Appendix 4

Glossary of adaptive technology and services

Adaptive technology
Adaptive technology describes the use of hardware and software to assist individuals who have difficulty accessing information systems using conventional methods.

Alternative keyboard
Alternative keyboard layouts and other enhancements allow people who experience difficulty with conventional keyboard designs to use computers. The products available range from key guards that prevent two keys from being pressed simultaneously, to alternative keyboards with differing layouts, sizes, etc. for people who have specific needs, to alternative input systems which require other means/methods of getting information into a computer.

- **Keyguard for keyboard**– A plate, which fits over the top of a keyboard and has holes over some or all of the keys. A key guard can allow the user a place to rest the hands while typing but it is primarily designed to prevent inadvertent key presses caused by poor motor control or other factors.

- **Large format keyboard** – Keyboards that have keys that are larger than those found on standard keyboards. They help people who have trouble either pressing the keys or seeing the letters on a standard keyboard.

- **Light touch keyboard** – A keyboard which has very little or no resistance on the keys. Sometimes useful for persons with Repetitive Strain Injury who incur pain from the resistance found when using traditional keyboards. Also useful to persons with neurological or motor problems who cannot exert much pressure on keys.

- **Micro-keyboard (mini)** – A keyboard on which the keys are grouped together as closely as possible so users whose fingers cannot flex over a standard keyboard can access the entire keyboard. The micro-keyboard is very often the size of a pocket calculator.

- **Non-QWERTY keyboard** – Several other keyboard layouts have been devised in an attempt to reduce motion, facilitate one-handed typing or to enable one finger typing. Some layouts also help persons with cognitive disabilities who are more comfortable with an ABC keyboard where keys are arranged in alphabetical order. The most common alternative layout is the DVORAK keyboard. The Dvorak keyboard was designed with the most common consonants on one side of the middle or home row and the vowels on the other side so that typing tends to alternate key strokes back and forth between hands. It was designed for speed typing but is sometimes helpful to persons with repetitive strain injury.

- **One-handed keyboard** – Allows for typing with only one hand. Some of these devices use chording techniques, which means that the user would depress a combination of keys in order to create certain letters or functions. One-handed keyboards have a special shape and letter layout. Speeds of 60 words per

minute have by demonstrated by operators using single handed keyboards. They are designed for "Touch Typing" and have Push-On Push-Off keys for Shift, Control and Alt functions, which is essential for single hand operation. There are also software programs that turn a standard keyboard into a half QWERTY one by allowing the one-handed user to type on a QWERTY keyboard with the good hand and when the space bar is depressed, the other side of the keyboard is mapped onto the keys under the good hand in a mirror image, such that the typing hand does not have to change positions to access the keys on the far side of the keyboard.

- **On-screen keyboard** –An onscreen keyboard generally appears on the same display used for programs and will remain permanently visible. The keyboard can then be accessed using the pointer device. In the simplest sense this means a standard mouse, but through the use of alternative mouse systems or switches a large number of disabilities can be addressed.

- **Split keyboard**
  Keyboards that separate the keys activated by the left hand from the keys activated by the right hand. They rotate the hands outward and upward so that the hands are in a more natural position than traditional rectangular keyboards. The keyboard is spit down the middle and rotated slightly upward and outward, which facilitates a more natural (straight) alignment of the wrist. The slight external rotation of the hand creates less tension in the muscles of the shoulder and less pressure on the nerves of the elbow. Often helpful to persons with Repetitive Strain Injury.

Alternative mouse system (alternative pointing device)
Alternative mouse system allows people who experience difficulty with conventional mouse designs to use computers.

- **Foot / toe mouse** – Foot-operated computer mouse that uses either the feet or a toe to move the cursor and activate mouse. Some units work in conjunction with other switching techniques (for mouse clicks) such as dwell software or toggle switches

- **Infrared / camera (optical mouse)** – Gives full mouse control to people who cannot use conventional pointing devices. An infrared sensing device is placed on the top of the monitor that follows a tiny dot that is place on the forehead (or other part of the body). The device translates head movements into direct movements of the cursor. The unit is used in conjunction with a switch or dwell software that perform mouse clicks. The most common switch used with an infrared head pointer is a "sip 'n puff" which is a "straw" type device that allows the user to click by breathing in or out of the "straw".

- **Keyboard keypad** – The keyboard keypad can function as a mouse using Mousekeys. Many of the alternative keyboards have Mousekeys built in, so the keys on the keyboard can toggle between text input or mouse input.

- **Mouth activated pointing device** – A simple device resembling a stick that the user holds in the mouth to replace functions that would be performed with the

hands. It is sometimes used on a keyboard. Some keyboards are designed especially for this purpose. If the mouth pointer is made of conductive material, it can be used on a touch pad (which has an active capacitance surface) to move the cursor. It is also used to perform clicks. These devices have been used for many years but are quickly being replaced by high tech alternatives such as lasers, which require less physical exertion.

- **Sip 'n' puff switches** – An alternative switch that is a little like a drinking straw. It is a pneumatic switch which means the individual uses the breath to perform mouse clicks. It can be programmed so that "breathing in" creates a double click and "breathing out" performs a single click. Some models also allow the user to activate the switch by biting. Often used in conjunction with a wireless transmitter that allows the user to move around without being attached to the computer by the switch wire.

- **Touch pad** – A small, touch-sensitive pad used as a pointing device. It works on a principle known as capacitance. Touch pads are often found on portable computers. By moving a finger or other object along the pad, the user can move the pointer on the display screen. Clicks are performed by tapping the pad. Many users find them to be less of a strain on the wrist, hand and arm because there is less movement and resistance than a traditional mouse. Persons with upper mobility problems have successfully adopted the Touch pad as a pointing device operated by the toe using dwell software or other switch to control the clicks. Dwell software follows the movement of the cursor.

- **Trackballs** – Trackballs are upside down mouse, with the ball on top and several buttons. Many trackballs offer the left and right mouse buttons plus one or two more which can be programmed to be a double click or drag lock. Many local computer vendors stock trackballs- the programmable ones are also available from assistive technology vendors. These allow the user to use one to 5 switches to control the mouse- the more switches the user can control, the faster the mousing around. It is used in many notebook computers. The user rolls the ball to direct the cursor to the desired place on the screen and can click one of two buttons (identical to mouse buttons) near the trackball to select desktop objects or position the cursor for text entry. Many persons with Repetitive Strain Injury prefer a trackball to the use of a mouse. Persons with limited hand movement who cannot use a mouse can sometimes use a trackball.

American Sign Language (ASL)
ASL, sometimes called Ameslan, is the most common of several signed languages used by the deaf to communicate in North America. ASL is a completely different language from English or French; it has its own grammar and syntax and involves well-defined hand and arm movements that represent concepts. Grammar and syntax can be conveyed by facial expression. Common gestures are not part of ASL and there is no such thing as a functioning universal signed language.

Assistive listening systems
Assistive listening systems (ALSs) are sometimes called assistive listening devices (ALDs). Essentially they are amplifiers that bring sound directly into the ear. They

separate the sounds, particularly speech, that a person wants to hear from background noise. They improve what is known as the "speech to noise ratio". ALSs utilize FM, infrared or inductive loop technologies:

- **FM systems** are ALSs that use radio broadcast technology. It transmits speech picked up from a microphone on an FM radio frequency; special receivers are worn by persons who are hard of hearing or deaf so that they can hear the transmitted message. In a small group of fifteen or fewer people, it is possible to place two or three microphones along the table, allowing the applicant to participate fully in the discussion.

- **Infrared systems** are ALSs that utilize light-based technology. It transmits speech picked up from a microphone on an infrared wavelength.

- **Inductive loop systems** utilize an electromagnetic field to deliver sound. They offer convenience to groups of t-coil hearing aid users because those users do not require body worn receivers. Loop systems can be used by non-hearing aid users through use of a headphone and inductive loop receiver.

Bell relay service (BRS)
Bell relay service enables people with a hearing and/or speech disability to communicate via the telephone and a device called a TTY (text-telephone). A relay service operator reads the message typed by the TTY user to the hearing person and relays a reply back. Each province in Canada has a similar message-relay system provided by the phone company servicing the province. The number for service in Ontario is 1-800-855-0511. For information about service provided in other areas of the country, call 1-800-331-9948.

Braille
A writing system using raised dots in patterns (cells) that represent the standard text alphabet.

- **Integral, grade I Braille** - Consists of the standard Braille alphabet, with no contractions (or abbreviations).

- **Abridged, contracted or grade II Braille** - The words and text are contracted or abridged in order to increase reading speed and to reduce the space required for transcription.

Braille note taker
Electronic portable note-taking devices that allows input via a Braille-style keyboard and output in synthesized speech and/or a one or two-line refreshable brail display consisting of tiny pins made of metal and plastic. Portable note takers are useful for taking notes in meetings, etc.

Braille embosser / printer
A printer that creates Braille instead of text.

Brailler
A mechanical device to write Braille on paper, such as a Perkins Brailler.

Closed circuit television (CCTV)
Closed circuit televisions (CCTV) are a video magnification system consisting of a video screen interfaced with a video camera. This technology produces major advances for people with low vision. The stand-mounted CCTVs can be configured with either television receivers, video monitors, or computer monitors. The CCTV system provides high contrast, inverse video display, gray scale, and control of contrast level and brightness.

Computerized note taking
A method utilizing a computer keyboard and screen to take simultaneous notes of verbal communication so that persons with hearing loss can understand conversations or group proceedings. A projector, which projects the text image onto a screen, can be connected to a port in the computer. Notes are usually summarizations, rather than verbatim transcriptions. A computerized note taker has been trained and inputs at an average rate of 40 wpm.

Finger spelling
A manual representation of the words of a spoken language using a separate hand shape for each letter of the alphabet. It is often used as a supplement to American Sign Language to represent words for which a sign is not known and in some cases for proper nouns.

Haptic devices
A haptic interface is a device which allows a user to interact with a computer by receiving tactile feed back. There are two main types of haptic devices:

- glove or pen-type devices that allow the user to "touch" and manipulate 3-demential virtual objects

- devices that allow users to "feel" textures of 2-demential objects with a pen or mouse-type interface

Hearing aid
A device that amplifies the sound received by the user's ear. Because hearing aids amplify all sound, including background noise, the acoustic condition of the room impacts upon the user's ability to hear speech.

Intervenor for the deaf-blind
Can provide for simultaneous interpretation as well as other communication and related information for a person who is deaf-blind. Depending on what works best for the individual, intervenors may use visual sign language, tactile sign language, tactile finger spelling, Braille or large-print notes (for those with some vision).

Keyboards
See Alternative keyboards.

Keyboard modification software

Changes the properties of a keyboard so that it behaves differently than it otherwise would. Characteristic modifications include "sticky keys" which allow a one handed typist to activate shift, control and function keys in combination with other keys.

Langage des signes québécois (LSQ)
The predominant signed language of the deaf in Quebec. Although native to Quebec, LSQ is not "signed French" and is an independent language in its own right.

Large monitor
Any monitor that is larger than 17 inches. It enables the user to enlarge print without losing continuity.

Large print
Letters or numbers magnified about 150 per cent or more by various means, such as a photocopier or word processor. A font of 16- or 18-point is commonly used but the font may be much larger, depending on the requirement of the individual.

Large print (Software)
Software that makes certain parts (or all) of the computer screen large, up to 16x larger than normal. It turns the pointer/cursor into a tool that simulates the action of putting a magnifying glass over a printed page.

Lip reading
A method utilized by persons with a hearing loss for understanding speech by watching the motion and pattern of the speaker's lips when talking. Lip reading is a difficult task since only 33% of English speech sounds are visible on the lips. Lip reading is a component of what is referred to as speech reading.

Manually coded English (MCE)
A general term for all artificially developed communication systems that may use signs and finger spelling to represent English. Within most of these systems, each sign is used to convey English. Both the sender and receiver of the message must have an understanding of English grammar and syntax in order to communicate using this method. Signed English is primarily used for educational purposes. Although some person who are deafened prefer this type of signed communication, because various forms of MCE were inappropriately used in early educational programs, it is not uncommon to find people who are deaf expressing negative views about the use of MCE.

Mouse
See Alternative mouse system.

Multimedia captioning (Hardware)
Hardware that allows the display of text or a sign language interpreter as an alternative to audio information.

Multimedia captioning (Software)

Software that allows for the display of text or a sign language interpreter as an alternative to audio information.

Multiple formats
Print material is made accessible through multiple formats: Braille, large print, audio taped, and electronic format.

Obus chair
Ergonomically designed chair with high back and adjustable height. Commonly used by persons with neck and back pain.

Optical character recognition (OCR)
Optical character recognition (OCR) is the process of converting an image of text, such as a scanned paper document or electronic fax file, into computer-editable text. The text in an image is not editable: the letters are made of tiny dots (pixels) that together form a picture of text. During OCR, the software analyzes an image and converts the pictures of the characters to editable text based on the patterns of the pixels in the image. After OCR, you can export the converted text and use it with a variety of word-processing, page layout, and spreadsheet applications. OCR also enables screen readers and refreshable Braille displays to read the text contained in images.

Oral interpreter
A trained professional who facilitates communication between a hearing person and a person with a hearing loss who prefers to communicate through speech reading and hearing. The oral interpreter repeats the exact message of the speaker in words and phrases that are easy to speech read, and uses appropriate facial expressions and gestures to facilitate communication.

To request interpreter services, call the Department of Public Works and Government Services Canada: 613-996-3346 or 613-996-0921. Arrangements for an interpreter should be made as early as possible.

Paperless Braille display
See Refreshable Braille displays

Personal date assistants
Personal digital assistants (PDAs) are portable computers that are designed to act as organizers, note takers and/or communication devices. There are also a group of PDAs that are designed to be used by users with disabilities. These PDAs use aural output, Braille displays and Braille keyboards to comprise their user interface.

Pidgin sign English (PSE)
Varieties of signed languages used by people who have a hearing loss which combine certain elements of both American Sign Language (ASL) and English. For example, PSE may use English word order rather than ASL syntax.

Portable note taker
An electronic device that allows notes to be taken in Braille. The device can be linked to a computer in order to print the recorded information.

Reader
A task of a reader is to read a written examination to the applicant who is blind or has low vision, or who has visual processing impairment. This includes reading the response alternatives if the test is using a multiple choice format. The person selected as a reader should be a native speaker of the language of the test and someone who reads well and articulates clearly. It is useful to familiarize the reader with the test procedures and terminology used in the test material beforehand, especially if the test is of a technical nature.

Real-time captioning (RTCD)
Also called Real-Time Reporting. A method for taking simultaneous notes of verbal communication so that persons with a hearing loss can understand conversations or group proceedings. A machine-shorthand reporter produces computer-aided transcription of the spoken word at the rate of speech at which the proceedings are taking place. A projector, which projects the text image onto a screen, can be connected to a port in the computer.

Refreshable Braille displays
Refreshable Braille Displays are electronic devices that are used to read text that a computer sends to the monitor. The device is connected to the computer by a serial cable and produces Braille output on the Braille display. Refreshable Braille displays only read one line of text at a time.

Screen magnifiers
Screen magnification software helps visually impaired persons to use computers by enlarging the picture on the screen by any factor they choose. Some programs enlarge the entire screen while others only enlarge the area around the mouse, producing a moving enlargement area. Features may include screen enlargement, mouse design and size, and colour contrast control.

Screen reader
A Screen Reader is the commonly used name for voice output technology. Hardware and software produce synthesized voice output for text displayed on the computer screen, as well as for keystrokes entered on the keyboard.

Scribe
A person who writes from dictation or sign language interpretation.

Sign language interpreter
A trained professional who acts as an intermediary between those who use Sign Language and those who use speech. 'Accredited' sign language interpreters have achieved the professional standards established by an official provincial body. 'Certified' sign language interpreters have achieved professional status through the Association of Visual Language Interpreters of Canada.

To request interpreter services, call the Department of Public Works and Government Services Canada: 613-996-3346 or 613-996-0921. This service is free of charge in many cases, but arrangements for an interpreter should be made as early as possible.

Speech reading
Refers to reading the facial expressions, eye expressions, gestures, and body movements of the speaker, as well as watching his or her lip movements, in order to understand what the speaker is saying. Lip reading is a part of speech reading and refers to watching the words as they appear on a person's lips.

Speech synthesizer
An external speech synthesizer is a hardware device used for speech output. Typically, they are used with screen readers or OCR/scanning software (optical character recognition) programs for people who have vision disabilities.

Spell and grammar check
Software feature found in most word processing applications such as Microsoft Word or Word Perfect that allows user to check and correct spelling and grammar errors.

TTY (text-telephone or teletypewriters)
Provides deaf people with instantaneous communication by telephone to all others who have TTYs. If a TTY user wants to contact a person with a regular phone, he or she must use the Bell Relay System. As TTY users type their message, a signal representing each letter is electrically transmitted over phone lines to the receiving TTY where the signal is converted and the corresponding message is printed. The conversation is limited only by the typing speed and reading and writing skills of the users. A printed copy of the transaction is often available.

Tactile imaging
Production of raised line / raised dot images that can be felt and interpreted by user who have vision disabilities.

Talking browsers
Talking browsers use the same technology as screen reading software, but the reading functions are limited to Internet use.

Text-to-Braille translator (software)
Converts text to Braille format so that it may be stored, printed out or sent to a tactile based display. Most translators also show a visual display of the dots on the screen. Most programs allow translation to grade 1, grade 2, or both Braille derivatives.

Text-to-speech systems
Text-to-Speech systems can convert words from a computer document (for example, word processor document, web page) into audible speech spoken through the computer speaker. This would aid persons who cannot see or read text on a computer.

Total communication

Incorporates appropriate aural, manual, and oral modes of communication in order to ensure effective communication with and among persons with hearing loss That is, all available means of communication are utilized: Sign language, finger spelling, gestures, facial expressions, body movements, pantomime, writing, reading, speech, speech reading, amplification with technical aids, pictures, and other means of communication. This is an educational approach that is not generally in use at the present time.

Touch screen

An input device that allows access to a computer by touching the screen. These are widely used commercially at retail outlets and banks.

Voice output communication aids (VOCA)

Voice output communication aids (VOCA) are electronic devices that are able to generate printed and/or spoken text. They aid individuals who are unable to use natural speech to meet all of their communication needs. There are many different products available. Some products are dedicated for communication purposes only while others are software programs in lap-top computer systems. Some have additional features built in such as appointment schedules and reminders, simple environmental control units, alternative access methods, dual displays, and abbreviation expansion programs.

Voice recognition system

Voice recognition allows a user to use his/her voice as an input device. Voice recognition may be used to dictate text into the computer or to give commands to the computer (such as opening application programs, pulling down menus, or saving work). While the accuracy of voice recognition has improved over the past few years, the system is not yet perfected and works only in restricted circumstances for selected users.

Voice synthesizer

See Speech synthesizer.

Word prediction

Word prediction technology is used to assist with text entry. These software packages predict the word you are typing and the next word based on word frequency and context. They may also include features such as spell checking as you type, speech synthesis, and hotkey's for frequently used words. Word prediction is particularly useful for slow typists, probe or pen users, and people with minor visual impairments or dyslexia.

Written communicator

Portable written communicators allow people with hearing loss and/or oral language expression problems to communicate via printed text. The user types a message on an expanded keyboard and the information entered is then printed on a small roll of paper, much the same way as on an adding machine.

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