from a technical network perspective, how multimedia content in WEA messages is significantly different from other instances in which email or texts with embedded links to videos are transmitted. How is the potential for network usage and congestion different in these situations or are they similar? TDI and Consumer Groups, CCASDHH, and DHH-RERC encourage carriers to provide concrete data on how often embedded links into WEA are utilized. If carriers continue to have network concerns over this use but do not currently possess specific data regarding the frequency of use, TDI and Consumer Groups, CCASDHH, and DHH-RERC suggest that the Commission consider requiring a transparent, publicly verifiable trial that will generate data from which the Commission and all stakeholders will be able to assess the nature and extent to which support for multimedia content in WEA raises meaningful concerns. This data will be important for the Commission and stakeholders to craft solutions to the extent any are necessary. Enabling multimedia content in WEA messages is critical to the public safety protection of the deaf and hard of hearing community. TDI and Consumer Groups, CCASDHH, and DHH-RERC stand ready to work with industry and the Commission in exploring whether and to what extent multimedia, including videos, can be included, along with phone numbers and URLs, as embedded references in the immediate future.

If network costs are prohibitive or if this step would substantially add to the congestion of the networks, TDI and Consumer Groups, CCASDHH, and DHH-RERC encourage carriers to come forward with specific documentation for review and a discussion of potential solutions by all stakeholders. TDI and Consumer Groups, CCASDHH, and DHH-RERC look forward to working with carriers and the Commission to make multimedia content, including video, in WEA messages a reality in the near future.

<https://ecfsapi.fcc.gov/file/1053069515304/TDI%20and%20Consumer%20Groups%20WEA%20Comments.pdf>

## Other Issues

■ Sign-On to Campaign for the Proposed Inmate Calling Technical Corrections Act • United Church of Christ

(March 9) TDI agreed to sign on to the campaign by United Church of Christ to endorse the proposed bill chiefly sponsored in the US Senate by US Senator Tammy Duckworth, D-IL, called the Inmate Calling Technical Corrections Act. It is a targeted bill addressing the key needs to eliminate predatory inmate calling rates in the U.S. A group of bipartisan policy-makers has acknowledged that the current market has failed to produce competition protecting family, clergy, and counsel who communicate with prisoners, inmates and detainees. After a decade of delay, the Federal Communications Commission finally took action in recent years to end predatory rates, but a recent decision by the U.S. Court of Appeals for the D.C. Circuit derailed that effort. The Inmate Calling Technical Corrections Act would address the court opinion,



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returning appropriate authority to the FCC.

■ Comments to Implementation of Sections 716 and 717 of the Communications Act of 1934, as enacted by the Twenty-First Century Communications and Video Accessibility Act of 2010 • CG Docket No. 10-213

(May 3) TDI, NAD, DHHCAN, ALDA, HLAA, CPADO, DSA, NASADHH, DHH-RERC, UI&IT-RERC, NASRA, and TEDPA submitted their comments in response to the FCC's Public Notice released on April 5, 2018, seeking comments to inform the preparation of the 2018 biennial report to Congress required by the Twenty-First Century Communications and Accessibility Act of 2010 (CVAA).

## I. ACCESSIBILITY UNDER SECTION 255

### A. Real-Time Text ("RTT")

... As we have stated previously, however, "the transition period from TTY to RTT services must be sufficiently gradual so as to allow consumers as well as governmental entities and businesses to substitute RTT technology for TTYs." RTT services should allow deaf, hard of hearing, and speech impaired persons to make direct calls to hearing users who use mainstream technologies without the hearing users having to take extra steps to enable RTT. The Report should identify the recommendations of DAC with respect to RTT and the action taken, and progress made, to meet those recommendations including the technical and practical challenges of supporting compatibility of RTT with refreshable Braille display and ways to introduce and support the integration of RTT into TRS operations.

### B. Hearing Aid Compatible Phones

The Commenters commended the Commission for updating the Hearing Aid Compatibility (HAC) rules by its Report and Order and Order on Reconsideration released on October 26, 2017, and recommended that the report include such updates. Importantly, the 2017 HAC R&O revised volume control standards for wireline handsets to provide a more accurate measurement of voice amplification and requires 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. Further, the 2017 HAC R&O extended the HAC requirements to wireline telephones used with advanced communications services, including phones used with VoIP services, with compliance required within two years. In addition, the Commission in 2016 adopted an Order revising its HAC rules to create improvements to benchmarks to be met by wireless handset manufacturers and service providers to ensure greater access to wireless communication services for Americans with hearing loss. The 2016 HAC Order directed industry stakeholders and advocates for consumers with hearing loss to develop a (stakeholder) task force for determining whether a 100 percent HAC deployment benchmark is achievable considering both technical and market conditions. On January 11, 2018, an ad hoc group of industry representatives and consumer groups submitted an ex parte letter describing meetings of the ad hoc group that considered issues related to the stakeholder process and steps to be taking in the coming year. As described in our 2016 CVAA Comments, however, many deaf and hard of hearing people continue to struggle to find phones, both non-mobile and wireless, to meet their accessibility needs. Not all wireless phones are HAC, particularly for

individuals who rely on telecoil coupling capability. Proprietary direct connect solutions are limited and expensive options that often only work with specific brands of hearing aids and therefore cannot meet everyone's needs. We also have found that HAC phones often work better with some hearing aids than others. Simply finding a HAC phone that works with a person's hearing aid remains challenging.

### C. High Definition Voice

The Commenters also supported the need for high definition (HD) voice-enabled phones and better noise-cancelling technology to reduce background noise in calls. Clearer, more natural sounding calls will improve the communication abilities of all consumers and may help make it possible for hard of hearing people to make calls even without assistive technology. While HD voice-enabled phones have become more available, interoperability across carriers has not improved. Likewise, there is no HD voice interoperability with relay services (IP Relay, VRS, IP-CTS) in sight. Until these two problems are resolved, the benefits of HD voice will remain very limited.

### D. Implementation of Text-to-911

Based on the Commission's most recent list, only 939 PSAPs have implemented Text-to-911, which is less than 11 percent of all PSAPs. We understand that this is an increase of 339 PSAPs over those that were Text-to-911 capable at the time of our 2016 Comments. Since Text-to-911 is a critical accessibility method for deaf and hard of hearing persons to reach emergency services, the status of its availability should be included in the Report. Further, the Report should discuss whether wireless carriers and





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other providers of interconnected text messaging applications are complying with requirements to deploy the service within six months to PSAPs that request them and how quickly they are doing so. To the extent such data is not currently available, the Commission should collect it.

## II. ACCESSIBILITY UNDER SECTIONS 716 AND 718

The Commenters continue to find the vast majority of certain kinds of advanced communication services (“ACS”) not to be fully accessible to deaf, hard of hearing, and speech impaired persons and deaf-blind people and deaf people with other disabilities. While not usually totally inaccessible, many ACS have only limited accessibility. In our 2016 Comments, 2014 CVAA Comments and comments filed in 2012 regarding the First Biennial Report, we highlighted many of these accessibility issues. We have seen limited to no improvement over the last two years. As we stated in our 2012 Comments and 2016 Comments, “individual companies can engage in a number of activities to make their products and services accessible to people who are deaf or hard of hearing.” These include, but are not limited to the following: participating in advisory board meetings and focus groups; conducting needs assessments; documenting input from customers at sales centers; beta testing; and research and development. The Commenters encourage the Commission to recognize that greater involvement of the deaf and hard of hearing community would provide valuable guidance to companies in developing products that meet the accessibility compliance requirements of the CVAA.

### A. Podcasts

Podcasts are episodic series of digital audio or video files with an almost unlimited array of topics. Many popular topics include educational, news, politics, medical, finance, entertainment, sports and music. Podcasts provide a wealth of knowledge to hearing persons. Unfortunately, audio podcasts generally are not accessible by deaf and hard of hearing people, while video podcasts only sometimes have captioning that permits accessibility by deaf and hard of hearing people that are not also blind. Except with respect to captioning of certain video podcasts subject to 47 C.F.R. § 79.4, the Commission has not addressed accessibility of podcasts. The Commission should investigate how to make podcasts more accessible to deaf and hard of hearing people. To increase accessibility, the Commission should require that each podcast on the Internet have a phone number to provide accessibility for deaf and hard of hearing people to “listen in” via VRS and (2) be captioned for those that do not want to access podcasts using VRS or who are not ASL users.

### B. Closed Captioning of Videos on the Internet

The Consumer Groups continue to be concerned with the lack of closed captioning of videos on the Internet. While there has been progress with respect to video programming delivered over Internet protocol that must be captioned pursuant to 47 C.F.R. § 79.4, the proliferation of other types of videos that are not captioned is becoming more problematic and disadvantageous to deaf and hard of hearing people who are not able to enjoy and benefit from such uncaptioned videos. In this respect, the accessibility to Internet video content may be decreasing. In addition, deaf and hard of hearing consumers are increasingly frustrated by

not knowing, before starting the video, whether a particular Internet video is captioned. When the video is preceded by an advertisement, that frustration is magnified. The Consumer Groups suggest that all Internet videos, including those on YouTube and similar websites or applications, be required to have a clear designation on their link or website indicating whether the specific video is captioned (e.g., either cc or slashed cc symbol). Having this requirement would enhance the general public’s awareness of and the need for captioning.

Quality control of captioning, particularly live and near-live captioning, of Internet video needs to be evaluated. The results of such evaluation should be shared publicly.

### C. Accessibility of Automobile Interfaces

Electronic interfaces and video playback and navigation capabilities are increasingly become an integral, if not critical, feature in today’s automobiles. However, the accessibility of these interfaces and video playback and navigation devices continues to be inconsistent between manufacturers of automobiles and their suppliers. The Commission continues to grant automobile companies waivers of the compliance deadlines for larger MVPDs. While there may be extenuating circumstances justifying additional waivers in the future, as have been granted for larger MVPDs, the Consumer Groups continue to believe that the December 20, 2018 compliance deadline for mid-sized and smaller MVPDs should not be extended. Further, the Commission must continue to scrutinize closely any future waiver requests to ensure that deaf and hard of hearing individuals have access to



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video programming without undue delay. Therefore, any future waivers must be limited in scope and duration to encourage manufacturers to meet the requirements of the CVAA and the Commission's rules.

## D. Video Conferencing Services

Video conferencing services have become an invaluable tool for consumers and businesses to communicate with friends, family, colleagues and customers in a virtually in-person manner. While many deaf and hard of hearing people also enjoy video conferencing services, these services, as explained in the attached 2016 Comments, are not completely accessible and usable by deaf and hard of hearing people. The following issues identified and explained in our 2016 Comments (and those filed in 2014) still exist today: 1. Relay services are not accessible through video conferencing services because they are tethered to ten-digit telephone numbers; 2. Video conferencing services, including off-the-shelf services, need to be interoperable with videophones provided by Video Relay Service (VRS) providers; 3. Video conferencing services need to be interoperable with each other; and 4. Video conferencing services need to allow users to prioritize specific functions so that they best support the communications needs of the deaf and hard of hearing user.

## E. Games and Gaming Systems

Commenters acknowledge the significant efforts that the Entertainment Software Association (ESA) and its members have taken over the past several years to improve the accessibility of gaming equipment and software. We continue to appreciate the efforts of ESA and its members to

dialogue and work with the deaf and hard of hearing and blind and visually impaired communities and gather feedback on their products and services from gamers who are deaf, hard of hearing, blind, visually impaired, or DeafBlind, including the additional steps taken throughout 2017 detailed in ESA's mid-year progress report. As the Consumer Groups and RERCs stated in their 2012 Comments, 2014 Comments, 2016 Comments and in other proceedings, many deaf and hard of hearing people have been unable to access or fully participate in games that use ACS components for communication between participants. Through our work with ESA, however, there has been progress on this front. For example, "video game manufacturers that utilize Microsoft's software development kit for Xbox One and Windows 10 devices now have access to realtime speech-to-text and text-to-speech transcription capabilities, which allow players to read a text transcript of other players' spoken words and hear machine-generated audio of text typed by other players." Other companies, including Nintendo, Sony, Activision, Warner Brothers, Capcom, Blizzard Entertainment and Mojang, also have implemented, or are working towards including, accessibility features, but much remains to be done to achieve full accessibility. Relay services should be included in these games to allow deaf and hard of hearing gamers to be included in this form of social interaction. The Consumer Groups appreciate the gaming industry's continued outreach to certain of the Consumer Groups and others representing persons with disabilities and look forward to continued outreach. In addition, virtual reality and other augmented reality products and services are more frequently part of, and integrated in, certain products and services, which makes such products and services inaccessible for the deaf and hard of hearing. More work needs to be

done to make such products accessible.

## F. Accessible Alerting Settings

Because there has not been much progress on this issue, the Commenters reiterate our prior concerns. As we discussed in our 2016 Comments and 2014 Comments, the continued lack of accessible alerting features for ACS results in missed calls and other messages. For instance, video conferencing services, particularly on smartphones, often do not include accessible alert functions such as vibration and/or flashing lights. Although Internet of Things devices and capabilities, such as smart lights and other types of smart appliances, hold some promise for alleviating alerting deficiencies, they are in very early stages of development, and the lack of technical standards makes it virtually certain that at present every ACS would need to be customer-tailored to provide accessibility alerting. These deficiencies should be included in the Report.

## D. Wireless Data Caps and Metering Negatively Affect Accessibility

While many more wireless service plans include unlimited data, such plans are often significantly more expensive or contain provisions that allow the wireless provider to "throttle" or meter heavy data users. More affordable wireless service plans continue to include much lower data caps that are insufficient for the routine communications needs of a deaf and hard of hearing user. Therefore, deaf and hard of hearing users are forced to choose between more expensive plans with unlimited data, which may be unaffordable, or less expensive, affordable plans with data caps that are insufficient to meet their communications needs. This choice is made more difficult because such users



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rely on data and video services that require more expensive smartphones. Hearing users can avoid using data services for basic communications by using their voice minutes, which generally are unlimited. As compared to hearing users, deaf and hard of hearing users disproportionately use data for daily and routine communications out of necessity. These users often pay overage fees because they must exceed the monthly data allowance of their plans simply to meet their communications needs -- needs which do not require similar data usage by other users. Or, they have no choice but to purchase a more expensive plan including unlimited data even when the data used for non-routine communications is minimal. Therefore, the Commenters request that the Commission incorporate in its Report concerns regarding the cost of plans with unlimited data, data caps and metering plans.

## III. EFFECTS OF ACCESSIBILITY RECORD KEEPING AND ENFORCEMENT REQUIREMENTS

Because the concerns and recommendations on these issues remain unchanged, we are reiterating our prior comments. The Consumer Groups and the RERCs continue to share the Commission's position stated in its First Report that "its assessment of accessibility barriers with respect to 'new communications technologies' should not be limited to those 'telecommunications' and 'advanced communications services' technologies under Sections 255, 716, and 718." This broad interpretation of "new communications technologies" does not mean a relaxed approach to the record keeping requirements of the CVAA is warranted. Rather, the Commission

should continue to apply Section 717's record keeping and enforcement requirements to new communications technologies. The Consumer Groups and the RERCs reiterate their suggestion that "the Commission require industry participants to produce periodic activity reports that specifically account for research and development activities that directly involve the deaf and hard of hearing community." These reports would serve multiple purposes: (1) providing the Commission data to conduct a more thorough analysis of progress toward compliance with the CVAA, (2) providing the Commission and the deaf and hard of hearing community a better understanding of the amount and quality of input each company received from deaf and hard of hearing participants and to what degree that input was utilized in the development of accessible equipment and services, and (3) holding the industry members more accountable in developing accessible products. The Consumer Groups and the RERCs also reiterate their position that "industry members [who] have requested waivers because accessibility is not achievable should be required to report on the number of non-accessible and accessible units sold."

And, that information should be used in the Commission's biennial Report to Congress to provide Congress with a more accurate picture of the level of collaboration between industry and consumers in the design, development and marketing stages of the products and services involved.

<https://ecfsapi.fcc.gov/file/105032162422464/Comments%20for%202018%20CVAA%20Biennial%20Report.pdf>

■ Reply Comments to Implementation of Sections 716 and 717 of the Communications Act of 1934, as enacted by the Twenty-First Century

Communications and Video Accessibility Act of 2010 • CG Docket No. 10-213

(August 23) TDI, NAD, DHHCAN, ALDA, HLAA, CPADO, DSA, NASADHH, the two RERCs, NASRA, and TEDPA submitted reply comments in response to the Federal Communication Commission's Public Notice released on August 9, 2018, seeking comments on its tentative finds for the 2018 biennial report to Congress required by the Twenty-First Century Communications and Accessibility Act of 2010 ("CVAA").

We responded to the Commission's tentative finding that "over the past two years, there have been continued improvements in the accessibility of telecommunications services and advanced communications services (ACS) and equipment" that is based on "improved access to the telecommunications and ACS features of smartphones and other devices for people with a wide range of disabilities." The Commission bases its finding on information in the record that "wireless service providers offer a wide range of service plans designed to meet the specific needs of people with disabilities" including "accessibility plans" for customers that want "data only plans." Although Commenters agree that improvements have occurred, the Commission should acknowledge and address the concerns raised by Commenters about the cost of smart phone plans with unlimited data, data caps and metering plans. As Commenters pointed out in their earlier comments, deaf and hard of hearing users disproportionately use data for daily and routine communications out of necessity as compared to hearing users. As a result, deaf and hard of hearing users, deaf-blind users and users with mobility disabilities are forced





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to choose between more expensive smartphone plans with unlimited data (even when the data used for non-routine communications is minimal) that may be unaffordable, or less expensive, affordable smartphone plans with data caps that are insufficient to meet their communications needs. This choice is made more difficult because such users rely on data and video services that require more expensive smart phone devices. In addition, while many more wireless service plans include unlimited data today as compared to two years ago, such plans are often significantly more expensive or contain provisions that allow the wireless provider to “throttle” or meter heavy data users. Even “accessibility plans” that may be offered by some providers can contain provisions that allow the wireless provider to “throttle” or meter heavy data users. If some mechanism cannot be determined to identify and separate communication data usage from other usage, then allowance for communication load on data plans for those who must rely on them (at both ends of the conversation) should be made. Universal inclusion of video as a standard part of unlimited phone call plans (and support by VRS)

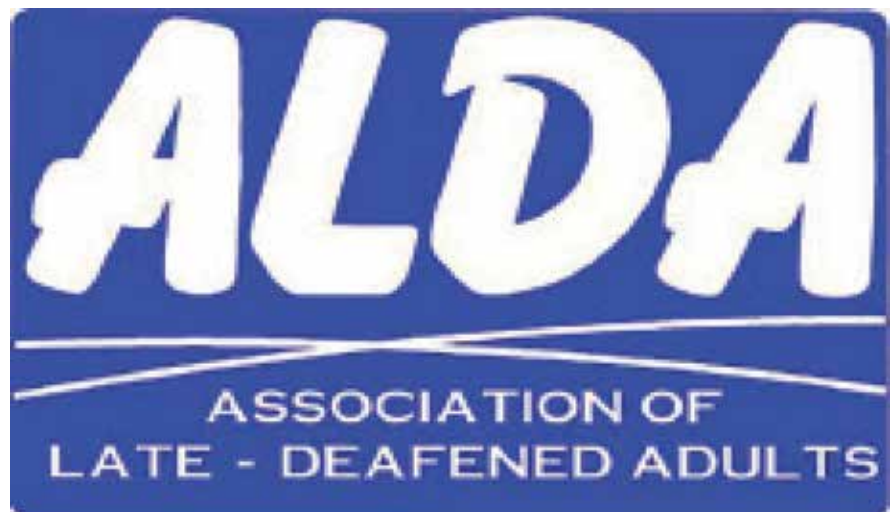
should also be explored – since it would allow separation of video for communication from other usage. For these reasons, the Commission should modify its tentative findings to recognize that more progress is needed regarding the cost of smartphone plans with unlimited data, data caps and metering plans to improve accessibility for deaf and hard of hearing users, deaf-blind users and users with mobility disabilities.

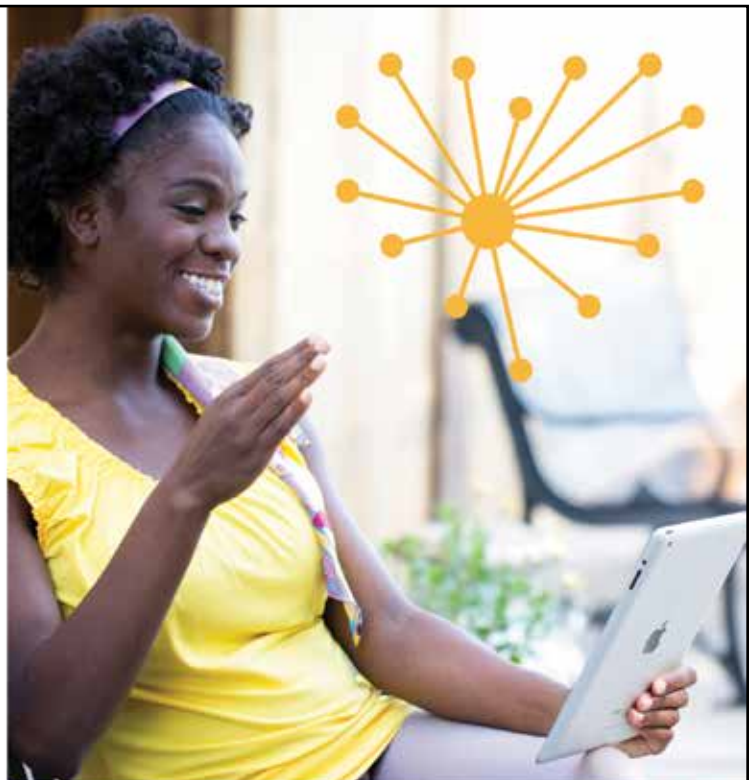
## II. ACCESSIBILITY BARRIERS TO NEW COMMUNICATIONS TECHNOLOGIES

Commenters are commenting on the Commission’s tentative finding that some accessibility concerns remain for new communications and other technologies. Commenters recommend that the Commission should address in this section three points previously raised by Commenters. First, the Report should note the progress made with respect to Real-Time-Text (“RTT”) as an alternative to current-generation TTY technology. It should specifically identify the Disability Advisory Committee (“DAC”) recommendations with respect to RTT and the progress made to meet those recommendations including the technical and practical challenges of supporting compatibility of RTT with refreshable Braille display and ways to introduce and support the integration of RTT into TRS operation. We emphasize the importance of incorporating RTT into the native phone capabilities of smart phones as Apple has done, rather than prolonged use of separate apps, which should only be used for the startup year due to all the usability limitations of making and/or receiving calls from a separate app. Second, the Report should

acknowledge that Text-to-911 is a critical accessibility method for deaf and hard of hearing persons to reach emergency services. It should also acknowledge that more progress is needed since only 939 PSAPs have implemented Text-to-911, which is less than 11 percent of all PSAPs. Third, the Commission should include information in the Report about the industry members who have requested waivers because accessibility is not achievable to provide a more accurate picture to Congress of the level of collaboration between industry and consumers in the design, development and marketing stages of new products and services.

[https://ecfsapi.fcc.gov/file/10823135597862/TDI%20et%20al%20Comments%20\(Dkt%2010-213\).pdf](https://ecfsapi.fcc.gov/file/10823135597862/TDI%20et%20al%20Comments%20(Dkt%2010-213).pdf)





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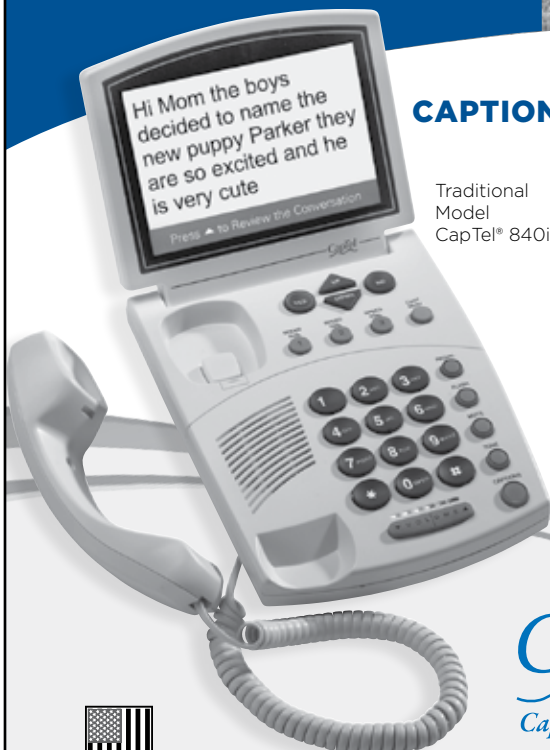
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