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June 26, 2012

Mr. John Traversy
Secretary General
Canadian Radio-television and
Telecommunications Commission
Ottawa, ON K1A 0N2

Dear Mr. Traversy:

Re: *Accessibility of Telecommunication and Broadcasting Services, Regulatory Policy CRTC 2009-430 – Responses to interrogatories*

TELUS Communications Company (“TELUS” or the “Company”) is in receipt of interrogatories issued by Commission staff on May 25, 2012 regarding TELUS’ video relay services (“VRS”) trial. In accordance with the instructions of Commission staff, TELUS files its responses to the VRS interrogatories posed.

TELUS notes that some responses have been prepared by Sorenson Communications Canada (“Sorenson”), TELUS’ third party provider for the VRS trial, where the interrogatories required Sorenson’s expertise. These responses are identified as such where applicable.

The Company is also in receipt of interrogatories issued by Commission staff on May 25, 2012 in relation to TELUS’ message relay services (“MRS”). The Commission staff recently extended the deadline for filing responses to the MRS questions from June 26, 2012 to July 26, 2012. TELUS confirms it will file its responses to the MRS questions no later than July 26, 2012.

Yours truly,

{Original signed by Ted Woodhead}

Ted Woodhead
Vice-President
Telecom Policy & Regulatory Affairs

IM/cs

Attachments

cc. Nanao Kachi, CRTC, nanao.kachi@crtc.gc.ca
Kay Saicheua, CRTC, kay.saicheua@crtc.gc.ca
Sorenson Communications Canada, gkane@stikeman.com

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- The TELUS final report submits costs categorized under “external vendor costs” and “Internal TELUS Costs”. Please provide a breakdown of the “external vendor costs” associated with providing the Canadian trial.

As Sorenson is not a regular participant in the Commission’s processes, Sorenson may wish to consult section 39 of the Telecommunications Act (S.C. 1993, c.38).

“External Vendor” Cost of Canadian Trial				
	Hourly*	Monthly	Trial Total	% of total external vendor cost
	\$ CAN	\$ CAN	\$ CAN	
VRS Call center platform				
Other technology (incl. technical support)				
Network Access				
Overhead				
VRS Operator Services				
Other				
Total				

*where applicable

ANSWER

The following response is provided by Sorenson Communications Canada

During the trial Sorenson Communications charged Telus \$6.64 Cdn per minute and later \$6.24 Cdn when the trial was extended. At the time these rates were consistent with the tiered-rate methodology established by the Federal Communications Commission (presently under review). The per minute charge only applied to actual conversation minutes when interpretation was taking place. For other parts of a call

(set up and tear down) there was no charge. Also, there were no charges for deaf-to-deaf calls because an interpreter was not involved.

Sorenson Communications is the largest provider of VRS in the United States by a very significant margin. Sorenson is also the lowest cost provider of all US providers. While the per minute amount charged during the trial may not be the exact amount decided upon to provide VRS in Canada on a national scale, it can provide helpful guidance and evidence of the overall cost of providing this life-changing technology to its deaf citizenry.

2. Given that Sorenson currently has VRS call-centres located in Canada to provide video relay services to clients in the United States; describe how the Canadian video relay traffic was identified and managed in relation to that of the United States. Quantify any effect this had on costs. If economies of scale were experienced, indicate whether they were accounted for in the costs identified above.

ANSWER

The following response is provided by Sorenson Communications Canada

The videophones for the Canadian video relay trial were configured to direct relay calls to a dedicated URL specific to the Canadian trial. This URL routed the call traffic to a set of servers dedicated to processing Canadian calls, and the servers were not used for any other purpose.

As for economies of scale, Sorenson Communications is the only US provider which has engaged independent economists to determine when economies of scale are reached in the VRS industry. In general, economies of scale in the provision of VRS are limited. Interpreter costs and many other costs - including most of the costs associated with call centers - vary with service volume and are not subject to significant economies of scale beyond a relatively low threshold. The fixed costs associated with providing VRS services are small and not a source of significant scale economies. Unlike telcos, VRS provider costs are highly variable because of the need to connect an interpreter on every VRS call. Any provider achieving roughly 400,000 conversation minutes each month has largely achieved all the meaningful economies available. In the US there are three providers (Sorenson, Purple, and Z) who handle at least this monthly volume. Achieving economies of scale also plays an important role in determining just how many VRS providers can realistically compete in the national provision of VRS in Canada. Without question it is critical to achieve economies of scale both for the financial health of the provider and for the assurance that VRS costs are as efficient as possible.

3. In TELUS' Final Report – Table 5, the number of “Active Users” represents roughly 80% of the “Installed Participants”.
- a. Identify any perceived post-installation barriers to adoption, and indicate whether these were identified by TELUS/Sorenson or through participant feedback.
 - b. Describe the manner in which the VRS trial was advertised; and how participants for the trial were solicited and registered. List what relevant information was provided to potential participants.
 - c. List the requirements participants needed to meet to qualify for the trial.
 - d. Indicate the number of customers who declined an offer to participate in the TELUS VRS trial. If applicable, indicate what their decision was based on.

ANSWER

- a. TELUS is not aware of any post-installation barriers that would have prevented adoption of the service once VRS installation was completed.
- b. TELUS prepared a communication to inform individuals on town hall meetings that were being organized to provide information on the VRS trial to potential users and to allow interested persons to register for the trial. The communication was sent electronically to all Canadian deaf and hard of hearing organizations known to TELUS and Sorenson. The communication also provided alternative locations where VRS trial application forms could be obtained in case customers could not attend the town hall meetings.

In addition to this electronic communication, posters were displayed at deaf and hard of hearing organizations' locations and each community prime from these organizations was solicited to assist in communicating information about the town hall sessions.

Finally, this communication was also posted on the following community organization websites: DeafBC.ca, ASL student Network, DHHS.ca.

The Company held these town hall meetings in June 2010 in Vancouver, Edmonton, and Calgary, prior to the beginning of the VRS trial. They were presented by TELUS and Sorenson and were attended by potential participants of the trial and other interested persons. The parameters and objectives of the trial were explained to attendees, including the trial period, the geographic availability of the service and any service terms and conditions. Attendees were given the opportunity to register for the trial.

Trial participation was solicited through potential participants completing an application of interest to participate in trial. These applications were available at public town hall meetings and at selected Deaf and Hard of Hearing organizations in each of Vancouver, Calgary and Edmonton. TELUS is filing in Appendix A to this answer a copy of the application form. This application form also included the VRS trial agreement that contained the terms and conditions that applied to the use of the VRS service during the trial.

Applications were available from the date of the first public town hall meeting¹. TELUS identified an initial target number of participants for each city for the initial selection and installation. Participants were selected from the total applications received by random lottery for each city. In addition a selection of schools, deaf organizations were approached to participate to provide an institutional view to trial results. Participants wishing to have VRS installed at their place of work were also assessed based on connectivity and willingness of their employer to participate.

Applications received from the potential trial users after the June 17, 2010 were collected and pooled for future additional selections². Once selected, participants were emailed to inform them of their selection and to explain any prerequisites for the trial. TELUS is filing in Appendix B to this answer a copy of the selection email sent to the selected VRS trial users.

Selected customers were registered in the Sorenson database and added to the lists for installers in each city. Installers then contacted each participant to arrange VRS trial installation.

- c. In order to be eligible for the VRS trial, participants needed to meet the following requirements:
- be an existing TELUS ADSL customer (TELUS High Speed or Extreme Internet Subscriber)
 - must be 18 years of age or older
 - be fluent in ASL
 - participate in monthly surveys/feedback sessions

There was also a general limit of 1 trial participant per household.

In addition, participants had to reside within the following TELUS boundaries prescribed for the VRS trial:

¹ Applications were received from June 8 to June 17, 2010.

² Based on call volumes and participation rates, additional selections of trial users were made on September 9, 2010, November 4, 2010 and January 11, 2011.

Vancouver:

City of Vancouver, West Vancouver, North Vancouver, Burnaby, Coquitlam, Port Coquitlam, Port Moody, New Westminister, Richmond, Delta, Surrey, Langley and White Rock.



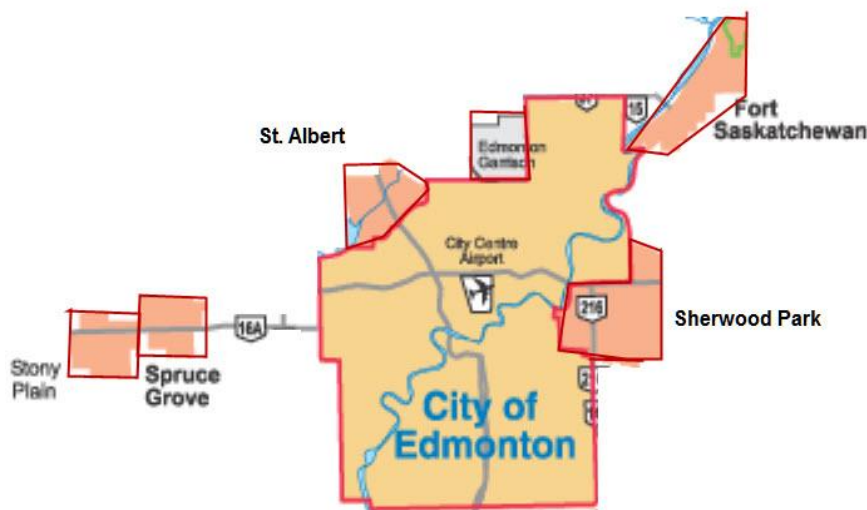
Calgary:

City of Calgary, Chestermere, Airdrie and Okotoks.



Edmonton:

City of Edmonton, Sherwood Park, St Albert, Fort Saskatchewan, Stony Plain, Spruce Grove and Greisbach/Namao.



- d. During the TELUS VRS trial selection process, 34 of the original applicants declined to participate in the trial. The primary reason for these applicants to decline was a change of decision to switch from another service provider to TELUS for Internet service. TELUS also received some customer declines based on financial constraints³ or technical constraints⁴.

In addition to those that declined for the reasons described above, TELUS disqualified 85 applications received for the VRS trial, for the following reasons:

- 17 applicants resided outside the prescribed VRS trial areas;
- 68 applicants were disqualified because the customer was unable to be contacted to set up an installation date. TELUS and Sorenson tried multiple contact means prior to disqualifying any applicant for this reason. Applicants were contacted via email provided on application⁵, applicants were called via telephone or TTY number provided on the application form and a message was left where possible. In addition, Sorenson installers went to customers' physical address supplied on the application and left door tags. (3 attempts)

³ These customers informed TELUS that they could not afford high speed Internet access.

⁴ TELUS High speed Internet was not available where they reside.

⁵ Three attempts were made.



Application for Participation TELUS Video Relay Service Trial

*Required Information

Please print your full contact information. A TELUS/Sorenson VRS Representative will be in contact with you when a videophone is ready for installation.

*First Name:		*Last Name:
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*Street Address	Apt #:
------------------------	---------------

*City:	*Province:	*Postal Code:
---------------	-------------------	----------------------

*E-mail:		
-----------------	--	--

I/M:	Phone #:	(text message capable? <input type="checkbox"/>)
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*What is your preferred method for us to contact you?		
<input type="checkbox"/> Email	<input type="checkbox"/> Phone(TTY)	<input type="checkbox"/> Text Message

*Do you currently have TELUS Internet Service?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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*If you are not a current TELUS Internet customer, are you willing to convert to TELUS Internet Service?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
---	------------------------------	-----------------------------

You must have or switch to (after selection) TELUS High Speed Internet or TELUS High Speed Turbo Internet to participate in this Trial. TELUS High Speed Lite is not compatible with this service

*Do you agree to being contacted by TELUS/Sorenson representative regarding videophone, updates for the videophone, and other VRS trial information?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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*Are you deaf or hard-of-hearing?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
--	------------------------------	-----------------------------

*Is ASL your primary language?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
---------------------------------------	------------------------------	-----------------------------

Please note that the customized TELUS/Sorenson videophones are available for deaf or hard-of-hearing persons who primarily use ASL to communicate.

*I am 18 years of age or older	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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*I confirm that I understand and accept the terms of the Video Relay Service (VRS) Trial Agreement attached.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
---	------------------------------	-----------------------------

***Signature:** _____ ***Date:** _____

**This is an application for participation in a 12 month trial with TELUS powered by Sorenson VRS, and does not guarantee the applicant's participation in the trial program.

Please submit your completed application at the town hall meeting in your area or deliver prior to 4pm June 17th to one of the addresses on the reverse of this form.

Addresses for submission of completed Video Relay service trial application forms prior to 4PM June 17th, 2010:

Vancouver, BC

WIDHH

2125 West 7th Avenue
Vancouver, British Columbia
Canada V6K 1X9

e-mail for support regarding the application:
address questions to Monte at BC-VRS@live.ca

Calgary, AB

DHHS Head Office:

63 Cornell Road NW
Calgary, AB T2L 0L4
Telephone: 403/284-6200
TTY: 403/284-6201
Fax: 403/282-7006

Edmonton, AB

Edmonton Association of the Deaf

#203, 11404 - 142 St.
Edmonton, Alberta
T5M 1V1



TELUS Video Relay Service (VRS) Trial Participant Agreement

This document contains the terms and conditions which apply to the use of the VRS service during the TELUS trial. By participating in the VRS Service trial you are agreeing to the terms of this Agreement. IF YOU DO NOT AGREE TO THESE TERMS, YOU MAY NOT PARTICIPATE IN THE TRIAL. The TELUS VRS service terms, as well as the service terms relating to any other TELUS services to which you subscribe, continue to apply to your use of those services during the VRS Service trial.

Please carefully review the terms in this document. If you do not agree, you will not participate in the VRS and your existing TELUS services will continue.

Trial participants:

- Be an existing TELUS ADSL customer (TELUS High Speed or Extreme Internet Subscriber)
- must be 18 years of age or older
- limit of 1 trial participant per household
- fluent in ASL
- participate in monthly surveys/feedback sessions

1. WHAT TELUS POWERED BY SORENSON COMMUNICATIONS PROVIDES:

a) Service

The Service provides Video Relay calling both to and from deaf and hard of hearing customers through TELUS powered by Sorenson American Sign Language (ASL) interpreters. This includes the feature of VCO calling. You agree that TELUS may change the Service features, functionality, minimum system requirements, and any other aspect of the Service or Equipment (as defined below) at any time, without notice or liability, at TELUS' sole discretion. If you do not agree to any such changes, your only remedy will be to terminate the Service in accordance with Section 3(a).

Minimum internet connection requirement: TELUS High Speed – cost responsibility of participant

The Video Relay service days and hours of operation will be communicated once the trial has commenced.

Hearing parties may contact trial participants through the following number:
1-877-922-6877 (1-877-9-CANVRS)

In the event of a power outage, or of a malfunction or other failure of your Internet connection for any reason, the Service will not function. In addition, a power failure or disruption may require you to reset or reconfigure the Equipment prior to using the Service.

b) Equipment

TELUS through Sorenson will provide you with one of each of the following: access point for high speed Internet service, videophone, cabling for videophone connection, videophone remote control. Any other equipment or services required to use the Service shall be your responsibility, and must be supplied at your expense. E.g. TV or computer monitor with video input

c) Service Limitations

Important: Access to emergency services through Video Relay using 911 or direct requests to ASL interpreters will not be supported for the duration of the trial. Trial participants must use traditional means of contacting 911 emergency services in the event of an emergency. TELUS and Sorenson shall not be deemed liable for any emergency assistance request placed through the TELUS powered by Sorenson VRS service.

The Service is provided on an "as is" and "as available" basis, and may be interrupted or altered as technical issues discovered during the trial are addressed by TELUS. Your use of the Service is at your sole risk. TELUS disclaims all conditions and warranties (express, implied or statutory) relating to the Service and Equipment.



TELUS is not responsible for the maintenance or repair of facilities or equipment owned by you, and does not guarantee that the Service will operate with all telephone equipment, computers, television sets, remote controls, home theatre components or other audio/visual equipment. You authorize TELUS to make any adjustments that are required to your existing local telephone service or high speed Internet connection in order to allow the Service to operate, and acknowledge that your only remedy should service disruptions result from such adjustments will be to terminate the Service in accordance with Section 3(a).

d) Limitation of liability

Neither TELUS nor its affiliates, nor their respective directors, officers, employees, agents or designated contractors (collectively, the "TELUS Entities") shall be liable to you or any other party for any direct, indirect, special, incidental, consequential or punitive damages, or any other damages or losses whatsoever arising directly or indirectly from the installation, maintenance or repair of the facilities or Equipment required to provide the Service, or from your use of the Service, regardless of the cause of action, including negligence, and even if one or more of the TELUS Entities have been advised of, or could reasonably have foreseen, the possibility of such damages or losses.

2. YOUR RESPONSIBILITIES

a) Hardware and Service Requirements

In order to use the Service you must reside at a predetermined eligible address and must obtain at your sole expense and responsibility a power source for TELUS High Speed Enhanced internet service as well as a TV with video input.

You authorize TELUS and its designated contractors to enter your property and premises in order to install, maintain and repair the facilities and Equipment required to provide the Service to your premises.

b) Feedback

In exchange for TELUS providing you with use of the VRS Service and Equipment as part of the technical trial, you agree to provide TELUS with feedback concerning your use and operation of the Service. You agree to complete and submit responses to monthly online surveys that will be delivered to your designated email address or through a web link. The surveys will be sent to you every 30 days from the time your service is activated, and should be completed within 10 days of receipt. TELUS may modify these timeframes at its discretion. You also agree to inform TELUS immediately of any issues affecting the Service, and provide a detailed description of the occurrence to allow TELUS to troubleshoot the issue.

c) Warranties and Indemnity

By agreeing to participate in the technical trial of the Service, you represent and warrant that you are the owner of the property on which the trial will be conducted, or that you have the authority to grant all the rights required to give effect to the trial. You agree to indemnify TELUS and its designated contractors, and all their respective employees, agents and representatives, from all losses, expenses and all manner of actions, claims and judgments sustained by or made against any of them as a result of any violation of the warranties stated above.

d) Acceptable Use Policy

By agreeing to participate in the trial you agree to the acceptable use of the service. TELUS reserves the right to suspend, restrict or terminate the Service or this Agreement at any time for behavior deemed as outside of Acceptable Use.

3. GENERAL TERMS

a) Term and Termination

This Agreement starts on the day that your Service is activated and will continue for a period of up to 12 months. You may terminate this Agreement and thereby end your involvement in the technical trial, at any time by e-mailing TELUS at VRS@telus.com. TELUS reserves the right to suspend, restrict or terminate the Service or this Agreement at any time, for any reason, with or without notice to you.

You agree to return the Videophone Equipment at the end of the trial or upon discontinued participation.

From: VRS
Sent: Friday, September 17, 2010 1:58 PM
To: VRS
Subject: TELUS VRS Trial - Calgary

Importance: High

TELUS Video Relay Service Trial

Thank-you for applying for the TELUS VRS trial.

We are happy to inform you that your name has now been drawn to select you to participate in the trial!

Now that you have been selected to participate in the trial there are some steps you need to follow:

1. Switch to a TELUS High Speed internet service

a. If you are an existing TELUS internet customer, confirm that you are on the **High Speed, High Speed Turbo, or Optik plans** (not on the High Speed Lite)

If you are on the TELUS High Speed Lite plan you will need to contact TELUS to upgrade to at least the High Speed plan.

b. If you are NOT currently a **TELUS internet** customer please ensure you make arrangements to switch to TELUS as soon as possible and provide your installation date when contacted by the installer. The switching process consists of 2 steps: contacting TELUS to order High Speed Internet, and TELUS activating/installing your internet (usually requires a TELUS installer to visit your house). Both of the 2 steps need to be complete before your videophone can be installed.

You can make arrangements to switch to TELUS by the following methods:

- the TELUS website <http://www.telus.com/content/internet/>
- by TTY through the message relay service (711) at 310-2255
- in person at most TELUS branded dealers. Most wireless dealers also sell both TELUS TV and TELUS High Speed Internet

c. If you have decided not to participate in the trial please reply to this e-mail informing TELUS of your decision.

2. If your email address changes as a result of switching to TELUS please send an email to vrs@telus.com indicating you name and your new and old email address. It is very important that we have an active email address for you in order to keep you updated on the trial.

3. A TELUS/Sorenson installer will be contacting you to arrange a time to install a videophone. Please provide your TELUS internet installation date when contacted by the installer. It is important that your TELUS internet has been ordered and installed/activated prior to the Sorenson installer arriving to install your videophone.

A few reminders:

- Trial will run June 30th, 2011
- TELUS High Speed or TELUS High Speed Turbo is necessary for good video quality
- 18 years of age or older to participate

- Deaf and fluent in ASL
- 911 is not support during the trial over the videophones
- And most importantly participate in monthly surveys/feedback sessions

If you have any questions or concerns with the trial please send an e-mail to vrs@telus.com.

Sincerely,

TELUS VRS Trial team



4. The TELUS Final Report states that a subscription to TELUS' high speed Internet was required to qualify for the trial.
 - a. Justify this requirement.
 - b. Describe any impediments to providing this service to non-TELUS subscribers.
 - c. Indicate whether the trial was offered via a managed-IP network or the public Internet; and whether service provision over a managed-IP network would be advisable. Provide your rationale, and the pros and cons under each scenario.

ANSWER

- a. Given the fact that VRS was offered on a trial basis, for a limited period of time, TELUS decided that the VRS trial participants must have a TELUS high-speed Internet connection. TELUS did this to ensure that it was able to maintain control of the overall VRS trial environment in order to be in a position to provide fast and efficient end-to-end troubleshooting of any potential technical issues. In addition, this provided TELUS the ability to ensure trial participants' Internet access met the upload and download speed requirements for the VRS trial. As a result, this requirement made for the optimum trial environment so that the service was as simple as possible for the trial users to utilize.

TELUS' goal was to make sure the trial period would enable it to provide the Commission with data that better reflected the reality of the market. By eliminating variables associated with alternative Internet providers, TELUS simplified the installation and troubleshooting processes, giving trial users as much time as possible to familiarize themselves with the service and the VRS technology. By reducing the potential problems at the installation and familiarization stage, customers had more opportunities to integrate the service into their regular ways of communicating.

- b. There would be no serious impediments known to TELUS to provide VRS service on a regular basis to subscribers of any various Internet service providers. However, customers' own Internet equipment, settings and protocols would have to be compatible with those required by the VRS provider. Consequently, the VRS service provider would have to provide detailed customer information upon subscription and provide customer support during and after installation to resolve any potential issues. Having

said that, these issues are not fundamentally different from the use of any over-the-top Internet application.

- c. TELUS' VRS trial was conducted on the public Internet network because it provided the widest access for the trial participants and mirrored the conditions that a VRS provider would expect for a regular VRS offer. TELUS is of the view that a VRS service offered over a managed-IP network would be more costly and would not provide a suitable solution for rural areas.

5. The Canadian trial required the use of Sorenson videophones which were professionally installed by a Sorenson technician.
- a. Describe the advantages to providing a VRS solution based on specialized end-user hardware versus a software solution. Describe the different resource considerations that would apply to either solution.
 - b. The trial highlights that roughly 70% of video traffic was point-to-point and did not require the services of a video relay operator. Given the widespread availability of non-VRS videoconferencing tools available on the market, based on your understanding, explain why the Canadian trial recorded such a high proportion of point-to-point calls.
 - c. The participant survey completed during the trial, and submitted as part of the TELUS Final Report, revealed that more than 1 in 4 participants experienced technical difficulties. The majority of them reported a “black screen” or disconnection of service. Please describe the potential causes for these technical difficulties and whether they were resolved during the trial.
 - d. Based on Sorenson’s experience in the United States, describe the cost and technological challenges to providing a bilingual user-interface.

ANSWER

- a. **The following response is provided by Sorenson Communications Canada**

Under either scenario, end-user hardware or software, the consumer must utilize an endpoint to use VRS (*i.e.*, the software must reside on something). Since the size of the deaf community is relatively small versus the usual targets for consumer electronic or telecommunication devices, it is highly unlikely that off-the-shelf devices will ever be optimized for the deaf consumer. Between unnecessary voice/hearing elements in off-the-shelf hardware, there is the understandable absence of deaf-specific features. End-user hardware, specifically designed for the deaf consumer and VRS, has only been successfully accomplished by Sorenson Communications. These video phone solutions provide features and functionality not found in off-the-shelf devices for the mass market.

Thinking a bit more broadly about provider-produced equipment and off-the-shelf solutions, it is self-evident that properly designed standards will need to be in place. This will promote economic efficiency and consumer welfare by

ensuring interoperability that allows the realization of network effects (*e.g.*, ensures that any VRS user can make point-to-point calls to any other VRS user, without regard to the two users' default VRS providers); reducing switching or porting costs; and providing a well-defined platform on which various suppliers can develop complementary products and services. Even if the CRTC chooses to facilitate the use of off-the-shelf equipment, the CRTC should not mandate its use. To do so would directly limit and distort competition.

The history of quality competition in the VRS industry in the US demonstrates that: (a) a firm that is able to introduce a superior service or product can expect to see its market share grow; and (b) both proprietary and off-the-shelf equipment can best serve consumer interests, depending on the situation. If off-the-shelf equipment is lower cost or more attractive to users, then VRS providers will have incentives to offer that equipment to VRS users in order to obtain competitive advantage. If a VRS provider can offer greater benefits to consumers using proprietary product designs that meet the interoperability requirements, then doing so will benefit consumers and make the program more efficient. In short, it would be a mistake to impose a requirement to use off-the-shelf equipment. The CRTC should let users decide which equipment best serves their needs. Different consumers may well make different choices.

While these hardware solutions provide important deaf-specific features and functionality they do not facilitate mobile access to VRS. Software for computers, PC and Mac and apps for mobile phones, tablets and iPads are critically important in adding mobility to VRS. End-user hardware, software and apps all combine to provide the deaf consumer with functionally equivalent access to telecommunications.

As for resource considerations, it is again important to restate that all software and apps for VRS must reside on an endpoint (computer, tablet or phone) whereas end-user hardware is obviously self-contained; but you can never escape an endpoint. Penetration of the deaf market in the US grew dramatically once endpoints became available and affordable. In most instances there was no charge for the endpoint (this was before the days of mobile VRS). This equipment distribution philosophy is still operative today in the US but to a lesser degree with computers and tablets and rarely, if at all, with mobile phones.

It can be cynically argued that aggressive equipment distribution plans only serve providers by growing the customer base and driving VRS usage and

provider compensation. But without significant penetration into the deaf market the economic, social and emotional benefits of access to VRS will never be maximized. In the US, it has been found that the endpoint can be a barrier to entry, particularly for individuals whose financial resources are very limited. With providers supplying endpoints, the program has flourished. If the ultimate Canadian system pushed the responsibility for endpoints exclusively onto the shoulders of the deaf, overall program costs would be lower but market penetration would also be lower. Consequently, all the associated benefits of telecommunications access for the deaf would likewise be needlessly lower.

- b. Although the TELUS VRS trial recorded what could be perceived as a high percentage point-to-point calls between the participants during the trial, it is TELUS understanding that this is not out of line with the US experience. In fact, according to Sorenson, TELUS VRS trial showed a slightly lower percentage of point to point calls than the current US experience

Despite the availability of other non-VRS tools to provide videoconferencing in the market, the feedback TELUS received from participants was that they preferred utilizing the VRS system due to convenience and familiarity. The VRS equipment already resided in their house and provided the service for no extra cost or effort. The ability to call other VRS subscribers using the trial supplied telephone numbers rather than finding out the IP address was a significant convenience. Also, they mentioned being familiar with the VRS interface and how to easily use the equipment.

The following response is provided by Sorenson Communications Canada

The most likely non-VRS videoconferencing tools used would be Internet based. TELUS' trial participants using the Sorenson endpoint would have a significantly better user experience because the reliability and quality of the video is much better than with those other tools. This dimension of video quality is critically important. Since sign language is a visual language, a deaf person can't be as forgiving of slow frame rates and blurriness as, for example, a hearing person can be on products like Skype. For VRS, whether it is an end-user hardware, software or app solution, video quality is optimized to perform much better than non-VRS videoconferencing tools likely available to the deaf.

In the US, it is the same as what was experienced during the Canadian trial. Point-to-point calls outnumber VRS calls by 7 or 8 to 1 and are predominantly

carried over VRS equipment/software solutions because those solutions provide much higher quality and reliability.

- c. Because this was a technical trial, in the early phases of the trial there were some difficulties with connections as a result of the learning curve for the Sorenson installers to become familiar with the various settings required to work effectively with TELUS' Internet service.

The most significant technical issue, the "black screen", was a result of incompatibility of one of the Internet/TV modems (Actiontec) that TELUS rolled out for new customers part way into the trial to support the TELUS TV offering.

Since this was only a service trial, the VRS service was not part of production services that went through the TELUS TV Quality Assurance testing by the TELUS engineering team. This modem did not allow the transmission of video encoded with the H.323 video codec, which is what Sorenson uses for its video relay service.

The TELUS engineering team worked with Sorenson and the modem manufacturer to create an updated firmware to add an Application Layer Gateway for the H.323 codec, which was deployed to all Actiontec modems, resolving the issue. As a result, this problem was experienced only for a short period of time.

The following response is provided by Sorenson Communications Canada

The H.323 videoconferencing protocol is more complex than protocols such as HTTP (used for web browsing) and it requires multiple simultaneous streams to be opened between endpoints. "Black Screen" issues are usually caused when the video stream is blocked by a network firewall or the endpoint is behind a NAT (Network Address Translation) device that is not configured to handle the multiple streams.

- d. **The following response is provided by Sorenson Communications Canada**

Bilingual user interfaces present several unique challenges compared to a single-language user interface. The first challenge is to create a set of localized resources for each element of the program that can be affected by language. These resources include text used for User Interface (UI) elements (buttons, etc.), picture resources, and format specifiers (for date and time formats, etc). The application must also be designed to dynamically load

these resources at execution time, based on the language configuration of the application. Since the length of string text can vary dramatically from language to language, many UI elements must also be resized to accommodate multiple languages, necessitating different UI layouts for the same application.

The costs of this effort include:

- (i) The development time to redesign the application to handle multiple languages,
- (ii) The cost of employing linguists to localize the string resources,
- (iii) The cost of testing the application in multiple languages, and
- (iv) The cost of developing multiple language versions of documentation

6. TELUS' Final report included the submission of a participant survey. The participant survey revealed that there is consumer demand for a mobile VRS solution.
- a. In Sorenson's experience, explain how such a demand could be met.
 - b. Describe the challenges and benefits of such a solution.
 - c. In Sorenson's experience, describe how partnerships with wireless network providers promoted the provision of a mobile VRS solution.

ANSWER

The following response is provided by Sorenson Communications Canada

- a. Meeting the demands of mobile VRS was an important milestone for Sorenson. Sorenson's efforts have focused on Android and iOS and currently support a large and ever growing number of mobile devices (both phone and tablet). Sorenson's apps essentially work to mirror the pervasive experience of the end-user hardware solution, so ubiquitous in the US today, while tailoring it to the capabilities and nuances of the mobile devices. Mobile VRS in the US is growing but still represents a small percentage of overall VRS usage. However, it would be impossible to imagine VRS today without this added benefit of mobility.
- b. **Challenges:** Bandwidth, calling plans, and screen size. With no QOS (quality of service) existing for bandwidth over a cell network, a mobile VRS user can experience varying levels of video quality during a VRS or point-to-point call. For this reason, and limitations on screen size, an in-home solution provides the optimal user experience. While it is true that larger screen mobile devices like tablets and laptops can rival in-home end-user equipment, tablets and laptops are still vulnerable to fluctuations in the cell network. However, despite some limitations with mobile it does provide deaf people with the opportunity to be every bit as "reachable" as a hearing person. Mobile also allows the deaf to make their own decisions as to whether a relay call will take place right now or be postponed.

Benefits: Being able to call (or be called by) anyone, anywhere, anytime is the driving benefit. In this regard it is no different for the deaf than it is for the hearing. But for the deaf it is much more compelling because mobile VRS is so new and the increased access it provides is so empowering. Depending upon the device, some sacrifices must be made because the user may not be

able to control or optimize lighting and screen sizes can be small. But these and any other sacrifices are minor compared to the benefits provided through increased access.

One major difference between hearing mobile and deaf mobile is that hearing mobile has surpassed landline usage. Given the limitations discussed above Sorenson is not seeing deaf mobile (*i.e.*, any endpoint relying on the cell network) in the US replacing the comparative stability of at home use of relay. There is some incremental usage because of mobile but it is very small.

- c. An important aspect of mobile VRS for the consumer is the availability of calling plans tailored to the deaf. The availability of data-only plans without unnecessary voice elements has made mobile VRS more affordable. Many such plans are available to deaf consumers from a number of wireless carriers in the U.S. because the carriers recognize the importance of serving this market with relevant offerings.

7. TELUS' trial did not include access to 911 services via VRS communication.
 - a. Although participants were advised not to use Video Relay services for emergency calls during the trial period, indicate whether emergency calls were received and if so the number of emergency calls received throughout the trial.
 - b. Based on Sorenson's experience in the United States, describe how access to 911 services via VRS communication in Canada could be implemented. In your response, indicate what the projected cost of 911 relay implementation in Canada would be.

ANSWER

The following response is provided by Sorenson Communications Canada

- a. As noted in the question, participants in the VRS market trial were advised not to use the service for emergency calls. Nevertheless, and in anticipation of the possibility of E911 calls, all interpreters were trained, prior to the trial starting, for emergency 911 calls being received. An estimated 20 emergency calls were taken over the period of the trial. All of the calls were handled without incident and the callers received the service they needed. In order for this to happen, Sorenson worked with TELUS to get "back door" numbers to the 911 services in British Columbia and Alberta depending on the caller's area code. A "back door" number can be defined as a 10 digit number direct to the E911 operator rather than a direct 911 dial. It was not possible to allow an E911 call to be routed normally because Sorenson's phone system would otherwise direct the call to E911 services in Utah. This was resolved by the use of back door numbers as described above.
- b. All VRS providers would have to find a third party company that could resolve the registered location of a user (using x, y coordinates) to the appropriate Public Service Answering Point ("PSAP") for the caller's location. The service is similar to how VoIP calls are routed to 911. When the caller is calling from the registered location, the calls could be routed through selective router to the native 911 trunks and the calls would appear to the PSAP with the appropriate Automatic Name Information ("ANI") and Automatic Location Information ("ALI"). When the user fails to keep their registered location up to date, then the appropriate PSAP (there are approximately 150 of them in Canada) is determined in real-time and the call

is not sent natively, but delivered to a PSAP designated 10-digit number without the ANI and ALI.

In the United States, Sorenson partners with a leading 911 solution partner called Intrado (www.intrado.com) and pays approximately \$1.2 million US annually for the services they render. Sorenson is a member of the National Emergency Number Association (“NENA”) which includes Canadian PSAPs. In June, Sorenson sent a representative to the national NENA conference and began business development discussions to determine if Intrado could provide the same solution for Canada and what Sorenson’s incremental cost would be. At this point, the amount has not been determined.

It is worth noting that Sorenson’s success with 911 calls has been tremendously successful and Sorenson processes approximately 22,000 911 calls annually for its VRS users in the United States. Allowing 911 access through VRS allows the deaf to use their native sign language (ASL or LSQ) to communicate to the PSAP increasing accuracy and speed over written communication in their second language (English or French).

8. TELUS undertook a consultative process before and during the trial. Provide the number of attendees for each town hall meeting and teleconference session, highlighting the number of organizations represented and the number of individuals represented. Provide a list of the organizations that form the BC VRS Consultative Committee.

ANSWER

From November 2009 through May 2010 TELUS engaged in a number of consultation sessions with the BC VRS Committee, the Edmonton Association of the Deaf and the Alberta Association of the Deaf *via* email and TTY to work on preparations for holding public townhall meetings to initiate the VRS trial.

Following those sessions, TELUS conducted various townhall and videoconference sessions to first launch the VRS trial and then to provide updates on the trial progress. Details of each town hall meeting and videoconference sessions, along with the number of meeting attendees, are provided below.

		Invitees	Attendees
02-Jun-10	Videoconference	Edmonton Association of the Deaf	1
		Alberta Association of the Deaf (Edmonton)	2
		Alberta Association of the Deaf (Calgary)	2
		BC VRS Committee	1
	Town Hall		
08-Jun-10	Vancouver	All Vancouver Deaf associations	275-350
09-Jun-10	Town Hall Calgary	All Calgary Deaf associations	80 to 100
10-Jun-10	Town Hall Edmonton	All Edmonton Deaf associations	150 to 175
14-Jul-10	Videoconference	Edmonton Association of the Deaf	1
		Alberta Association of the Deaf (Edmonton)	2
		Alberta Association of the Deaf (Calgary)	2
		BC VRS Committee	3

10-Aug-10	Videoconference	Edmonton Association of the Deaf	1
		Alberta Association of the Deaf (Edmonton)	2
		Alberta Association of the Deaf (Calgary)	2
		BC VRS Committee	8
03-Mar-11	Videoconference	Edmonton Association of the Deaf	1
		Alberta Association of the Deaf (Edmonton)	2
		Alberta Association of the Deaf (Calgary)	2
		BC VRS Committee	5
		Deaf and Hard of Hearing Society	1
		Western Institute for Deaf and Hard of Hearing	1
15-Sep-11	Videoconference	Edmonton Association of the Deaf	1
		Alberta Association of the Deaf (Edmonton)	2
		Alberta Association of the Deaf (Calgary)	2
		BC VRS Committee	7
	Town Hall		
29-Nov-11	Vancouver	All Trial participants	175 - 200
30-Nov-11	Town Hall Edmonton	All Trial participants	100 - 150
1-Dec-11	Town Hall Calgary	All Trial participants	75 - 100

It is TELUS' understanding that the BC VRS Consultative Committee is not comprised of representatives of member organizations for the Deaf and hard of hearing organizations, but rather of a number of deaf and hard of hearing individuals interested in the implementation of VRS in Canada.

Some of those individuals are members of organizations but, in their role as members of the BC VRS Consultative Committee, were not representing the views of their organization but rather their individual views.

TELUS was supportive of dealing directly with individual customers who were users

of the VRS service. Members of all organizations within the trial area and the CRTC were also invited to Town Hall meetings where they had opportunity to express their views/issues and suggestions as part of the meeting question/answer period.