Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of	)	
Structure and Practices of the Video Relay Service Program	)	CG Docket No. 10-51
Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities	)	CG Docket No. 03-123

Reply-To Comments of the Rehabilitation Engineering Research Center on Telecommunications Access

2012-11-29

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I. Introduction

The Telecom RERC (RERC-TA) is a joint project of the Technology Access Program at Gallaudet University and the Trace Center at the University of Wisconsin-Madison. The RERC is funded by the U.S. Department of Education, National Institute on Disability and Rehabilitation Research, to carry out a program of research and development focused on technological solutions for universal access to telecommunications systems and products for people with disabilities.

In our comments we expressed concern that mandating a single common application for all VRS providers would slow down the pace of innovation in the VRS industry, and provide no guarantees of solving the interoperability problems that currently exist. We also expressed concern that a single application would be unable to meet the diverse needs of the community, including people with additional disabilities, such as the deaf-blind and people with motor disabilities[1]. By and large, it seems that other commenters agree with our assessment.

In addition, the unusually large number of comments[2] shows that there clearly is a lot of concern about the trade-offs between off-the-shelf equipment/software and custom VRS equipment/software. In these reply-to comments, we address a few specific

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[1] Comments filed by the Telecommunication RERC, CG Docket 10-51, 11/14/2012. Online: http://apps.fcc.gov/ecfs/document/view?id=7022054832

[2] Unfortunately, many such comments were essentially duplicate filings of letter templates. To increase the chance of finding substantive comments, we have made available a list of comments with duplicates sorted out for the public's perusal at http://tap.gallaudet.edu/cvogler/VRSReform/.

technical points that have stood out; in particular comments on video quality and integration between the equipment and back office processes.

II. Video Quality

Some commenters have expressed concern that off-the-shelf equipment and software cannot provide the video quality necessary for effective VRS, while other commenters have asserted that off-the-shelf solutions can easily serve as replacements for custom VRS-provided solutions with adequate video quality. Neither standpoint fully captures the complex interplay among various factors that affect video quality.

Video quality is affected by the rate at which video is sent and received, the resolution, the codec used, the encoding strategies used for the codec, the characteristics of the underlying network, and the characteristics of the camera, all of which vary widely across both custom videophones and off-the-shelf equipment. Given a good camera, a high-quality network, and sufficient network bandwidth, any video can be made to look good for the purposes of sign language conversations; the differences between video optimized for VRS calls and for “talking heads” geared toward the mainstream largely show up when the underlying network constrains the bandwidth or exhibits packet loss, jitter, and latency. We previously mentioned in our comments that VRS calling equipment and mainstream equipment have different trade-offs between frame rate and resolution under limited bandwidth: VRS equipment emphasizes frame rate over resolution, whereas mainstream equipment emphasizes resolution. Encoding strategies are another area where quality differences may become apparent for sign language conversations.

However, the impact of varying video quality on VRS calls has not been quantified beyond the absolute minimum requirements that have an impact on comprehension, as specified in the ITU-T H-Series supplement[3] and our supplemental filing on minimum frame rates, exposure times, and resolution in April 2011[4]. In particular, it is still an open question as to what impact quality differences in video beyond the minimum standards have on the mental effort expended by humans on following the conversation, and how much they impact the well-being and performance of video interpreters[5]. Rather than just unconditionally accepting the assertion that VRS-specific equipment and software provide much better video quality than off-the-shelf equipment, we encourage stakeholders to conduct additional research into these questions to come up with requirements on video quality that satisfy all stakeholders. When such research is conducted, it is also crucial to test under conditions that mirror real-world networks, rather than the low-latency, low-jitter, high-bandwidth, and low-packet loss networks that are found in many laboratory setups.

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[3] Application profile – Sign language and lip-reading real-time conversation using low bit-rate video communication. ITU-T H-series Recommendations – Supplement 1, 05/99. (Available at http://www.itu.int/rec/T-REC-H.Sup1-199905-I)

[4] Comments filed by the Telecommunication RERC, CG Docket 10-51, 4/1/2011, attachment #2. Online: http://apps.fcc.gov/ecfs/comment/view?id=6016375091

[5] See e.g. the comments in CG Docket 10-51 by Kelly Johnson, http://apps.fcc.gov/ecfs/document/view?id=7022065805, Diana O'Toole, http://apps.fcc.gov/ecfs/document/view?id=7022068731, Kimberly C. Díez, http://apps.fcc.gov/ecfs/document/view?id=7022040370, and Lisa Adele Kurtz http://apps.fcc.gov/ecfs/document/view?id=7022054617, all of which express concern that the video quality may have an adverse impact on interpreters.

III. Interaction between clients and back office processes

Sorenson Communications asserts that "VRS providers would need to make critical network and back office information available to the developer, so that it could generate a solution that works with their systems.[6]" The RERC-TA questions the need for incorporating proprietary back office information into the development of videophones and video calling software. This would be akin to telecommunications carriers stating that it is impossible for phone manufacturers to create landline and smartphones that work on their respective networks, despite overwhelming evidence to the contrary: such phones work on a wide array of networks across a wide variety of carriers. There is no compelling reason why the situation should be any different for videophones. Moreover, any such stance would de facto prevent off-the-shelf equipment and software from interoperating with VRS, including IMS-enabled mobile devices.

Sorenson's comments, however, do underscore the need for a comprehensive set of interoperability standards in the VRS industry. If such standards were to exist, they are likely to lessen or eliminate the need for factoring proprietary information into the implementation of the client hardware and software. And even if a VRS provider's network is designed such that it exhibits an over-reliance on proprietary features of the client, there is no good justification for perpetuating this state of affairs, especially not

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[6] Comments filed by Sorenson Communications, Inc., CG Docket 10-51, 11/14/2012, p. 63. Online: http://apps.fcc.gov/ecfs/document/view?id=7022053792

when improved interoperability with both custom VRS equipment and mainstream equipment, including IMS and next-generation 9-1-1, is the ultimate goal.

IV. Conclusion

The RERC-TA respectfully requests that the FCC consider the points made by all stakeholders in the proceedings before moving ahead with VRS reform. We also submit that additional research should be carried out on the impact of the proposed technical changes on all stakeholders, including video interpreters, before a final decision is made.

Respectfully submitted,

On behalf of the RERC-TA[7]:

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[7] The contents of these comments were developed with funding from the National Institute on Disability and Rehabilitation Research, U.S. Department of Education, grant number H133E090001 (RERC on Telecommunications Access). However, those contents do not necessarily represent the policy of the Department of Education, and you should not assume endorsement by the Federal Government.