Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Comment Sought on Application of Clarity Products, LLC for Certification to Provide Internet Protocol Captioned Telephone Service	)	CG Docket No. 03-123
	)	

CONSOLIDATED RESPONSE TO COMMENTS OF CLARITY PRODUCTS, LLC

Seymour James van den Bergh
Beryl Bucher
Clarity Products, LLC
6131 Preservation Drive
Chattanooga, TN 37416

Scott D. Delacourt
Madeleine M. Lottenbach
WILEY REIN LLP
1776 K Street NW
Washington, DC 20006

Counsel for Clarity Products, LLC

October 10, 2019

TABLE OF CONTENTS

I. TESTING / METRICS / STANDARDS 4

A. MITRE Testing 4

B. Development of Standards 5

C. Provider-Initiated Standards 6

D. Public Record 6

II. PRIVACY 7

III. FUNCTIONAL EQUIVALENCE AND UNDERSERVED POPULATIONS 10

A. Accents and Specialized Vocabulary 10

B. Functional Equivalency 12

IV. GENERAL PROBLEMS WITH COMMENTS 16

V. CONCLUSION 19

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Comment Sought on Application of Clarity Products, LLC for Certification to Provide Internet Protocol Captioned Telephone Service	)	CG Docket No. 03-123
	)	
	)	

CONSOLIDATED RESPONSE TO COMMENTS OF CLARITY PRODUCTS, LLC

The Consumer and Governmental Affairs Bureau ("CBG") of the Federal Communications Commission ("FCC" or "Commission") recently sought comments on Clarity Products, LLC's ("CLARITY") application for certification to provide Internet protocol captioned telephone service ("IP CTS").[1] In addition to several complimentary responses by CLARITY product users,[2] six comments were submitted that were more contentious, specifically

[1] *Comment Sought on Application of Clarity Products, LLC, for Certification to Provide Internet Protocol Captioned Telephone Service*, Public Notice, CG Docket No. 03-123, DA 19-820 (rel. Aug. 26, 2019). *See generally* Application of Clarity Products, LLC, for Internet-Based TRS Certification, CG Docket No. 03-123 (filed June 5, 2019) ("Clarity Application").

[2] *See, e.g.*, Comments of Kathie Kearbey, CG Docket No. 03-123 (filed Sept. 5, 2019) ("This application is a huge step forward in captioning for the deaf and hard of hearing because it connects fast without waiting for a captioning person to become available. . . . It is also really accurate. I have a lot of problems with certain consonants and this program cuts down on the requests to repeat words or verify letters."); Comments of Melissa Graham, CG Docket No. 03-123 (filed Sept. 6, 2019) ("In my field of work which is nursing, I need to be able to use the telephone easily and can easily misunderstand important medical information. The unique feature of CaptionMate is that it doesn't use a 3rd party relay service which is extremely important in the confidentiality issue of medical information."); ("Comments of Carlos S. Monserrate, CG Docket No. 03-123 (filed Sept. 6, 2019) ("The CaptionMate application is very fast and accurate.").

those submitted by Sprint Corporation ("SPRINT"),[3] CaptionCall LLC ("CAPTIONCALL"),[4] Clear2Connect Coalition ("CLEAR2CONNECT"),[5] consumer groups including the Hearing Loss Association of America ("HLAA *et al.*"),[6] Hamilton Relay ("HAMILTON"),[7] and Ultratec, Inc. ("ULTRATEC").[8]

Before we answer the comments directly, we would like to address the intent of our application. It seems that our application for certification, like those of VTCSecure, LLC ("VTCSECURE")[9] and MachineGenius, Inc. ("MACHINEGENIUS"),[10] has been a point of aggressive comments implying that we, as new applicants, intend to deprive the community of

---

[3] Comments of Sprint Corporation, CG Docket No. 03-123 (filed Sept. 25, 2019) ("Sprint Comments").

[4] Comments of CaptionCall, LLC on the Applications of MachineGenius Inc., VTCSecure, LLC, and Clarity Products, LLC for Certification to Provide Automatic Speech Recognition Based Internet Protocol Captioned Telephone Services, CG Docket No. 03-123 (filed Sept. 25, 2019) ("CaptionCall Comments").

[5] Comments of the Clear2Connect Coalition, CG Docket No. 03-123 (filed Sept. 25, 2019) ("Clear2Connect Coalition Comments").

[6] Comments on Applications for Certification as Providers of ASR-Based IP CTS Hearing Loss Association of America, Telecommunications for the Deaf and Hard of Hearing, Inc., National Association of the Deaf, Association of Late-Deafened Adults, Cerebral Palsy and Deaf Organization, American Association of the Deaf-Blind, Deaf Seniors of America, Deaf/Hard of Hearing Technology Rehabilitation Engineering Research Center, Rehabilitation Engineering Research Center on Universal Interface & Information Technology Access, and National Technical Institute for the Deaf, CG Docket No. 03-123 (filed Sept. 25, 2019) ("HLAA *et al.* Comments").

[7] Comments of Hamilton Relay, Inc., CG Docket No. 03-123 (filed Sept. 25, 2019) ("Hamilton Comments").

[8] Comments of Ultratec, Inc., CG Docket No. 03-123 (filed Sept. 25, 2019) ("Ultratec Comments").

[9] VTCSecure, LLC, Internet-based TRS Certification Application, CG Docket No. 03-123 (filed May 26, 2017).

[10] MachineGenius, Inc., Internet-based TRS Certification Application, CG Docket No. 03-123 (filed Oct. 13, 2017).

those with hearing loss from the technology due them. Press communication, at least from CLEAR2CONNECT, encourages this viewpoint.[11] This is not a truthful approach, and represents exactly the opposite of what we strive to do.

CLARITY's mission statement is "to create communication products to help those with hearing loss lead secure and engaged lives." CLARITY has a 50-year history of serving the community of those with hearing loss. We are not trying to deceive the FCC or the hard-of-hearing community. We endeavor to provide a service that we believe benefits an underserved population. We believe that our offering is a remarkable step forward in providing functional equivalence to a community that has been neglected from lack of technological advances.

We are willing to accept that the commentators on our application acted in good faith, albeit sometimes carelessly. We hope that we can all proceed with a less acrimonious tone. Not everyone with hearing loss may prefer CLARITY's product, named CaptionMate ("CAPTIONMATE"), but we believe that some will. We are not attempting to quash competition, but to expand choice. We strongly believe that we can serve new users who have been left out of captioning opportunities because traditional IP CTS does not address their very real concerns.

In expeditiously reviewing and acting on CLARITY's pending automatic speech recognition ("ASR") based IP CTS certification application, the Commission should apply the same standard it has consistently used for other IP CTS certification applications: does CLARITY's service satisfy the IP CTS minimum operating standards specified in the

---

[11] *See* Zack Budryk, *Deaf Activists Warn Against FCC Push for Automatic Phone-Captioning Service*, The Hill (Sept. 24, 2019), https://thehill.com/policy/technology/462810-deaf-activists-warn-against-fcc-proposal-to-automate-phone-captioning.

Commission's rules? If CLARITY's application meets those standards, it should be granted. Moreover, the Commission should act quickly to deliver to deaf and hard-of-hearing consumers the benefits of the CAPTIONMATE option – improved user experience and privacy, competitive choice in technology, and cost savings for the Telecommunications Relay Service ("TRS") Fund. Should the Commission elect to develop new, more rigorous IP CTS standards, and test providers against those standards, that activity should be undertaken as a parallel work stream. Nothing about granting CLARITY's application, which demonstrates CLARITY's product meets and exceeds current standards, prevents the FCC from a welcome continuing effort to improve the overall IP CTS experience in a technology neutral manner.

CLARITY responds below to issues raised by commenters:

I. TESTING / METRICS / STANDARDS

The need for testing is addressed by every one of the commentators, in a myriad of ways. We address the main points here.

A. MITRE Testing

We support testing, BUT it has already been done: In 2013 the FCC decided to test current providers and newer technologies. The resulting 2016 report by MITRE Corporation ("MITRE") concluded "Automated Speech to Text (STT) tools can provide much lower transcription delay (deemed better). In all but one case, the STT tools provided accuracy at least as good as the worst of the IP CTS providers. In two cases, automated STTs provided better accuracy than any of the IP CTS providers."[12] The FCC, using these test results (which were

[12] MITRE Corporation, Internet Protocol Caption Telephone Service (IP CTS) Devices: Summary of Phase 1 Activities, CG Docket Nos. 03-123 and 13-24, Executive Summary (2017), https://ecfsapi.fcc.gov/file/10411287298464/MITRE%20Corporation%20Summary%20of%20Phase%201.pdf (emphasis added) ("Phase I MITRE Results"). The MITRE Corporation is a

publicly released in 2018), then issued a declaratory ruling stating that "we determine that CTS and IP CTS using ASR to generate captions are forms of relay service eligible for compensation from the TRS Fund."[13]

Calling for more testing now is duplicative and would only cause delays. Most importantly, it is harmful to the consumer to unnecessarily further delay their access to improved services, and it is harmful to the TRS Fund not to take advantage of technologies that can reduce costs.

B. Development of Standards

We agree with the commenters who stated that metrics and standards for IP CTS should be created. This should have been done years ago. (As far as we know, MITRE may have already done this, but their process remains mostly inaccessible to the public.)

Since calls for such standards have been taking place for years, and yet nothing that we know of has actually been accomplished, we believe that it would be years before they actually are created, let alone the testing accomplished. Keep in mind that MITRE's last public testing round for ASR took 5 years, from 2013 to public release in 2018.

Delaying further only hurts the community and denies users a choice and the availability of a solution that may benefit them.

To the extent the FCC develops new standards, it should be a parallel work stream to near-term action on CLARITY's pending ASR-based IP CTS certification application.

---

private, not-for-profit corporation that operates federally funded research and development centers.

[13] *Misuse of Internet Protocol (IP) Captioned Telephone Service*, Report and Order, Declaratory Ruling, Further Notice of Proposed Rulemaking, and Notice of Inquiry, 33 FCC Rcd 5800, ¶ 13 (2018).

CLARITY's application should be evaluated, as all other IP CTS certification applications have been, only for compliance with the Commission's minimum operating standards. New IP CTS standards should be developed and applied prospectively and in a technology neutral manner.

C. Provider-Initiated Standards

Our understanding is the existing providers have created a "Joint Quality" taskforce intended to create standards and contract independent testing against those standards. In October 2018, Ultratec wrote to the FCC that "[t]he Commission should rely on IP CTS providers to develop performance measures that appropriately and accurately measure functional equivalence because only IP CTS providers have the experience serving actual users necessary to develop effective metrics."[14]

We strongly disagree with this approach. We believe that it is the consumers themselves, or at least a fully independent third party, such as MITRE, that should both create the standards and then conducts tests. We further believe that the consumers involved in creating standards and metrics should include not only existing consumers, but also a wide array of people with hearing loss who do not currently use IP CTS, so that we can discover what the existing and potential end users truly want and how to measure whether their needs are being met.

D. Public Record

Several commenters mentioned that the testing results of the three ASR-only applicants should be made public. For example, SPRINT has said "[i]f the Commission were to rely solely on private, off-the-record testing, that would completely defeat the purpose of allowing public notice and comment on the Applications."[15]

---

[14] Comments of Ultratec, Inc., CG Docket Nos. 03-123 and 13-24, at 2 (filed Oct. 16, 2018).

[15] Sprint Comments at 5.

We are puzzled by this statement, as MITRE has informed us that the existing providers are so sensitive about their own testing that they don't even allow "blinded" results (where they can see their own results but the names of the others are redacted) to be shared *amongst themselves*, let alone be made public.[16]

We pledge to call for future MITRE testing results to be made public, for ALL providers. We'd like to reiterate that CLARITY's application satisfies the IP CTS minimum operating standards specified in the Commission's rules. We fully support an ongoing effort to develop metrics and standards by an independent third party, but we do not believe that this should be done *before* the FCC grants certification of CAPTIONMATE.

II. PRIVACY

CLARITY is *highly* focused on privacy. CAPTIONMATE is, in fact, more private than the existing IP CTS providers.

CLARITY does use a speech engine, but we use a version which categorically does NOT save the audio or transcriptions for use in machine learning. Evidence of this has been given to the FCC in the redacted portion of CLARITY's application. Audio is deleted from CLARITY's servers as soon as it is transcribed; transcriptions are deleted immediately at the end of a call. The speech engine itself discards audio and transcription as soon as it is delivered. The transcriptions are saved only on the user's local device(s).

Traditional IP CTS providers, by using Communication Assistants ("CAs"), *include at least one person listening to every single call*. In addition, every traditional IP CTS provider

[16] Meeting of James van den Bergh and Beryl Bucher of CLARITY, with Jim Malloy and staff of MITRE, August 19, 2019, at MITRE offices in Tysons Corner, Virginia.

uses computers to transcribe and/or send that transcription to the end user. CLARITY simply removes the middleman, or CA.

All but one traditional IP CTS provider uses ASR (by a process called re-voicing) on a computer to create transcriptions. We are not privy to the software choices made by existing IP CTS providers, but we are concerned that there may be privacy issues regarding their ASR software that should be disclosed to users. For example, the self-described market-leader in ASR software is by Nuance,[17] which states in their privacy policy "[w]hen you use Nuance voice recognition technology, whether by using Nuance's own Products or by using third party products that employ Nuance voice recognition technology, we may capture your voice and the words that you speak into the product."[18]

CLARITY saves neither the audio nor the transcription anywhere; nor does its speech engine. Can the same be said for the ASR software currently in use by traditional providers?

[17] Nuance Software, https://www.nuance.com/omni-channel-customer-engagement/voice-and-ivr/automatic-speech-recognition/nuance-recognizer.html (last visited Sept. 26, 2019).

[18] Nuance Privacy Policy, https://www.nuance.com/about-us/company-policies/privacy-policies.html (last visited Sept. 26, 2019).

We are baffled by allegations of a lack of privacy. Below are two diagrams to visualize how traditional IP CTS works and how CAPTIONMATE works:

TRADITIONAL RE-VOICING and ASR:

* What is the privacy policy of the ASR engine? Is this known to the FCC and/or the user base?

CAPTIONMATE ASR:

*CAPTIONMATE's ASR Engine is 100% private: No audio or transcript is stored anywhere other than on the user's device.

We submit that CAPTIONMATE is, by definition, *more* private than traditional IP CTS, and reject assertions that claim otherwise. In addition, CLARITY has shown that it meets the Minimum Mandatory Standards for privacy as set by the FCC.

III. FUNCTIONAL EQUIVALENCE AND UNDERSERVED POPULATIONS

"Functional equivalence" is an important concept, and it is critical to protect it. We agree with those commentators who express the need to ensure its defense. There are several issues here, which we summarize below:

A. Accents and Specialized Vocabulary

Multiple commenters mentioned concerns about whether ASR could handle differing accents, specialized vocabulary, etc. They made some very strong claims, which can be represented by two quotes:

- Claim 1: "Today's CA-based IP CTS and CTS providers have demonstrated that CAs are capable of delivering functional equivalence by providing accurate captions under adverse, real-world conditions."[19]

- Claim 2: "ASR-services are more likely to struggle during emergency calls, calls with difficult speakers (*e.g.*, soft-spoken speaker, speakers with unusually high- or low-pitched voices, minority speakers, speakers with accents, and speakers with speech impairments); calls with difficult speech content (*e.g.*, speech content that is highly specialized or personalized); calls with difficult background conditions (*e.g.*, noise, music, multiple voices, or reverberation); or calls when captioning is otherwise inaccurate for unidentifiable reasons."[20]

As to the first claim, that CAs have been proven to be capable of delivering functional equivalence, it only takes a quick Google search to find hundreds of complaints[21] about the

---

[19] UltraTec Comments at 6.

[20] CaptionCall Comments at 4-5.

[21] We have not provided references here because we don't believe that it benefits anyone to call out specific providers. However, if requested by the FCC, we will be happy to supply such resources.

accuracy of each of the existing providers. We're not trying to attack these providers, but only to say that, for at least some users, there is frustration about the accuracy of transcriptions. We hope they will find the accuracy of ASR-only an improvement.

HLAA *et al.* even state in their comments that ". . . the Commission should insist upon a substantial demonstration that an ASR based service will provide a similar -- or ideally better, **given the persistence of quality problems with CA based service experience** for consumers."[22] This statement is notable on two counts: (1) the acknowledgment that the CA based service does have quality problems, and (2) the request that ASR-only be required not to match, but to exceed the existing quality before certification, which seems questionable.

Moreover, in their 2017 report "MITRE observed that faster speech, background noise, more complex speech, computer generated voices, and non-native English speakers all have a negative impact on accuracy. One script (Pizza) was executed with both a native English speaker and a non-native English speaker. For all providers and SSTs, the average accuracy for the non-native speaker sample was lower than for the native speaker."[23] We believe that to claim that traditional IP CTS does not experience problems such as accents and speech patterns is inaccurate, and does not accord with common sense and experience.

For the second claim, in the combined 175 pages of comments submitted, we found exactly *zero references* to research that directly compared existing IP CTS providers against ASR-only, except for those statements that mentioned MITRE's testing. As the risk of being repetitive, MITRE found, in testing ASR in 2016, that testing of one of three automatic speech-to-text systems in its analysis provided service with **superior accuracy, speed, and usability**

---

[22] HLAA *et al.* Comments at 6 (emphasis added).

[23] Phase I MITRE Results at 9.

than three of the four tested IP CTS providers. Three years have passed since 2016 – that is considered eons in the software development world. If ASR-only solutions were tested as appropriate back then, they are far better now and will continue to improve.

Finally, we would like to note that, unlike any existing solution, CAPTIONMATE provides a method for users to ensure that the captions are being accurately transcribed. This is particularly important when the remote party is speaking of something that absolutely needs to be accurate, like someone giving an address, phone number, stock quote, or prescription. CAPTIONMATE gives the user the ability to send the remote party a one-time link to the transcription, so that the remote party can ALSO view the transcription, and can see whether or not the information given is accurate.

B. Functional Equivalency

At least two of the commentators believe that ASR-only service deprives a segment of the community of those with hearing loss of functionally equivalent services.[24] We don't agree with their conclusions. As mentioned in the "Metrics" section above, we believe that CAPTIONMATE will exceed existing accuracy for many of those specified.

[24] *See, e.g.*, Ultratec Comments at 13 ("Although Ultratec's testing has shown that ASR has promise to improve IP CTS, these tests also have demonstrated that ASR-only technologies currently are not adequate in many situations to provide functionally equivalent service without the involvement of a CA."); CaptionCall Comments at 9 ("And without the ability to fall back on trained and professional CAs to provide and correct captions during such calls, a certified ASR-only IP CTS provider may generate inaccurate captions that do not enable functionally equivalent communications.").

Here, we'd like to also speak for those who are definitely left out, partially or entirely, in the current environment:

Those Who Speak Spanish: Considering the emphasis put on being able to serve as broad a market as possible, we're surprised that some providers do not even fully offer coverage for the Spanish language. There are over 37 MILLION native Spanish speakers in the USA,[25] but MezmoCorp d/b/a InnoCaption ("INNOCAPTION") does not offer any Spanish at this time,[26] and HAMILTON only offers Spanish during certain hours, from 7 a.m. to 11 p.m. [27]

Native Speakers of Languages other than English *or* Spanish. Approximately 18 MILLION people in the USA are native speakers of a language other than Spanish or English.[28] This number rises if you include those who do speak English or Spanish natively, but also desire to communicate with relatives or others who do not. Surely, they would benefit from a service that provides more languages.

Where is their accommodation? Where is their functional equivalence?

Those Who Value Complete Privacy: Current IP CTS users simply have to resign themselves to calls with a transcriptionist or re-voicer in the middle. Users who have sensitive conversations with doctors, family members, and friends have to accept there will be a person listening in to conversations.

---

[25] World Atlas, *The Most Spoken Languages In America*, https://www.worldatlas.com/articles/the-most-spoken-languages-in-america.html (last updated June 12, 2018).

[26] InnoCaption FAQs, Question 17, Will Captions be Available in Languages Other than English?, https://www.innocaption.com/general-faqs/ (last visited Oct. 3, 2019).

[27] HamiltonCaptel Frequently Asked Questions, Question 6, Can I Place a Call Using Hamilton Web CapTel in Spanish?, https://www.hamiltonwebcaptel.com/faq.jsp#234 (last visited Oct. 3, 2019).

[28] World Atlas, *The Most Spoken Languages In America*, https://www.worldatlas.com/articles/the-most-spoken-languages-in-america.html (last updated June 12, 2018).

Sometimes consumers can be wary of giving out private information over the phone with a third-party listening in. For example, a customer review on Amazon said "I had an incident a few days ago that is still worrying me. I was using the CapTel Phone 2400i to order a product. I had to give my Credit Card number. The Sales person repeated the number back to me. I did not think this was going to happen. The Captioning Person typed out my Credit Card Number. If I knew that this was going to happen I would have turned off my Captions."[29]

In another review, a different user said "It's a decent unit, what kills everything is they use real people to transciibe [sic] your conversations. NOT GOOD!"[30]

Where is the accommodation for those who want complete privacy? Where is their functional equivalence?

Those Who Need a Work Solution: There are very few options right now for users who need to use a landline phone at work, which is perhaps why the marketing focus and user base of the traditional IP CTS providers leans heavily towards our seniors.

There are many in the workforce who also need a solution, but many companies use a PBX system that is incompatible with the existing providers' analog landline phones.

---

[29] Customer Review by waltkct, https://www.amazon.com/gp/customer-reviews/RG9IK3UE73XHF/ref=cm_cr_arp_d_rvw_ttl?ie=UTF8&ASIN=B00ZYHA1KI (last visited Oct. 3, 2019) ("The Phone is Excellent. The Captioning Service is human. Make sure NO ONE repeats sensitive info back.").

[30] Customer Review by Holden Wood, https://www.amazon.com/Hamilton-CapTel-Touch-Screen-Amplification-Microfiber/product-reviews/B00ZYHA1KI/ref=cm_cr_unknown?filterByStar=one_star&pageNumber=1 (last visited Oct. 3, 2019).

Fortunately, HAMILTON has released a phone (Hamilton CapTel for Business), but it only operates in a Cisco VoIP environment.[31] This is a step in the right direction, but still leaves a large group of office workers out of luck.

SPRINT has also released its WebCapTel product,[32] which also is an enormous step forward in providing users at work with captions. We have not tested this service, but believe it will be helpful to many users. However, there is a limitation: in order to receive a call, according to their website, a user must (among other things):

> "Have your callers dial 800-933-7219 (English) or 866-219-6803 (Spanish), then dial your telephone number and press pound (#). You must be logged in to receive calls."[33]

This is helpful but onerous, and not always possible in an office where calls are often routed through an established, main number and then routed to an extension.

CAPTIONMATE offers a simple solution to making and receiving calls at work, which will overcome both the need for a Cisco system as well as the need for having incoming calls dial an unfamiliar set of numbers.

We applaud both HAMILTON and SPRINT for their efforts to expand captioning to those at work. We hope to be part of the effort to improve working conditions for those with hearing loss.

Those Who Value Speed: We believe it to be irrefutable that CAPTIONMATE is faster than traditional IP CTS. In their 2017 report, MITRE found that the average delays for

---

[31] Hamilton Captel, *Hamilton Captel Means Business*, https://hamiltoncaptel.com/business-program-for-telecom-administrators.html (last visited Oct. 3, 2019).

[32] Sprint WebCapTel, https://sprintcaptel.com/products/webcaptel (last visited Oct. 3, 2019).

[33] *Id.*

transcriptions with traditional IP CTS were measured at 15.8, 7.3, 4.1, and 14.6 seconds, averaging 10.45 seconds.[34] Ten seconds can seem like an eternity on a telephone call.

HAMILTON's study of 2018 finds that accuracy is more valued by consumers than speed,[35] but MITRE's report of 2017 finds exactly the opposite: "Controlled Usability Study participants indicated that they prefer captions that appear quickly (caption delay) and are complete as opposed to accurate transcription."[36]

We believe that this is not necessarily contradictory, but rather a matter of individual preference and dependent on the type of call, the reason for the call, and the relationship of those on the call. For example, if a senior is talking to her daughter, and the daughter knows she is using captioning and is hard-of-hearing, then accuracy may well be more important.

However, if a person is in the workplace and trying to participate in a conference call, they may prefer speed. We have only anecdotal evidence regarding this issue, but we have users who have stated things like "I can't use traditional IP CTS on a conference call at work, because the captions are too slow. Because I have a delay in responding, people assume I'm stupid, so I use VRS instead."

It is time to expand the choices to consumers who search for true functional equivalence.

IV. GENERAL PROBLEMS WITH COMMENTS

In the 15 days the FCC allotted for responses, we did not have time to read every study cited and research every footnote in the comments. However, we want to note that we found

---

[34] MITRE Phase I Results at 11.

[35] *See* Ex Parte Presentation of Hamilton Relay, Inc. and Ultratec Inc., CG Docket Nos. 03-123, 13-24, A Trial of Automated Speech Recognition for IP CTS Calls (filed Dec. 19, 2018).

[36] MITRE Phase I Results at 12.

inconsistencies or problems in several submissions, because of the lack of references and/or because of citing sources that do not back up the claims made. This was enormously frustrating and time consuming. Here we give a few examples of such problems:

ULTRATEC said "[t]oday's CA-based IP CTS and CTS providers have demonstrated that CAs are capable of delivering functional equivalence by providing accurate captions under adverse, real-world conditions. This includes the provision of captioning when the audio is degraded by background noise; when technological effects such as poor wireless, wireline, or VoIP connections or substandard telephone microphones degrade sound quality; when the hearing speaker has a strong accent, speaks softly, or uses an unusual speech pattern; and when the subject matter of a call requires the participants to use a special, niche vocabulary, such as calls about medical, legal, or technical matters. Current ASR engines struggle or fail when facing these issues, all of which are common place in the real world in which IP CTS users live and work."[37]

Since these statements weren't footnoted, we searched hard for the sources for ULTRATEC's claims: (a) that today's CAs are capable of delivering functional equivalence with strong accents, unusual speech patterns, niche vocabulary, and (b) ASR engines struggle or fail under the same conditions. We looked in particular at the footnote above this claim, and the one below this claim. Here they are:

- The footnote before this references a study from 2002/2003.[38] While it is called "A Trial of Automated Speech Recognition for IP CTS Calls," it includes no data whatsoever comparing a CA versus ASR, or even comparing ASR to an ideal, nor does it contain any mention of accents, specialized vocabulary, etc. It simply

[37] Ultratec Comments at 6.

[38] *See* Ex Parte Presentation of Hamilton Relay, Inc. and Ultratec Inc., CG Docket Nos. 03-123, 13-24, A Trial of Automated Speech Recognition for IP CTS Calls (filed Dec. 19, 2018).

describes "the relative importance of accuracy and speed on caption usefulness (functionality) in real-world environments."[39]

- The footnote after these sentences references an ULTRATEC FCC comment document from October 2018[40] which again does not address the quality details of ASR nor that of traditional IP CTS in any way, but argues instead that the FCC should have standards, that those standards should be set by the providers themselves, and that the FCC should not "foist" new technologies on the providers.[41]

We find the ULTRATEC claims of the superiority of CA versus ASR technology to be unfounded and unproven.

SPRINT made a similar claim: "ASR systems routinely fail to present names and technical terms properly, they stumble on accented or mumbled speech or background noises, omit punctuation, and can have difficulty determining the differences between what a speaker 'said' and what they actually 'meant.'"[42]

Unfortunately, SPRINT's source for this quote does include the quote, but does not include any references or studies that come to these conclusions.[43] Again, we beg to differ with their conclusions and wonder where the actual research is.

In the appendix of CAPTIONCALL's submission, Dr. Stern cites a study regarding deaf accents, saying "One recent study found that for a particular commercial translating device, ASR error rates for deaf speakers were more than 4 times those obtained for normal-hearing speakers,

---

[39] *Id.* at 5.

[40] Comments of Ultratec, Inc., CG Docket Nos. 03-123 and 13-24, at 2 (filed Oct. 16, 2018).

[41] *Id.* at 5.

[42] SPRINT Comments at 8.

[43] David Titmus, *Will the FCC's Allowance of ASR for Captioned Telephone Service Be a Help or Hindrance?*, VITAC (June 19, 2018), https://www.vitac.com/will-the-fccs-allowance-of-asr-for-captioned-telephone-service-be-a-help-or-hindrance/.

rendering the device unusable."[44] However, when we checked that cited study we find it used only one ASR engine for its results, "Microsoft Translator Speech API".[45] First, at least one study has shown that Microsoft ranks at the bottom of a set of fourteen Speech-to-Text engines tested in 2019.[46] Second, the "Microsoft Translator Speech API" is a *translation* engine, not simply Microsoft's Speech-to-Text engine. Because it is a translator, it spends time and effort trying to first determine the language spoken, and then finding the appropriate transcription and, if necessary, translating that back into English.[47]

Frankly, we are not surprised that when you create a test that (a) uses what is potentially the worst speech engine, and then (b) compound that by using the wrong version, and then (c) create data that compares to the ideal rather than to real-life effectiveness of IP CTS CAs, the results are far from impressive.

V. CONCLUSION

CLARITY does not propose to deprive consumers of the choice of continuing to use traditional IP CTS. We only intend to expand the range of choices available, thereby making IP CTS available to those who have not been able to benefit from it thus far.

In all the years of providing IP CTS, only several hundred thousand consumers have been served. The current offerings don't, and can't, serve the millions in need.

---

[44] CaptionCall Comments, Appendix A, at 14.

[45] A. Glasser, K. Kushalnagar and R. Kushalnagar, *Feasibility of Using Automatic Speech Recognition with Voices of Deaf and Hard-of-Hearing Individuals* (Nov. 1, 2017), https://arxiv.org/pdf/1909.01167.pdf.

[46] TimBunce, *A Comparison of Automatic Speech Recognition (ASR) Systems, Part 2*, https://blog.timbunce.org/2019/02/11/a-comparison-of-automatic-speech-recognition-asr-systems-part-2/ (last visited Oct. 3, 2019).

[47] Microsoft Translator Text API, https://www.microsoft.com/en-us/translator/business/translator-api/ (last visited Oct. 3, 2019).

CLARITY believes that individuals with hearing loss should have as many choices as possible. Individuals with hearing loss are perfectly capable of choosing what is best for themselves. Just as some people prefer Coke to Pepsi, McDonalds to Burger King, so too individuals with hearing loss should be provided the ability to choose between IP CTS technologies and services.

CLARITY has satisfied the FCC's standards for review and grant of an application for IP CTS certification. We ask the FCC to expeditiously approve CAPTIONMATE's application so that we can expand the choices available to those with hearing loss.

Respectfully submitted,

Clarity Products, LLC

By: */s/ Seymour James van den Bergh*
Seymour James van den Bergh
Beryl Bucher
Clarity Products, LLC
6131 Preservation Drive
Chattanooga, TN 37416

Scott D. Delacourt
Madeleine M. Lottenbach
WILEY REIN LLP
1776 K Street NW
Washington, DC 20006

Counsel for Clarity Products, LLC

October 10, 2019

CERTIFICATE OF SERVICE

I hereby certify that, on this 10th day of October 2019, a copy of the foregoing pleading was served via First Class mail upon:

Rebekah P. Goodheart
Elliot S. Tarloff
James T. Dawson
JENNER & BLOCK LLP
1099 New York Avenue, NW, Suite 900
Washington, DC 20001

Counsel for CaptionCall, LLC

David A. O'Connor
Rachel S. Wolkowitz
WILKINSON BARKER KNAUER, LLP
1800 M Street NW, Suite 800N
Washington, DC 20036

Counsel for Hamilton Relay, Inc.

Blake E. Reid
SAMUELSON-GLUSHKO TECHNOLOGY LAW & POLICY CLINIC
2450 Kittredge Loop Drive
Robert & Laura Hill Clinical Suite, 404 UCB
Boulder, CO 80309

Counsel for Telecommunications for the Deaf and Hard of Hearing, Inc.

Loretta Herrington
CLEAR2CONNECT COALITION
3075 Adeline Street, Suite 155
Berkeley, CA 94703

Counsel for The Clear2Connect Coalition

Scott R. Freiermuth
SPRINT CORPORATION
6450 Sprint Parkway
KSOPHN0304 – 3B521
Overland Park, KS 66251

Pamela Y. Holmes
ULTRATEC, INC.
450 Science Drive
Madison, WI 53711

Jan Withers
Claude Stout
TELECOMMUNICATIONS FOR THE DEAF AND HARD OF HEARING, INC.
PO Box 8009
Silver Spring, MD 20907

Howard Rosenblum
Zainab Alkebsi
NATIONAL ASSOCIATION OF THE DEAF
8630 Fenton Street, Suite 820
Silver Spring, MD 20910

Richard Brown
ASSOCIATION OF LATE-DEAFENED ADULTS
8038 MacIntosh Lane, Suite 2
Rockford, IL 61107

Mark Hill
CEREBRAL PALSY AND DEAF ORGANIZATION
14510 Homecrest Road, Unit #3008
Silver Spring, MD 20906

René G Pellerin
AMERICAN ASSOCIATION OF THE DEAF-BLIND
65 Lakeview Terrace
Waterbury Center, VT 05677

Alfred Sonnenstrahl,
DEAF SENIORS OF AMERICA
5619 Ainsley Court
Boynton Beach, FL 33437

Christian Vogler
Linda Kozma-Spytek
REHABILITATION ENGINEERING RESEARCH CENTER ON TECHNOLOGY FOR THE DEAF AND HARD OF HEARING, GALLAUDET UNIVERSITY
800 Florida Avenue NE, TAP – SLCC 1116
Washington, DC 20002

Gregg Vanderheiden
REHABILITATION ENGINEERING RESEARCH CENTER ON UNIVERSAL INTERFACE & INFORMATION TECHNOLOGY ACCESS
Trace Research & Development Center
University of Maryland
4130 Campus Drive
College Park, MD 20742

Dr. Gerard Buckley
Gary Behm
NATIONAL TECHNICAL INSTITUTE FOR THE DEAF
52 Lomb Memorial Drive
Rochester, NY 14623

Barbara Kelley
Lise Hamlin
HEARING LOSS ASSOCIATION OF AMERICA
7910 Woodmont Avenue, Suite 1200,
Bethesda, MD 20814

/s/ Rhe Brighthaupt
Rhe Brighthaupt
Wiley Rein LLP