

GALLAUDET TODAY

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From TTY to RTT

Gallaudet Continues
Leading Advancements in
Deaf Telecommunications

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GALLAUDET TODAY

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University Mission Statement

Gallaudet University, federally chartered in 1864, is a bilingual, diverse, multicultural institution of higher education that ensures the intellectual and professional advancement of deaf and hard of hearing individuals through American Sign Language and English. Gallaudet maintains a proud tradition of research and scholarly activity and prepares its graduates for career opportunities in a highly competitive, technological, and rapidly changing world.

University Vision Statement

Gallaudet University will build upon its rich history as the world's premier higher education institution serving deaf and hard of hearing people to become the university of first choice for the most qualified, diverse group of deaf and hard of hearing students in the world, as well as hearing students pursuing careers related to deaf and hard of hearing people. Gallaudet will empower its graduates with the knowledge and practical skills vital to achieving personal and professional success in the changing local and global communities in which they live and work. Gallaudet will also strive to become the leading international resource for research, innovation, and outreach related to deaf and hard of hearing people. Gallaudet will achieve these outcomes through:

- A bilingual learning environment, featuring American Sign Language and English, that provides full access for all students to learning and communication
- A commitment to excellence in learning and student service
- A world-class campus in the nation's capital
- The creation of a virtual campus that expands Gallaudet's reach to a broader audience of visual learners
- An environment in which research can grow, develop, and improve the lives and knowledge of all deaf and hard of hearing people worldwide

Approved by the Board of Trustees, May 2009

On the Cover

Over 50 years ago, deaf engineer Robert Weitbrecht, along with deaf collaborators Andrew Saks and James Marsters, invented the TTY, thus ushering in an era of deaf telecommunications. Now, Gallaudet University's Technology Access Program is at the forefront of taking deaf telecommunications to Real Time Texting.

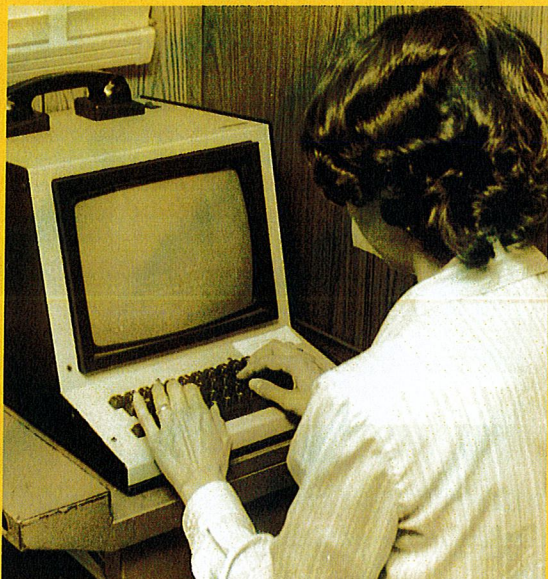
Photo Courtesy of Gallaudet University Library Deaf Collections and Archives



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Cover Story



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From TTY to RTT: Gallaudet Continues Leading Advancements in Deaf Telecommunications

Gallaudet University's Technology Access Program, led by Dr. Christian Vogler, played a huge role in the Federal Communications Commission's December 2016 landmark decision to transition to a new, internet-based, real-time text standard (RTT), which will improve communication accessibility networks for people who are deaf, hard of hearing, deaf-blind, or have speech-related disabilities. Take a look at how deaf telecommunications has evolved since its inception in the 1960's.

Feature Stories

22 Deaf Doctoral Students Bring Needed Perspectives to Interpreting and Translation

Since 2010, Gallaudet's Department of Interpretation and Translation has offered students a chance to earn a doctorate degree, following its establishment of the nation's first graduate degree in interpreting in 1988. Deaf doctoral students Janis Cole, Keith Gamache, Naomi Sheneman, and Ricardo Ferracuti have provided research supporting the ever-increasing need for deaf and hard of hearing interpreters and translators.

25 Play and Learn: Gallaudet and Convo Collaborate to Create Sandbox

In a space once used to hold outdated storage, Merrill Learning Center's Room B320 is now a place for creative and collaborative play. The "Sandbox" officially opened on January 27, 2017, thanks to a partnership between Gallaudet University and Convo, a deaf-owned telecommunications company.

27 Patricia Thompson, Agnes Muse, Reflect on Over Four Decades of Service to Gallaudet

Since the early 1970's, Gallaudet University has experienced much transformation. Patricia Thompson and Agnes Muse, both retiring in 2017, share some of their favorite memories of their four-decade-plus years at Gallaudet.

29 Russell Stein, '95, Influences Next Generation of Deaf Business Owners

Russell Stein, co-founder and co-owner of the all-deaf-staffed Mozzarella pizza restaurant located in the heart of San Francisco, gave back to his alma mater during the 2017 spring semester, serving as Gallaudet's first-ever entrepreneur-in-residence. Sponsored by the Gallaudet Innovation and Entrepreneurship Initiative and the Office of the Provost, Stein provided mentorship to Gallaudet students from January 30 to February 10, 2017.

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The Bison men's basketball team enjoyed a historic season, winning a best-ever 20 games.

45 Invest in the Future

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48 74 Years Ago...

The success of this year's men's basketball team provided a reminder of the legendary "Five Iron Men" and their surprising 1943 championship run.

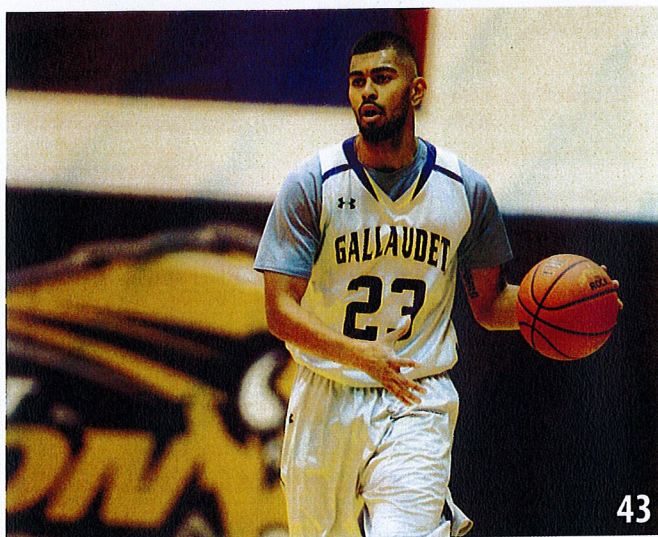
CORRECTIONS

Gallaudet Today regrets an error in the Winter 2016-17 issue's "In Memoriam" for **Dr. Yerker Andersson, '60 & H-'98** (page 42). Andersson did much work with the United Nations, but never addressed the General Assembly. The first deaf person to address the UN General Assembly was **Dr. Robert R. Davila, '53**, Gallaudet's ninth president, who spoke as a representative of the United States at the invitation of President George H. W. Bush when the UN reported on the "Decade of Persons with Disabilities" in 1992. *Gallaudet Today* appreciates those who brought this historical fact to our attention.

In the Winter 2016-17 issue's Invest in the Future story about **Ann Tennis, G-'43**, Tekamah, Nebraska, was misspelled on page 52. On page 53, it is mentioned that Tennis taught at a one-room school that still stands today. She attended the school in first and second grades before moving to Tekamah, but did not teach there.



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From TTY to RTT

Gallaudet Continues Leading Advancements in Deaf Telecommunications

By Andrew Greenman, '10, Adham Talaat, '14, and Phil Dignan

Gallaudet University's Technology Access Program (TAP) played a pivotal role in the December 15, 2016, landmark decision by the Federal Communications Commission (FCC) to transition to a new, internet-based, real-time text standard (RTT) to improve the accessibility of communications networks for people who are deaf, hard of hearing, deaf-blind, or have speech-related disabilities. The FCC decision also mandated that RTT be compatible with new mobile devices starting at the end of December 2017, with the goal of RTT devices replacing outdated and obsolete TTYs within a few years.

"Real-time text" is self-descriptive. It allows users to instantly see letters, characters, and words as they are being typed. Instead of showing that a "user is typing," and waiting until they hit "enter," RTT allows for faster, simultaneous conversation.

"It gives us greater options for communication access just like any hearing person who wants to make a call and connection without a delay," said Dr. Christian Vogler, associate professor and TAP director. "This gives users—including deaf, hard of hearing, and hearing, all people—the immediacy of being able to think about and respond to conversation in real time."

TAP, led by Vogler with support from **Norman Williams, '91**, senior research engineer; Linda Kozma-Spytek, research audiologist; **Paula Tucker, EdS '03**, research associate; and Muna Yilma, research administrator, conducts research related to communication technologies and services, with the goal of producing knowledge useful to industry, government, and deaf and hard of hearing consumers in the quest for equality in communications.

"I think perhaps the best way to think about it is that Gallaudet sponsored, along with granting agencies and partners from other universities, a think tank aimed at working with business, industry, and government on emerging issues in communication accessibility," said **Dr. Judith Harkins, PhD '84**, TAP founding director. "We never lobbied Congress, but we provided information as it was needed in a very dynamic era of changing technology and implementation of breakthrough legislation. We did whatever type of work—research, demonstration projects, technical assistance, holding and organizing panels at consumer conferences, standards work—that would help with the mission of improving communication accessibility."

Photo Courtesy of Gallaudet University Library Deaf Collections and Archives

"I believe that diligence and constant presence over the years was and is an appropriate contribution of Gallaudet to the lives of its students and alumni, and the global deaf community."

TAP received a patent (U.S. Patent 8,433,761) from the U.S. Patent and Trademark Office for a RTT user interface design in 2013. Created by Williams, this work resulted in integrating RTT with instant messaging.

In 2013, on a visit with telecommunications carrier AT&T at its New Jersey lab, TAP used a hands-on demonstration and test to convince AT&T to champion RTT instead of perpetually supporting TTYs for telecommunications for the deaf. After gaining AT&T's backing, TAP, along with several long-time collaborators, including the Trace Center at the University of Wisconsin-Madison (now at the University of Maryland) and Omnitor in Sweden, worked together over the years to develop, test, compile, and bring the petition for RTT to the FCC, which was unanimously approved.

TAP's goal is for real-time text to be integrated in mainstream wireless phones for everyone—deaf, hard of hearing, and hearing alike—and eventually in other forms of telecommunications, including public places, places of business, organizations, and government agencies, thus effectively phasing out TTYs.

"With AT&T and other telecommunications companies, and organizations like Telecommunications for the Deaf, Inc., National Association of the Deaf, Hearing Loss Association of America, and Communications Service for the Deaf, we have

Imagine a world where people who are deaf or hard of hearing have the option of calling any other person's phone directly via real-time text, or using a mix of real-time text and voice... I passionately believe that we've only scratched the surface of what is possible with new communication technologies. The most exciting technological developments are still to come.

—Christian Vogler, associate professor and TAP director

fought hard to convince the FCC to vote on RTT because it is superior to existing TTY systems," said Williams.

Vogler painted a picture of an imminent future after the inception of RTT: a level playing field where anyone can call anyone, removing the need for relay services or separate phone systems for those who cannot hear or speak well.

"Imagine a world where people who are deaf or hard of hearing have the option of calling any other person's phone directly via real-time text, or using a mix of real-time text and voice," said Vogler. "This would do wonders for our integration into mainstream communications."

Telecommunications for the deaf first began in 1964 with the creation of the TTY, invented by deaf engineer Robert Weitbrecht, and his deaf collaborators, Andrew Saks and James Marsters. Weitbrecht obtained a discarded teletype machine, and designed an acoustic coupler (modem) that connected standard telephones to outdated teletypewriters.

Early TTYs were expensive, noisy, unwieldy, heavy, unattractive, and

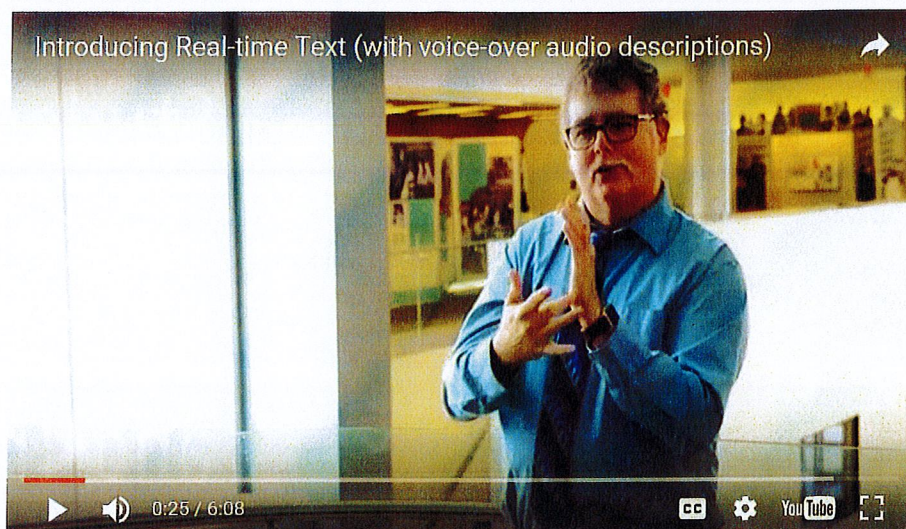
painfully slow—causing it to slowly gain popularity and mainstream use. Present-day TTYs, now about the size of a laptop computer, are now increasingly considered legacy devices, given the emergence of email, texting, and instant messaging. However, these newer methods will not work with regular analog phone lines without a data connection. Because data connections are unavailable in parts of many countries, TTYs remain the only direct method for analog landline text phone calls without using relay services. Once implemented, RTT will bypass the need for relay services, allowing RTT devices to communicate with TTY users.

In the 1990s, **Ed Bosson, '66 & H-'08**, known as "the father of Video Relay Services," brought video communication to the deaf and hard of hearing community when he persuaded the Texas Public Utility Commission to test a video conference product. This proved to be a viable form of communication through the means of video and sign language interpreters. Bosson enlisted support from state organizations such as the Texas

Association of the Deaf/Hard of Hearing and Coalition for the Disabilities, as well as from Gallaudet, who played a major role in quantifying VRS interoperability problems in 2012-2013, thus prodding providers and the FCC into action.

Significant improvements in video call quality of service for the deaf occurred in 2003 when Sorenson Communications, a video compression software coding company, developed its VP100 model stand-alone videophone. Favorable reviews quickly led to its popular usage at educational facilities for the deaf, and from there to the greater deaf community. Coupled with similar high-quality videophones introduced by other electronics manufacturers, the availability of high-speed Internet, and sponsors authorized by the FCC in 2002, VRS for the deaf underwent rapid growth.

In 1990, the Americans with Disabilities Act (ADA) was passed to ensure equal opportunity for persons with disabilities. The ADA prohibits discrimination against persons with disabilities in public accommodations or commercial facilities, requiring that public facilities—such as hospitals, bars, shopping centers and museums (but not movie theaters)—provide access to verbal information on televisions, films or slideshows. The Television Decoder Circuitry Act of 1990 was also passed, giving the FCC power to enact rules on the implementation of closed captioning, mandating all analog television receivers with screens of at least 13 inches or greater, either sold or manufactured, to have the ability to display closed captioning by July 1993.



Norman Williams, '91, TAP senior research engineer, appears in a video announcing the Federal Communications Commission's landmark decision to begin phasing out TTYs and transitioning to a new, internet-based, real-time-text standard (RTT) compatible with future smartphones. To see the video, visit www.gallaudet.edu/news/real-time-text.

Between 2011 and 2014, TAP played a role in the proposed FCC rules on Internet captioning in collaboration with consumer advocacy groups, especially with video playback devices. Since September 2012, new content shown on television with captions and posted on the Internet had to be captioned. In 2014, virtually all devices capable of video playback, including mobile phones, tablets, Internet-connected DVD players, Blu-ray Disc players and more, were required to support the display of closed captions at a quality comparable to or better than television.

As technology continues to advance, and governing bodies pass legislation benefitting telecommunications for the deaf, TAP remains a vital advocate.

"I see our role now is to provide independent research and advice on what communication options work for people who are deaf or hard of hearing,

what does not work, what avenues for improvement are, and where to go from here," said Vogler. "We're respected by industry, policymakers, and consumers. Some critical questions for the near future include studies on the effectiveness of next-generation telecommunications options for our constituency.

"I passionately believe that deaf and hard of hearing people have only scratched the surface of what is possible with the new communication technologies. The most exciting technological developments are still to come."



A display of TTYs and other telecommunication devices for the deaf is located in the Merrill Learning Center.