AAACT InfoSession Summary, Observations & Technologies

Accessibility, Accommodation and Adaptive
Computer Technology Program (AAACT)

Shared Services   Services partagés
Canada   Canada

Canada

SSC   **SPC**
celebrating   célèbre ses
10 years   10 ans

Initial Focus – Workplace Accommodation

Thank-you for spending time with us recently. This is a summary of the technologies and techniques we discussed during the InfoSession. This is not a recommendation based on a complete assessment of the end-user's needs but rather a list of tools, techniques and technology that may apply or have applied to others with similar requirements.

It was a pleasure meeting you today. It is always much more pleasurable to work with clients when the majority of key players (Management, IT, HR, etc.) are involved from the beginning of the exercise.

> **The information contained in this InfoSession Summary are not recommendations. They are the information and similar technologies covered during the session. You do not need to consult with AAACT if you decide that some of the things covered during the InfoSession would assist you and that they could be readily implemented. If you require our assistance to further explore solutions and obtain recommendations, you will need to be added to your Departmental Service Level Agreement (SLA). Please note that no matter how you proceed, you will need to be aware on how the implemented solutions are impacting you. If at any time while using the solutions, current or new, you experience discomfort or pain, stop the activity immediately and consult your medical/licenced professionals and the AAACT team. AAACT will work with you and your medical/licenced professional to determine different solutions that will not aggravate your condition or cause new ones.**

IT Workstation Requirements

As a general rule, adaptive computer technology requires more resources to run. The type of IT workstation you will require will depend upon the type of adaptive software/technology you require. If you require software that has different workstation requirements, you will likely require a workstation with a 64 bit operating system.   The specific workstation requirements for your system will be listed with the software and a more complete listing will be found in Annex A.

Topics covered

We had an information session to look at various options for assisting with making your workday easier and more efficient. We also discussed:

- General disability information
  - Temporary disabilities
- Dexterity/mobility disabilities
- Vision disabilities
  - Light sensitivity
  - Reduced vision
  - Reducing visual distractions
  - Vision loss
  - No vision
- Cognitive disabilities
  - Visual Stress Syndrome (concussion)

- - Reading and writing
  - Memory
- Physical environment
  - Seating
  - Lighting
  - Distractions
  - Scent sensitivity
- Pain & Repetitive Strain Injury
- Voice recognition (Dragon Professional)
- Teleworking

We expressed our desire to develop automaticity and explained how no single product in itself may offer the desired solution. Rather, a suite of tools and techniques as well as a change in how you work will deliver beneficial results. The use of adaptive technology involves a rehabilitory learning process in how to do your work and your approach to learning.

Disability and Injury

It should be noted that not all persons requiring accommodations have these requirements from birth. Many disabilities are acquired from aging or injury. Regardless of how or when a disability is acquired, it is important that actions be taken to mitigate its impact as well as there be continued follow-up from medical professionals.

One immediate goal is to acquire computer accessories and/or furniture items that help your integration/reintegration into the work place. You will need to learn new skills or approaches to complete your daily tasks in an efficient and safe manner. Due to your new ways of working, it is possible that standard ergonomic recommendations may no longer apply. That being said, accommodations can often be met with standard products from standing offers or supply arrangements but possibly used in new or non-traditional ways. To achieve this outcome, clients and Management must understand different approaches to non-standard situations (i.e. those where traditional ergonomic standards do not apply such as unique anthropometry, advanced ergonomic assessment, medical recommendations, non-traditional sitting, Job Accommodation planning, Return to Work situations, etc.). It should be mentioned that Occupational Health and Safety (OSH) along with your Management should always be involved in purchasing these items. If your situation is a bit more in-depth and cannot be completely resolved through standard equipment, you may consider activating AAACT through your departmental Service Level Agreement (SLA). Details on this can be found at the end of this session summary.

Accidents and temporary disabilities

Temporary disabilities are generally caused by accidents however, if not properly managed and different approaches taken to complete tasks, the individual may end up with a permanent disability/injury. For temporary requirements, it is often best to look at solutions that improve efficiency and reduce aggravating activity that don't necessarily require lengthy training or steep learning curves. The solutions put forward in the case of temporary requirements should not be viewed as long term solutions, should the requirements continue long term. It is recommended that any temporary situation lasting longer than 4 months be re-assessed by the job accommodation team including any treating professionals.

Dexterity and/or Mobility

We looked at various options to compensate the lack of dexterity and to avoid any aggravating activity that would worsen client condition while completing tasks. In this type of situation, it is important to keep an open mind and that non-traditional means of interacting with workplace equipment may be required. Maintaining dialogue with your treating professionals is a critical key to success in this type of situation. Due to no two employees having the exact same requirements and/or challenges in the workplace, there will be a requirement to try various ways of interacting with workplace tools. Each solution tried may be effective or a different one may be tried. While learning how new tools work and determining what solutions are effective, management should expect a hit to productivity while the process is taking place. When the proof of concept phase is over, solutions should be put in place in a permanent fashion and the employee should spend time refining their new skills and/or new way of working. We recommend having monthly or bi-monthly meetings to evaluate progress and identify any issues. During the testing phase, these meeting may need to occur on a more frequent basis, generally bi-weekly.

Vision Disabilities

There are different approaches to accommodate individuals with vision related disabilities. The solutions explored are dependent on the degree of vision impairment and whether or not the condition is stable or degenerative. While the solutions for each category of vision impairment are different, as described below, they all require new skills to be developed. All situations require familiarity with touch-typing and keyboard navigation for successful outcomes. In situations where there is a degenerative condition or continued pain, proper follow-up with medical professionals is critical.

There will be modifications required to the standard GC operating environment on your departmentally issued computer. We recommend using a system with a 64 bit version of Windows 10 and Office 2016. In select situations, as described below, additional software or hardware will be required.

Light Sensitivity

LED and LCD computer displays can cause eye strain by projecting more light than is required in some situations. Individuals may also be sensitive to the refresh rate of computer displays, as modern displays may refresh at a rate that is detectable by some individuals. Changes can be made to the operating system to reduce the amount of light that is projected by the monitor. Light filters can be used to reduce the intensity should the adjustments made in the video card software not reduce the projected light sufficiently. Many clients who have found LED and LCD displays problematic can have success using older CRT (Cathode Ray Tube) monitors or E-ink (electronic ink) style monitors to cause significantly less strain on their eyes.

Workplace lighting is a common factor in aggravating the employee's condition. Solutions range from simple, such as egg crate diffusers that focus light directly towards the floor, to complex, such as dimmers controlled by employee smartphones. It is important to note that accommodating an individual may require focusing on more than their individual workspace, but also redesigning common spaces to be inclusive as well.

Reduced Vision

Employees with reduced vision tend to have a wide variety of different vision issues that contribute to their condition. No two reduced vision users are alike, and thus, it is rare that any two employees with reduced vision would have the same accommodation. We offer many different tools, both physical and on the computer, to allow employees with low vision to do their jobs effectively. Some examples of the tools we offer include:

- Accessibility features built into Windows such as high contrast black, browser settings, etc.
- Intel HD Graphics Control Panel for changing brightness, colours, etc.
- Dolphin SuperNova for magnifying the screen, changing colours, and highlighting important information
- Documents readers, CCTV, and Fisheye Lenses for reading physical documents

AAACT may recommend one or more of these and other tools to an employee based on their own individual condition and technical environment.

Post-Concussion Syndrome and Reduced Vision

Employees with post-concussion often have to deal with vision issues such as the light from the environment, the light emitted from the monitor and patterns in the environment. No two post-concussion employees are alike, and thus, it is rare that any two employees with post-concussion would have the same accommodation. We offer many different tools, both physical and on the computer, to allow employees with post-concussion to do their jobs effectively. Some examples of the tools we offer include:

- Accessibility features built into Windows such as high contrast black, browser settings, etc.
- Intel HD Graphics Control Panel for changing brightness, colours, etc.
- Text to speech software (built in to windows or separate software)
- Monitors that emit no light

AAACT may recommend one or more of these and other tools to an employee based on their own individual condition and technical environment.

Typical vision Loss (Aging)

Borrow from [All About Vision - Complete Guide To Vision and Eye Care](#)?

https://www.fightingblindness.ca/

Clarity (Mild/Medium/Severe)

Field of vision (Mild/Medium/Severe)

We looked at various options for accessing the computer, improving the readability of material on the computer display. We also focused around various aspects one is the distorted vision or a loss of central vision in the work environment, as well as focus enhancement software. Other goal was to reduce eyestrain caused by the interaction with computer display

No Vision

TO BE REWRITTEN

Cognitive & Learning Disabilities

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Cognitive disability/learning disability (also referred to as intellectual disability) is a commonly used term that refers to a number of conditions which cause a person to have greater difficulty with mental tasks.. They can be thought of in clinical or functional terms. Clinically, there is Down syndrome, traumatic brain injury (TBI), and dementia with less severe cognitive conditions including attention deficit disorder (ADD), dyslexia (difficulty reading), dysgraphia (difficulty with writing), dyscalculia (difficulty with math), and learning disabilities in general.

In the workplace, functional classifications work better since they focus on the user's abilities and challenges, irrespective of their clinical diagnosis. Multiple functional challenges may occur from a single clinical diagnosis. Some of these workplace challenges can be exhibited in the following areas:

1. Memory
2. Attention and Focus
3. Reading, linguistic, and verbal comprehension
4. Writing
5. Math comprehension
6. Visual comprehension

Additionally, even people with undiagnosed or no learning disability diagnosis may experience some of the same issues as someone with those diagnosis. Often, those challenges can be addressed in a similar manner to someone with a learning disability.

Attention and Focus

Some individuals may have issues of maintaining attention and focus on a single task due to distractions all around them or experience hyper-focus where they focus on one thing at the expense of other things they need to attend to. There are various approaches that may assist individuals experiencing these challenges such as

Reducing Visual Distractions/Animations

Microsoft Windows offers the end user the ability to reduce visual distractions such as pop-ups, as well as animations within the operating system. This can be achieved quickly by switching to a high contrast theme, but can also be done by changing various settings throughout the operating system. Plug-ins can also be added to browsers to prevent animations and videos from playing automatically.

For more information on this, please consult the AAACT guide on reducing visual distractions in Windows 10.

Visual Stress Syndrome (Concussion)

Visual Stress is a neurological condition that interferes with reading, attention, coordination, general health and behaviour, and can occur despite normal vision.

If you suffer from any of these difficulties, it is important to investigate whether or not you have Visual Stress. You may be one of the 10-20% of the population that unknowingly suffers and could benefit from the use of coloured filters or other interventions.

Visual Stress occurs when stimuli such as patterns, contrast, light and colour affect the visual cortex, altering brain function and resulting in symptoms of physical discomfort and perceptual distortions. Solutions such as coloured filters have been shown to reduce the effects of these stimuli, calming the stress and restoring brain function.

LED and LCD computer displays create eye strain by making our eyes dry, inflamed, deeper myopia, and even cause dizziness, headache, etc. This is often referred to as CVS (Computer Vision Syndrome). More information can be found on WebMD https://www.webmd.com/eye-health/computer-vision-syndrome#1.

Many clients who have found LED and LCD displays problematic can have success using older CRT (Cathode Ray Tube) monitors or E-ink (electronic ink) style monitors to cause significantly less strain on their eyes. Employees may also look at using different types of filters on their physical monitors to reduce strain. You may also wish to look at using software options such as the Intel Management Suite to change the colour temperature of the display output.

Many of the symptoms of Visual Stress Syndrome can also be caused by concussions. It should be noted that concussions can also induce Visual Stress Syndrome.

There is a clinic that specializes in these issues in Ottawa called Opticalm: opticalm.ca

Reading and writing

Individuals may have better retention of material when consumed in a multi-modal way, such as auditory and visual feedback. Envision having Siri read your email to you, at the same time as highlighting each word you and Siri are reading.

DEPENDING ON THE SITUATION, ONE OF THE FOLLOWING STATEMENTS SHOULD REMAIN AND THE TITLES REMOVED

Learning Disabilities

Some individuals may have issues storing information that they have read, or clearly communicating ideas in written form. Learning disabilities can make simple tasks complex, like having to re-read a passage many times over or feeling stuck while trying to write a document. Many tools exist to help overcome these issues, such as text-to-speech, voice recognition, writing support tools, and predictive text software.

Mobility

Mobility can create problems with reading or writing depending on the individual's specific condition. An individual with cerebral palsy, for example, may not be able to hold a writing instrument or type on a keyboard without additional tools and accommodation. Mobility issues can also create reading problems that may require the use of extra tools to solve.

Print Disability/Brain Injury

Individuals unable to make full use of the computer screen can benefit from tools that read text out loud. This can be to reduce visual effort, or to completely replace one's vision. Generally in situations such as this, we are using a combination of document and screen readers.

Memory

Memory issues are common, it happens more often than you may think. Jeff will provide his wisdom at a later date.

There are multiple solutions available to help alleviate this issue. It should be noted that some of them can be easy to implement solutions such as taking notes using a laptop or tablet, to team based approaches such as having a colleague take notes on your behalf.

Physical Environment

Seating

The primary goal of the exploration session was to identify alternative seating and computer tools to improve the employee's "at work" experience. Since the employee had an ergonomic assessment and is in some pain after implementing many changes we are exploring just the portion involving Sit-Stand solutions as it is the most likely to be of benefit when the employee is using furniture that does not meet the requirements of the modern office environment. Suggestions around workstation, computer input and work environment needs are provided so workplace parties can address and implement as part of broader job accommodation and/or disability management related interventions. Co-operation with Real Property supports will be needed.

A basic rule of ergonomics is that there is no such thing as the "average" person; however, providing an individually designed chair for every employee is not practical. The only solution is to provide the employee with a fully adjustable chair that can accommodate the maximum range of people (typically

90 to 95 percent of the population). The chair must have controls to allow easy adjustment of the seat height and tilt, as well as the backrest height and angle. It is important that the employee can operate these controls from a sitting position. The chair's design must match the tasks.

A trial period is essential to the process of selecting a chair. Employees should try out the chair in the real work situation and ensure it meets the needs of the job before the final selection is made.

Please also see the OSH Answers document "Ergonomic Chair" for more information.

Lighting in the Workspace

Whether in industrial or office settings, proper lighting makes all work tasks easier. People receive about 85 percent of their information through their sense of sight. Appropriate lighting, without glare or shadows, can reduce eye fatigue and headaches; it can prevent workplace accidents by increasing the visibility of moving machinery and other safety hazards. Good quality lighting also reduces the chance of accidents and injuries from "momentary blindness" (momentary low field vision due to eyes adjusting from brighter to darker, or vice-versa, surroundings).

The ability to "see" at work depends not only on lighting but also on:

- The time to focus on an object. Fast moving objects are hard to see.
- The size of an object. Very small objects are hard to see.
- Brightness. Too much or too little reflected light makes objects hard to see.
- Contrast between an object and its immediate background. Too little contrast makes it hard to distinguish an object from the background.

Distractions

Whether you're in a busy office, working flexibly in a another location, or working at home, there is a near-endless range of distractions that can tempt you to spend time away from what you're supposed to be working on. Distractions may affect your work and prevent you from reaching your full potential at work because of these distractions. It is important to recognise which distractions you are personally most likely to succumb to. Focus is often a matter of physical wellness and preparation.

Auditory

Workplace noise can come from many sources and can be a contributing factor to being distracted. Anything from a multi-function printer to a door opening and closing frequently can cause issues. Many individuals can find relief by using noise cancelling headsets that are compatible with their work phone and/or computer. Other solutions may include a white noise generator, earplugs, and relocating to quieter sections of the office space.

Visual

Intermittent or constant movement in the workplace can be huge distractions for some individuals, causing a decrease in work efficiency and increasing anxiety. Solutions range from the seating location within the individual's office, the location of the office, to relocation to an enclosed workspace.

Scent

Workplace scents are a common factor in aggravating the employee's condition. Solutions range from notifications to refrain from wearing strong odours to relocation to a better ventilated workspace.

Physical

Loud colours, architectural elements, uneven floors, and intermittent or constant movement in the workplace can be huge distractions for some individuals, causing a decrease in work efficiency and the increase of anxiety. Solutions range from the seating location within the individual's office, the location of the office, to relocation to an enclosed workspace.

Environmental/Scent Sensitivity

Allergic and asthmatic patients, as well as those with other conditions, report that certain odours, even in the smallest amounts, can trigger an attack.

The severity of these symptoms can vary. Some people report mild irritation while others are incapacitated and/or must give up many 'normal' activities in order to avoid exposure (such as going to public places). As a consequence, some patients report feelings of depression or anxiety.

Any product or chemical may be associated with environmental sensitivities. As stated by the Public Service Commission of Canada "Individuals with environmental sensitivities may have adverse reactions to foods, chemicals or environmental agents, singly or in combination. ... Environmental sensitivities include adverse reactions to specific allergens, such as cleaning agents, dust, perfumes or building construction materials."

This document focuses on sensitivities from scented products. Other documents that may be helpful include:

Indoor Air Quality - General

Indoor Air Quality - Moulds and Fungi

When dealing with a sensitivity issue in the workplace, be sure to address any and all possible causes.

More information is available from the CCOHS:
https://www.ccohs.ca/oshanswers/hsprograms/scent_free.html

Pain & Repetitive Strain Injury

There is no good reason for an activity or your computer to cause you pain. If you have pain, your body is warning you that something is wrong. You should make note of what activities or tasks cause you pain or discomfort and find ways to minimize the aggravating activities.

Proper medical management is critical. If you are not being treated by a licenced professional, you are likely to have an increase in the severity and amount of painful incidents over time. Waiting until you suffer from severe problems such as random hand failures on a regular basis before seeking medical attention is a bad idea.

Common activities that can contribute to discomfort and pain:

- Reaching for the mouse (your mouse is generally kept outside your natural field of reach)
- Using a keyboard that pushes your mouse too far to the left or right
- Keyboard that is not properly positioned for your body type
- Resting your wrists on the keyboard tray or table
- Holding your desk phone with your shoulder and head for periods of time
- Improper seating position
- Leaning into your monitor
- Improper monitor positioning (panning and scanning)

The CCOHS has resources that may help you work safely, including what to avoid while sitting: https://ccohs.ca/oshanswers/ergonomics/sitting/sitting_poor.html

It should be noted that an ergonomic assessment is not a therapeutic assessment, though it may promote good habits and prevent future injuries.

Voice Recognition (Dragon Professional)

We believe the other possible solutions such as **EXAMPLES HERE** will bring an immediate benefit without the additional learning curve associated with Dragon Professional (DP). We are presenting information on DP to inform you of DP as a possible solution for you in case the current proposed solutions are not of sufficient benefit or your condition worsens in the future.

Voice recognition is an important tool that can be used to replace the keyboard and mouse entirely. Users who struggle with dexterity, mobility, and learning disabilities may find a voice recognition tool useful. The voice recognition tool we recommend is Dragon Professional.

Dragon Professional is a comprehensive speech-to-text software tool that can, after enough training, replace the keyboard entirely. However, there is an extensive learning curve for both the user and the software itself. In order to properly use the software, there is a minimum of 90 hours required to simply build the basic vocabulary file and train the software to recognize the client's voice and speaking style.

In addition to the basic hours, there is a vocabulary building component that may be required, depending on the nature of the business the client is involved in. Needless to say, the required training is key and the employee would need to be prepared to spend a set amount of time on a regular basis in order to develop a decent level of proficiency and accuracy with the software. The software can be used to control all aspects of the computer interface and can be tailored for specific job functions or tasks.

For users who needs to write in English and French we recommend purchasing the French version of Dragon Professional, as the French version comes when the capability to dictate in French and English, while English version will only permit dictation in English.

There are three different aspects of using the computer that Dragon can assist with:

Writing

With Dragon Professional, you can use your voice to write text in supported applications where there is an edit field on the computer. This includes emails, documents, web searches, and more. For "unsupported applications" or unknown text fields, you may not be allowed to dictate and/or some voice commands won't work or won't work consistently. In these instances, the Dictation Box opens

automatically if DP notices that you are trying to dictate in an unsupported application. In the Dictation Box you can enter the text or commands and transfer the text to the application.

Navigation

Dragon can also be used to navigate through the operating system. Voice commands can be given to perform tasks such as opening folders and files, switching between applications, and any other task that you could perform using a mouse and keyboard.

Dictaphone

Some people struggle with note taking using both pen and paper and a computer. Dragon can help with its built in Dictaphone feature. A Dictaphone is a physical voice recorder that is typically used for taking quick oral notes. Using Dragon, the Dictaphone can be connected to your computer and the audio on the Dictaphone automatically transcribed for you into a Word document or text file.

Teleworking

The current Pandemic has caused a major shift in how the GC works with the majority of the GC workforce now Working From Home (WFH). At present, the GC has no plans for a return to the office workspace but with vaccine roll-outs and a control of the pandemic in the future, it can be assumed that the return to the office workplace will not be exactly as it was before the pandemic. It is possible that, initially at least, return to work will be a hybrid of some days in the office and some days working from home with some positions being more heavily focused on WFH.

To determine the support provided by your department for you home work space, you will need to consult with your Departmental directives concerning their policies on accommodating working from home.

Should teleworking be explored by the employee and management, it is important that the individual's requirements be met both in the workplace and the home office. As a general rule, AAACT recommends that the employee be provided with a laptop that meets the requirements of their situation and it be used both at home and the office for simplicity. It should be noted that in some situations it may be better to have a computer for each location. When going through the assessment and testing phase, non-software adaptations are generally completed in one work environment to confirm effectiveness before being replicated in the other.

While we believe we have seen that testing possible solutions is easier while still in the workplace, we have seen greater success at PSPC where they have implemented solutions only at home and have the employee telework from home

We have also observed that for some employees with pain issues in some situations in some departments have been able to increase the quality and amount of work they produce on a daily basis. It is important for both the employee and the employer that a formal teleworking agreement be put in place that captures the responsibilities of both parties and the equipment that is required.

Re-Adaptation & Skill Development

During our session we discussed skills that are required for a successful transition to a new way of working. Developing these skills in the workplace may require a significant investment of time by the employee and employer. Admittedly, learning to work differently and mastering alternative techniques is not easy. While balancing medical needs and promoting a safe working environment, the employee will need dedicated time to understand, develop, and master skills with current or new solutions.

It is important to understand that we aren't providing "training" per se, but are working towards skill development activities to build alternate techniques to support the client in working in a different set of modalities & mediums using new techniques. This generally is something that takes time and requires direct application of the technology & techniques in the workplace using the documents, information & systems that are part of the day to day work.

Quick list summarizing skills that exist and/or need further development for **NAME OF PERSON**

- Keyboard Navigation
  - o Keyboard navigation is the best way to improve efficiency on the computer and prevent injury. We recommend trying to learn a few new shortcuts weekly to improve your skills. Annex B contains links to keyboard navigation lists from our software vendors, Microsoft and Adobe.
  - o Keyboard navigation is enhanced through the use of touch typing (also called touch type or touch keyboarding). Touch typing is typing without taking the time to look at the keys you are pressing. Touch typing generally promotes a proper posture and reduces neck and muscle strain caused by looking at the keyboard. Every individual learns at a different pace, and routine practice is required to maintain a speed and accuracy. For employees using Dragon Professional, a good understanding of keyboard shortcuts is recommended in order to more effectively navigate the computer's interface with your voice.
- Voice recognition
  - o Using voice recognition requires a significant amount of time. The time is divided between learning how Dragon works and for the software to learn how to recognise your speech patterns. Typically it takes 90 to 120 hours per language for an individual to learn how Dragon works, how to correct its mistakes properly and build a working vocabulary within the tool and the computing environment. It should be noted that management cannot expect the employee to be at full productivity while this activity occurs.
  - o Using Dragon Professional to replace the mouse/for navigation will require effort to learn how Dragon interacts with the operating system and other software used on the computer. This typically requires an investment of time in the range of 30 to 60 hours.
- Multi-modal reading
  - o Text to Speech requires some effort on the part of the employee to determine what speech synthesizers (Voices) work best for their work and/or ability to process information read out loud. When employees first start using text-to-speech it will generally be run at a relatively slow speed to allow the employee time to get used to it. At the default speed it takes about 50% longer to have a text spoken then to read it. Over time, most individuals will increase the speed to a level that is the same or quicker than reading.
- Microsoft Office
  - o This individual could benefit from third party Microsoft Office training to improve their skills to an intermediate or expert level.

- Screen enhancement technology
  o Utilizing SuperNova's features to their full potential requires additional knowledge and skills on the part of the user. When part of the SLA, AAACT is able to provide assistance and training to set-up and use SuperNova.
- Screen replacement technology
  o Utilizing JAWS to its full potential requires additional knowledge and skills on the part of the user. When part of the SLA, AAACT is able to provide assistance and training to set-up and use JAWS.
  o Using Braille displays with your computer. AAACT can provide this training to individuals who are on the SLA.
- Repositioning of the monitor
  o Repositioning your monitor throughout the day is not a common task that most individuals do. With varying visual acuity, repositioning the monitor to ease focusing can relieve both eye and back/neck pain from the natural tendency to lean-in to better see. Proper monitor arms can allow repositioning to be done easily with little physical effort.
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Planning for Future Adaptation

We discussed the possibility that your condition may/will worsen in the future. It is the AAACT's opinion that any individual with a degenerative condition will benefit from being added to the SLA so that they have access to our resources as their condition changes. Given this, it is imperative that you begin to adapt your working style to deal with degenerative condition.

Based on our quick assessment during the InfoSession, below is a list of skills that will be critical to develop as time progresses for you:

- Touch Typing & Keyboard Navigation
  o Keyboard navigation is the best way to improve efficiency on the computer and prevent injury. We recommend trying to learn a few new shortcuts weekly to improve your skills. Annex B contains links to keyboard navigation lists from our software vendors, Microsoft and Adobe.
  o For employees using Dragon Professional, a good understanding of keyboard shortcuts is recommended in order to more effectively navigate the computer's interface with your voice.
- Voice recognition
  o Using voice recognition requires a significant amount of time. The time is divided between learning how Dragon works and for the software to learn how to recognise your speech patterns. Typically it takes 15 to 50 hours for an individual to learn how Dragon works and how to correct its mistakes properly, and about 50 to 100 hours per language to build a working vocabulary within the tool and the computing environment. It should be noted that management cannot expect the employee to be at full productivity while this activity occurs.
  o Using Dragon Professional to replace the mouse/for navigation will require effort to learn how Dragon interacts with the operating system and other software used on the computer. This typically requires an investment of time in the range of 30 to 60 hours.
- Multi-modal reading

- o Text to Speech requires some effort on the part of the employee to determine what speech synthesizers (Voices) work best for their work and/or ability to process information read out loud. When employees first start using text-to-speech it will generally be run at a relatively slow speed to allow the employee time to get used to it. At the default speed it takes about 50% longer to have a text spoken then to read it. Over time, most individuals will increase the speed to a level that is the same or quicker than reading.
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- Screen replacement technology
  - o Utilizing JAWS to its full potential requires additional knowledge and skills on the part of the user. When part of the SLA, AAACT is able to provide assistance and training to set-up and use JAWS.
  - o Using Braille displays with your computer. AAACT can provide this training to individuals who are on the SLA.
- Repositioning of the monitor
  - o Repositioning your monitor throughout the day is not a common task that most individuals do. With varying visual acuity, repositioning the monitor to ease focusing can relieve both eye and back/neck pain from the natural tendency to lean-in to better see. Proper monitor arms can allow repositioning to be done easily with little physical effort.
- **ADD MORE AS REQUIRED PER INFOSESSION**

Having a good support network is critical when dealing with a condition that worsens over time. Make sure to involve your friends, family, and other support groups as needed to ensure that your transition is as easy as possible.

Keyboard Navigation & Windows Shortcuts

Keyboard navigation will help prevent injuries and assist you in working safely by reducing the reaching and gripping associated with mouse use. Most individuals have their mouse located outside their **working reach envelope**. It will take time to break the bad habit of hovering over the mouse. Shortcuts can also allow you to quickly activate and deactivate features in software that you are using to assist you. A very useful example of this is the ability to mute/unmute your microphone in MS Team by pressing Ctrl + Shift + M.

Keyboard navigation for the average individual is no faster or slower than using the mouse. However, it can be significantly faster for individuals who have difficulty interacting with the mouse or finding the cursor on the screen. For average employees, reducing mouse use can be the difference between being injured performing tasks by reducing the amount of work done solely by the dominant hand. In situations where mouse use is problematic, once keyboard shortcuts are learned they can help employees navigate and complete tasks quicker. Annex B contains links to the keyboard shortcuts for base software installed on every Government of Canada computer.

Touch Typing

Keyboard navigation is enhanced through the use of touch typing (also called touch type or touch keyboarding). Touch typing is typing without taking the time to look at the keys you are pressing. Touch typing generally promotes a proper posture and reduces neck and muscle strain caused by looking at the keyboard. Specifically, a touch typist will know their location on the keyboard through muscle memory. By knowing the location of the keys, you will be able to use Windows shortcuts and minimize or eliminate the use of a mouse. Every individual learns at a different pace, and routine practice is required to maintain a speed and accuracy.

Built-In Features of Windows

Windows Zoom

Some accessibility features are built-in to Windows. One example is the ability to magnify the screen easily.

To zoom in and out using the mouse, hold down the [Ctrl] key while you turn the mouse wheel. Scroll up with the mouse wheel to zoom in and scroll down with the mouse wheel to zoom out.

Radar Mouse

Finding the mouse pointer can be a challenge for some. One way of finding a tiny white mouse pointer is to enable the mouse radar feature. When this feature is enabled, when you press the CTRL key, it marks the mouse pointer's location with animated, radar-like circles.

To turn this feature on, go to you're Mouse settings and select Additional mouse options from the links on the right side of the page. In Mouse Properties section and on the Pointer Options tab, at the bottom, select Show location of pointer when I press the CTRL key. Press OK and the feature will be enabled.

Organizational Skills (Getting Things Done)

You had highlighted an interest in tools for time management / task management. We highlighted that it is often difficult to break old habits and learning to work in a new fashion entails a change in approach and does require dedicated time and skill development. One methodology we covered was the framework called Getting Things Done (GTD). The book "Getting Things Done" http://www.davidco.com/ is a great reference for this. You might also explore some apps that have been built around GTD http://en.wikipedia.org/wiki/Getting_Things_Done.

We covered the necessity for establishing a framework and methodology in order for any of the above solutions to be effective.

- Learn the fundamentals of the GTD
  - https://gettingthingsdone.com/
- GTD audio shop
  - https://store.gettingthingsdone.com/audio-s/102.htm
- Microsoft Outlook® 2013 and 2016
  - http://gettingthingsdone.com/2014/04/new-guide-for-microsoft-outlook-2013-gtders/
  - https://store.gettingthingsdone.com/setup-guides-s/107.htm
- GTD Outlook for Windows 2013/2016 Setup Guide

- o https://store.gettingthingsdone.com/Outlook-for-Windows-2013-2016-Setup-Guide-p/10410.htm
- GTD OneNote 2016 for Windows Setup Guide
  - o https://store.gettingthingsdone.com/OneNote-for-Windows-Setup-Guide-p/10415.htm

Multi-modal Reading

One of the new skills you will need to learn is how to assimilate information that is read to you by the computer. At first, it will take some adaptation to understand the audio information. Over time, many individuals having the computer speak to them, will increase the speed that the system reads to them. Individuals using software such as Office 2016 or TextAloud to improve their reading skills and/or their comprehension of written text, will need to adjust the synthesizer speed to match their reading speed.

Other multi-modal reading techniques used by individuals may include font type/size/colour control, spacing control, focus highlights, line guides, screen magnification.

If having the computer read out loud is proving problematic for neighbours, a comfortable high quality headset or headphones is recommended. Generally speaking they should be lightweight and designed to be used for extended periods of time. Switch boxes can be acquired for headsets to allow them to be used or shared between the computer and a communications device such as a phone or a smart phone. If headsets were specifically discussed during the session, more information will be contained under the sections titled Headphones **and** Headsets.

Training for Core Applications

Fundamental computer skills are required for individuals to make effective use of adaptive computer technology. During the InfoSession, we had the impression that the employee would benefit from additional training/books/resources on the core tools below. The AAACT team does not provide basic Windows or Microsoft Office training. Training can be procured from local private industry providers.

- Microsoft Windows 10
- Microsoft Office 2013/2016
  - Word
  - Outlook
  - Excel
  - PowerPoint
  - OneNote/Other

Microsoft Office

Microsoft Office

There are various features and tools within the MS Office Suite that can be tailored for your needs (such as calendaring, tasks, assigned tasks and categorization/tagging/filtered views). Some of the advanced features of Outlook such as an integrated information management software aid can increase the functionality of the software for your use.   Focusing on calendars, task lists, notes, and the journal by using reminders, categorization, folders and color coding to organize information.

Draft Mode/Outline Mode in **Microsoft Word** allows the user to work in whatever font (including font type, size, colour, and spacing) they find useful while the Print Mode is set to the departmental standard.

Additional font types such as APHont and Dyslexie Font can be purchased and used in Draft Mode. These are accessible font styles that can aid reading.

Using colours to filter information in Excel can aid finding information more readily.

Advanced Microsoft Office Skills

The AAACT team does not provide advanced Microsoft Office training. We believe that as part of the employee's learning plan, they would benefit from these skills to improve their productivity. The gains from better utilizing the Office Suite will offset the productivity losses from using the computer differently. Training can be procured from local private industry providers.

Screen Magnification Techniques

The most basic task of screen magnification software is to magnify the screen. Some screen magnifiers enlarge text, icons, and other graphics up to 20 times or more. If you are typing an e-mail while using a screen magnifier, for example, the program will enlarge the words you type to make them easier to read. As you type characters, issue keyboard commands, or move your mouse, a magnified screen view will keep up with what you are doing and where you are focused on the screen.

Screen magnifiers can also enlarge and enhance mouse and text cursors to make them easier to see and track. Magnifiers can also sharpen edges, increase contrast, and change color combinations to make things easier to see.

Since vision acuity differs from person to person, screen magnifiers give users many options to customize what to magnify and what to highlight or sharpen. You'll probably spend considerable time at the beginning optimizing various settings for your particular needs, but this is a one-time chore. Once you save your settings they will be available anytime you use your computer.

Even users with partial sight will want to learn about screen readers, how they work, and getting used to having the computer read them text. It is an important skill to learn so that you may conserve visual effort and if your vision deteriorates. Perhaps right now you can operate a computer perfectly fine with just a bit of screen magnification, but what if your vision deteriorates? Even if your functional vision remains steady, pairing a screen reader with a screen magnifier will enable you to spend more time using your computer with minimal eye strain.

Screen Reader Techniques

Screen readers describe the interface as well as communicate any information that is traditionally consumed visually. They can be configured to speak individual letters, words, numbers, punctuation, or complete sentences. Everything is voiced aloud by a speech synthesizer of the individual's choosing, then sent to the computer's sound card. Individuals may choose to use a USB sound card for better performance and select the headphones/headset that is most comfortable for their needs. If specific headsets were discussed during the InfoSession, more information will be contained under

Headphones & Headsets section. Screen readers are the default computer access method for people who are unable to see the computer screen.

Screen readers use one of a growing number of computer voices, also called text-to-speech engines, to speak text. You've probably already heard these voices in use on phone trees and the US Weather Bureau forecast cable weather channel, and in airport gate announcements and TV commercials featuring the Apple Siri voice. The voices are usually customizable, giving you the ability to set volume, pitch, tone, and speed. You can start out with a slow voice, then, as you grow accustomed to the program, speed it up to the point where you may be able to read text faster than a computer user with sight.

Of course a screen reader must do a lot more than simply read the computer screen. As you enter data, click links, or issue other commands, the computer screen changes. If you had to wait for the software to read the full screen each and every time a single letter or graphic changed, you would never get much done. That's the "special sauce" in these software programs: screen readers use a bit of artificial intelligence to determine what information you may wish to hear at any given time. Full-feature screen readers include dozens of screen reader keyboard shortcuts that will read highlighted text, characters, words, paragraphs, and any number of other text elements. Screen readers can announce each keystroke as you press it, decode and describe icons, and even describe certain graphic images. Screen readers also include special mouse navigation keys that allow you to manipulate the mouse pointer, moving it wherever on the screen you like, and to press other keys to perform a mouse click or double click.

If you are learning to read and write braille, most screen readers offer an additional useful option. Instead of having your screen read out loud, you can obtain a refreshable braille display and use your screen reader without audible speech.

Braille

Braille is not only a tool for blind people to read but it is used in everyday communications. The amount of written content available has led to the development and wide spread acceptance of recorded books and using dictation to create content. These tools and text-to-speech products and software seem to indicate that Braille is an unnecessary tool.

Technology such as refreshable braille, Bluetooth, and the availability of braille embossers—have actually made braille more practical than ever. Users do not need to wait for another person to scan, proofread, translate, and emboss documents. Portable devices to read electronic documents and books immediately. Users of braille can read just as fast and just as easily with braille showing that the code is not slow, obsolete, or difficult.

Work Tasks and Breaks

It is more important to vary your tasks, seating, or position than it is to take breaks away from your work. This behaviour can take many forms such as walking to a printer, working on paper for a few minutes instead of your screen, getting up, sitting back down, and adjusting your posture, working standing up, etc. These breaks in your position or habits are important to relieve eye-strain, prevent muscle injury, and assist in the recovery and prevention of Repetitive Strain Injury (RSI).

Break reminders

Some individuals have difficulty peeling themselves away from their tasks, and/or have recommendations from a treating professional that they not work longer than a set period of time without a break. This can be achieved using different techniques such as egg timers, Outlook reminders, smartphone reminders, and alarm clocks that remind individuals to take a break and/or change their posture. There are various techniques that are available. The most effective for our clients have been tools that prevent the computer from being used, such as Workrave.

Workrave

We have generally used Workrave, as it is simple and easy to use. It prevents the computer from being used after specific time intervals have been reached. Workrave has the added benefit of resetting the timer should an individual leave their computer for the length of time specified as a break.

More information can be found on Workrave's website: http://www.workrave.org/

Outlook Reminders

For clients who need break reminders but do not necessarily need the lockout features that Workrave offers, setting reminders to take breaks in Outlook is the best option. Outlook reminders can be configured to display at any time interval you need them to, which allows you to have your computer remind you through Outlook to take a break as often as you need.

Redistribution of tasks

One of the main causes of Repetitive Strain Injury is the over-taxation of a specific area of your body, such as your hands or wrists. Typically the right hand side is over-taxed (Enter, Backspace, numeric keypad, and mouse are typically all on this side). The best way to avoid this is to redistribute tasks to other parts of the body. We call this "spreading the load".

In order to redistribute tasks, software and hardware changes will need to be made. Some changes could include training on how to navigate Windows differently, using software to reassign tasks to different buttons, and/or using physical hardware switches to accomplish tasks evenly across the body.

Sometimes, you may not need to remove all tasks from a certain part of your body, such as your right hand. Instead, reducing the amount of tasks on the hand may be enough to remove the likelihood of injury. For example, gripping the mouse may be difficult, but using a single finger on a touchpad to move the mouse pointer may not be. In that case, other mouse tasks such as clicking and scrolling would be reassigned to buttons controlled by your other hand or your feet.

Physical Environment Adaptations

The employee could benefit from modifications to the standard office environment currently in place. Below is a list of physical adaptations that we discussed in your InfoSession that we feel may help make your work environment safer and more comfortable.

Lighting

The current lighting in your office may be contributing to headaches, fatigue, and other cognitive related issues. We discussed various solutions that could be easily implemented to ease discomfort.

Please note that you must consult with your building's facilities team in order to implement and install any lighting solutions in your workspace.

Fluorescent & Full Spectrum Lighting

The simplest low cost solutions are full spectrum fluorescent lights and egg crate diffusers similar to what we demonstrated here at the AAACT classroom.

Full spectrum lighting can be found at the following link: http://www.canadalite.com/Fluorescent-Lamps/Specialty-Fluorescent-Tubes/Full-Spectrum-Fluorescent-Tubes

Egg crate diffusers

An egg crate diffuser is a light covering that points fluorescent light straight down instead of throwing light in every direction. These diffusers are inexpensive, easy to install, and can drastically reduce the amount of cognitive strain caused by standard government lighting.

The following links point to websites where egg crate diffusers can be purchased:

- http://www.eaglehilllouvers.com/?a=g
- https://www.homedepot.ca/en/home/p.egg-crate-white-louver---2375-inch-x-4775-inch.1000110881.html
- http://www.liteline.com/Optics/Plastic-Eggcrate-Louvers/page/1

Indirect lighting

Led indirect lighting

Fluorescent Light Filters

Fluorescent light filters are designed to reduce the glare and flicker of traditional fluorescent lights. They are available in a number of colours and help reduce symptoms related to light sensitivity and other cognitive related issues.

More information can be found at the following link: https://www.makegreatlight.com/benefits

LED Lighting

Some employees may find LED lighting to be more tolerable than traditional fluorescent lighting. While LEDs are typically only available in bulb form, LED tubes exist to replace traditional fluorescent lighting. They can be found at the following link: http://www.canadalite.com/LED-Light-Bulbs-and-Fixutres/LED-Light-Bulbs/LED-Tubes

Please note that dimmers may not be available for LED lighting.

Halogen Lighting

Statement

Other Lighting Solutions

Indirect Lighting

Indirect lighting is a type of lighting that directs the light back up to the ceiling. This reduces the amount of glare caused by office lighting, as all of the light in the area is bounced onto the ceiling and not towards the floor. For those with light sensitivity issues, indirect lighting is important to manage symptoms and prevent headaches throughout the day.

Dimmers

In our classroom space we demonstrated how modern ballasts and electronic dimmers can allow for adjusting and dimming conventional fluorescent bulbs, this may not work with LED bulbs. For more information on how to get them installed in your workplace please consult with your Building Services team. If you need more information on what was installed here we would be happy to ask BGIS (Brookfield) for the list of items installed here.

Desk Lamps

Use of desk lamp with light therapy bulbs is also good option for providing adequate and appropriate lighting to assist your work task.

Cubeshield

CubeShield blocks out bothersome overhead lights while providing added personalization and privacy to office cubicles.

https://www.cubeshield.com/

Cubicle/Work Surface Modifications

Sit Stand Options

- Clamp on solutions
- Replacing desk
- Motorizing current work surface
- Smartpods
- Other

The current furniture (based on its design) is likely 30 years old and pre dates modern office technology. AAACT's recommendation is that it be replaced. The desk should be replaced with a modern sit-stand solution that would be not only effective in offering the ability to vary working positions during the day but would not require replacing the current cubicle walls.

https://ccohs.ca/oshanswers/ergonomics/standing/sit_stand.html

https://ccohs.ca/oshanswers/ergonomics/office/sit_stand_desk.html

Sit stand desks come in multiple formats including motorized versions, please see **attached document** on them. Testing them out by trying them in a colleague's space or borrowing them from facilities is the best way to try them out.

A simple and cost effective way to create a motorized sit-stand desk for your current office furniture is to detach your work surface from the cubicle partition and attach motorized legs to your work surface.

Smartpods, available from Corcan, are also an option as they can be programmed to force the employee to change seating positions on a regular basis as they have an integrated computer that will simply move the desk at pre-set or random intervals. http://www.smartpods.ca/basic/

SSC's Facilities/Accommodations group should be involved in the procurement process so that the new desk can match what SSC is procuring for new offices. In our opinion she would benefit from a model that allows her to have different pre-set heights in addition to the ability to set nonstandard heights.

More information can be found here:
https://www.corcan.ca/shop/furniture/ergonomic-adjustable-desks/alteco-ergonomic-adjustable-desk/

Smartpods - Active Motion Workstation:
https://www.corcan.ca/shop/furniture/smartpods/

Monitor Arms

One of the most important modifications you can make to your office is installing a monitor arm. Monitor arms are crucial to ensure that you do not develop or aggravate neck, back, and shoulder injuries. A monitor arm with three points of articulation and easy movement is required. This will allow you to shift position in your chair or while standing and allow the monitor to move with you, rather than you having to adapt to the monitor's stationary position all day, which could cause injury or discomfort. There are many manufacturers of monitor arms on supply arrangements and standing offers. Most monitor arms are well suited to any client who does not need to adjust them on a frequent basis, or who does not suffer from RSI. For clients who have reduced mobility or a requirement to adjust multiple times a day, we recommend the two Ergotron models below.

For two monitors or one monitor and a laptop, the Ergotron LX Dual Stacking Arm is generally the best solution. The product number is #45-248-026 and it is available on the AVSO from Northern Micro. Here is a link to the product on Ergotron's website: https://www.ergotron.com/en-ca/products/product-details/45-248#/

For a single monitor, the Ergotron LX Desk Monitor Arm, Tall Pole is generally the best solution. The product number is #45-295-026 and it is available on the AVSO from Northern Micro. Here is a link to the product on Ergotron's website: https://www.ergotron.com/en-ca/products/product-details/45-295#/

For your information, there is a generic version of the two monitor arms listed above for non GC purchases available from Amazon Basics. It uses the same mechanisms but a less expensive material for the arms (powder coated steel vs. machined aluminium).

Computer Access – Logging to windows without a password

Computer login options that require little or no mobility, dexterity or fine motor skills can be problematic to implement but solutions do exist. Most Departments in the GC have a few users who, due to physical disability or severe injury, require this type of option. Prior to Windows 10 the most common technology that we have seen deployed successfully by IT Security is the XyLoc proximity card. With Windows 10 alternate options exist such as Windows Hello. Windows Hello with the correct webcam can allow you to unlock your computer using your face. This option should be discussed with your IT security and desktop engineering team to see if it could be implemented in your department. Communications Security Establishment and the Common Desktop Operating Environment working group have been discussing implementing Windows Hello from an entire Government of Canada perspective. The following link is provided for your Departmental IT. If you wish to explore it, you will need to apply to the group.

https://gcconnex.gc.ca/groups/profile/12903340/wtd-common-desktop-operating-environment-environnement-dexploitation-commun-des-ordinateurs-de-bureau-des-atmt?language=en

Door Access - Proximity Sensor

For individuals with little or no mobility, dexterity or fine motor skills, opening a door can be challenging or even impossible. Door access can be facilitated with the use of a proximity sensor and an automatic door opener. A proximity sensor is able to detect the presence of nearby objects without any physical contact. The sensors often emit an electromagnetic field or a beam of infrared light and looks for changes in the field or return signal. When a change in the signal is detected, the sensor will activate the automatic door opener, allowing the door to open without having to touch it. Please note, if using this solution for a closed office, the solution will need to be implemented on both sides of the door or the individual will be trapped after going though the door.

Proximity sensors have a high reliability and long functional life because of the absence of mechanical parts and lack of physical contact between the sensor and the sensed object.

It is best if this solution is implemented during construction though it can also be retrofitted into existing structures. We recommend that you approach your Faculties to discuss this issue further. We are available to sit in, discuss or meet with anyone on this topic, as required.

Office Chairs and Seating

Properly adjusting your chair as well as sitting with proper posture is critical in preventing future injuries. Employees should visit the CCOHS website or your departmental OHS committee's website for proper seating techniques. https://ccohs.ca/oshanswers/ergonomics/sitting/sitting_position.html

There are too many different chairs available in the marketplace to have them all listed. We recommend visiting local vendors who are on a supply arrangement or standing offer with the federal government. Many vendors such as ASOKAN and CORCAN have showrooms where you can try the various chairs available and see what options are customizable on a particular model. The CCOHS has information on what to look for when buying a chair. https://ccohs.ca/oshanswers/ergonomics/sitting/sitting_workchairs.html

Alternate seating positions

Alternative seating and desk setups can reduce the employee's pain and/or discomfort. Suggestions around seating are provided as part of broader job accommodation and/or disability management related interventions. It is critical that alternate seating arrangements/positions be discussed with the employee's medical professional prior to being purchased or implemented.

The CCOHS website has further information on alternate seating positions available at this link: https://ccohs.ca/oshanswers/ergonomics/sitting/sitting_alternative.html

Below are some other alternative seating options not mentioned on the CCOHS website, available from various manufacturers.

- Zero gravity chairs and desks
- Chairs with a larger reclining angle
- https://healthpostures.com/products/coming-soon-new-stance-angle-chair/

Location of Cubicle

The location of the employee's office/cubicle may need to be changed depending on both their condition and the accommodations provided to them. Some examples of situations where employees may need to be moved include:

- An employee using voice recognition cannot be seated near devices that produce repetitive mechanical sounds, such as printers, shredders, and doors. The noises produced by these devices interfere with the proper recognition of the employee's voice by the computer.
- Employees going through the training and learning phase of Dragon Professional should be housed temporarily in an enclosed space as to not disturb others or be disturbed by others while they are training the tool.
- Employees sitting next to or near a client using voice recognition may not be able to properly concentrate on their work when someone is speaking to their computer for the majority of the day.
- Certain employees who have the computer read text to them may benefit from a set of headphones or a headset in order to reduce the amount of noise coming from their office/cubicle.
- Some employees may require a closed office depending on their level of accommodation.
- Certain employees in a GCworkplace setup may need to have an assigned seat or be moved to a closed space permanently due to the complexity of the tools being used.

Changes may be required based on other accommodations as well. Please contact AAACT if you have any questions about the location of employees in your team.

Reducing Distractions

Sometimes employees have the need to eliminate distractions as much as possible. Noise cancelling headsets, white noise generators, and other tools exist as possible options to minimize distractions in the workplace

To reduce audio distractions, we recommend using a headset that covers both ears. Further recommendations can be found later in the document in the section titled **Headphones**.

Teleworking

With regards to teleworking, it is important that the employee's needs and requirements be met at home as they are in the workplace if teleworking is part of their accommodation plan. This means that if physical products are procured for the employee in the office, the same or similar must also be procured for the employee's home. This includes monitors, monitor arms, docking stations, desks, chairs, switches, macros, keyboards, mice, and anything else that's a part of the employee's accommodation.

It should be noted that in some situations it may be better to have a computer for each location. However, in general, we recommend having the same setup in both locations and one workstation that is transported between the home and the workplace by the employee.

Technical Considerations

Many technical solutions vary in their complexity. Some solutions are easily implemented and at little to no cost, while others may require hardware or software at an additional cost but are relatively easy to implement. Finally, there are more complex technical considerations that require more investment financially and in time with respect to the amount of training required to use the solution.

Immediate Implementation Options

There are immediate changes that most employees can make to their windows workstation to adapt the interface to their needs. In this situation we recommend you look at the following.

Built in Accessibility Features

We will be addressing various features available in the latest versions of Windows 10 and Office 365 below. Some of the headings such as Reading Assistance are also covering in Medium Technical Considerations section of this document should you require more advanced tools than what is provided by Microsoft. A good example is having the computer read text out loud. In some situations the way documents are read and the voice synthesizers available are sufficient. In other situations, using TextAloud with its more advanced features and better selection of voice synthesizers is a better option.

There are many features available in Windows 10 that increase the accessibility of your computer. We will be addressing some of the features our clients have found most useful. Additional features and information can be found at Microsoft Accessibility and Education web sites:

> https://www.microsoft.com/en-ca/accessibility

> https://www.microsoft.com/en-ca/education

There are a number of setting changes, modifications and add-ons to improve the desktop experience; features such as the high contrast black theme, accessibility settings in Internet Explorer, and adding either APHont or Dyslexie Font to Windows (located at https://www.aph.org/products/aphont/ and https://www.dyslexiefont.com/en/dyslexie-font/) can make

a big difference and are very easy to implement. Instructions on how to access Internet Explorer features such a controlling the font, formatting, and colours of pages, can be found at: https://support.microsoft.com/en-ca/help/17456/windows-internet-explorer-ease-of-access-options

Office 365 is recommended by Shared Services Canada to provide access to employees to world-class accessibility features without the need to purchase additional tools.

For instruction on how to enable Dark Mode on your computer, follow this Microsoft link: https://support.microsoft.com/en-us/help/4531350/change-colors-in-windows

When working on a laptop or computer monitor for an extended time, pressure on your eyes can increase. Much of the eye fatigue you feel when looking at a screen can be attributed to blue light emitted from your monitor. Windows 10 has a new feature which relieves stress on the eyes. This feature is called Night Light and restricts blue light emanating from your display by changing its hue changing the colours displayed on your screen into warmer versions of themselves. For more information, please visit the Microsoft website at the following website:

https://support.microsoft.com/en-ca/help/4027563/windows-10-set-your-display-for-night-time

Filter Keys

Filter Keys is a Microsoft Windows accessibility feature that tells the keyboard to ignore brief and repeated keystrokes that may be caused by slow or inaccurate finger movements. People with hand tremors might hit the same key again, and again, this is where Filter Keys help.

There are a number of Filter Key options that allow you to customize your experience. The configuration of the Slow Keys, Repeat Keys, and Bounce Keys options will allow you to:

- Decide hold long a key should be in pressed before the computer accepts it.
- Decide to ignore repeated keystrokes
- Decide how many seconds to wait before accepting a repeated key press.

More information on how to turn Filter Keys on in Windows 10 can be found on the Windows Club website

Many popular applications such as Outlook and Word have built-in accessibility features. These allow users to customize viewing layout, font type and size to better suit individual needs. It is highly recommended that the client be upgraded to Office 2016 or Office 365 if they have not been already, as Office 2016 & 365 have much better support for accessibility.

If you are added to the SLA, we can discuss this further during the assessment process, where AAACT will sit with you to explore options and customizations that best meet your needs.

Internet Explorer 11 - Internet Explorer Ease of Access Options

Internet Explorer 11 has built in features to make the browser more accessible. These features allow you to modify your interaction with the websites by allowing you to: zoom on a webpage, make text larger or smaller, use your keyboard to navigate the web, and change the font, formatting, and colors on all web pages. Further information on these features can be found at the following website:

https://support.microsoft.com/en-ca/help/17456/windows-internet-explorer-ease-of-access-optionshttps://support.microsoft.com/en-ca/help/17456/windows-internet-explorer-ease-of-access-options

Outlook

You are able to modify how you interact with Outlook including how it appears and the information you see. More information and direction to accomplish this can be found at the following Microsoft websites:

Navigation pane: https://support.office.com/en-us/article/Customize-the-Navigation-Pane-b584af01-c99b-40ea-a7d8-3fe1830e64c9#__toc256681966

List view: https://support.office.com/en-us/article/Create-change-or-customize-a-view-f693f3d9-0037-4fa0-9376-3a57b6337b71?ui=en-US&rs=en-US&ad=US

Change the default font or text color for email: https://support.office.com/en-us/article/Change-the-default-font-or-text-color-for-email-messages-1aabb236-01d4-4faf-b998-a4087da3ceab

Change the default appearance of the window with Dark Mode: https://support.office.com/en-us/article/Dark-mode-in-Outlook-com-and-Outlook-on-the-web-391487d7-c2c0-4256-a5af-b49d0b36a645

Graphics Adapter Settings

We did not discuss the Graphics Adapter Settings but are including it here because it may provide you some benefit. Any individual wishing to take advantage of the settings below must have their monitors connected to a mechanical dock, directly to the laptop using the video out port, or a Thunderbolt to DisplayPort adapter. Monitors connected to a USB port replicator or docking station will not support these features.

Your computer's graphics card can be controlled using software from Intel to adjust settings such as brightness, colour temperature, contrast, colour and it can even record what is sent to your video card. Using the Intel Graphics Card to make your adjustments will remove the need to adjust each of your monitors individually and will make the adjustments automatically when switching from one location to another. Any monitor you have should be a 23"/24" class LED monitor from the computer NMSO. To ensure that both monitors are displaying similarly, it is important that they are manufactured within a month or two of each other and be set to default settings.

Depending on the age of your computer, it may use the Intel HD Graphics Control Panel or the Intel Graphics Command Center. To access this you can simply type the word "Intel" into your Start Menu and launch the app. If none appears, contact your service desk to install the Intel Graphics Command Center. See image below to see an example of what you should see when you do the search on your computer.
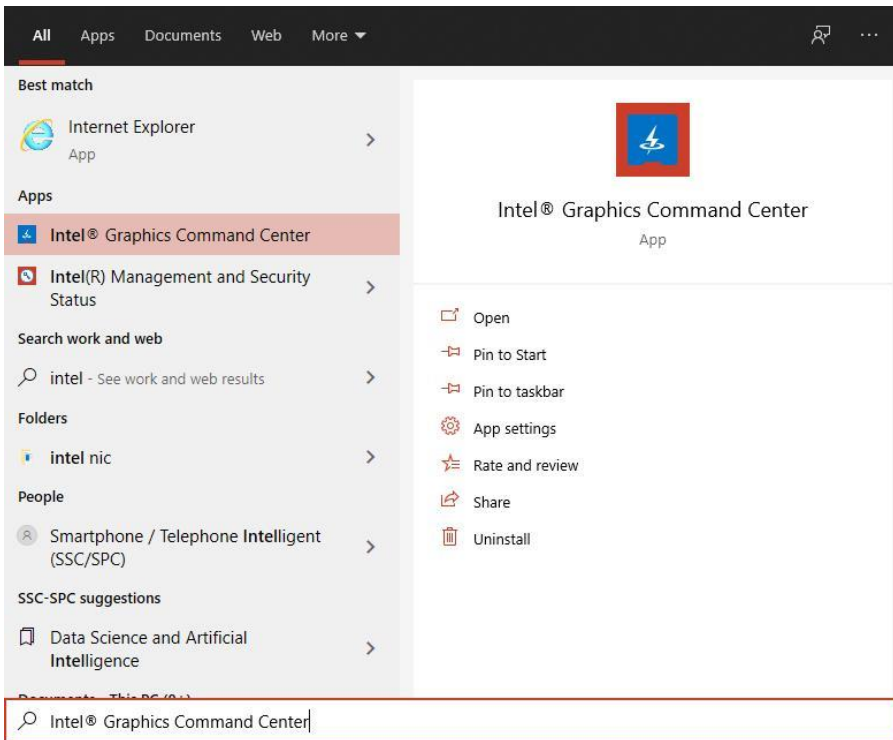
Fix your laptop's color and brightness with Graphics Command Center | PCWorld

https://www.pcworld.com/article/3616250/fix-your-laptops-color-and-brightness-with-intel-graphics-command-center.html

Removing visual distractions

Windows, Internet Explorer, and Office offer methods to reduce visual distractions on the computer. For more information, see the following tips on the Microsoft website:

- https://support.microsoft.com/en-ca/help/27930/windows-10-make-it-easier-to-focus-on-tasks
- https://www.microsoft.com/en-us/Accessibility/default.aspx?v=t

Look for settings and options geared towards Learning and Vision. The site makes reference to the Microsoft Narrator and Dictate. While these tools do work, they are not nearly as effective as 3rd party tools such as TextAloud or Dragon Professional.

If you require further assistance with implementing the above changes your departmental service desk should be able to assist. This can also be addressed by AAACT during the intake and assessment phase after being added to the SLA.

Monitors

Clients should be provided with a 23 to 24" Business Class monitor with ambient light sensor. All monitors on the Computer NMSO should meet this requirement.

For more information on what's available visit: https://www.sscitpro-spcapproti2.com/category-s/141.htm

The monitors will be listed with each model of desktop computer under components section of each system.

To order contact your departmental service desk or use SSC's E-Procurement tool ITPro https://www.sscitpro-spcapproti2.com/category-s/154.htm

Ultrawide Curved Monitor

Based on our work with other clients in a similar situation we recommend that Simone be provided with a Samsung 34" Ultra wide monitor should a colour monitor continue to be used. Details on the monitor can be found here https://www.samsung.com/ca/business/monitors/lc34h890wjnxgo/ and is available on SSC's IT Pro procurement site. With the Monitor being curved, the entire display is the same distance (equal focal distance) from the eyes reducing the need to refocus your eyes. Individuals using magnification tools like SuperNova would also benefit from it, as its expanded screen space effectively replaces a dual monitor setup, which SuperNova or Zoom-Text don't easily support. For more information on what's available visit: https://www.sscitpro-spcapproti2.com/category-s/199.htm. To order please visit SSC's Procurement and Vendor Relations website http://service.ssc-spc.gc.ca/en/services/hw-sw/microcomputers/procure

Low Technical Considerations

Keyboards

Alternative keyboard designs/layouts allow people who experience difficulty accessing conventional keyboard designs to use computers. Sometimes adjustments can be made to the accessibility options of the computer; for example, changing the sensitivity of the keyboard. On other occasions, it is necessary to get a different keyboard.

Freestyle Pro

The Kinesis Freestyle Pro is a split keyboard and is an excellent option for most clients. It can be adapted using different accessories to offer palm rests and varying degrees of tilt. The Freestyle Pro offers the ability to re-program keys to offer Macros or do combinations of keystrokes. There is also a gaming version available called the Kinesis Freestyle Edge that offers different key options (Freestyle Edge Textured Key Kit - 5 Colours or Freestyle Edge Textured Key Kit - Coloured and Back Lit). The keyboards are distributed in Canada by Ergo Canada with the simple combinations being available from GC stationary suppliers at an additional cost.

Freestyle Pro:
http://www.ergocanada.com/detailed_specification_pages/kinesis_corporation_freestyle_pro_keyboard.html

Freestyle Edge:
http://www.ergocanada.com/detailed_specification_pages/kinesis_gaming_freestyle_edge_gaming_keyboard.html

Tilt Options

Freestyle Pro Keyboard - VIP3 Pro Tenting and Palm Support Kit - https://www.kinesis-ergo.com/shop/freestyle-vip3-pro-accessory/

Freestyle Pro Keyboard - V3 Pro Tenting Accessory Kit - https://www.kinesis-ergo.com/shop/freestyle-v3-pro-accessory/

Small Format Keyboard

Small format keyboards are useful for minimizing the distance between keys and thus, minimizing the amount of movement required to type. It also can be used one-handed more readily than standard format keyboards or split format keyboards. There are a variety of different options available. Some of the most common in use in the federal government are listed below.

SolidTek Super Compact Mini Keyboard: http://www.ergocanada.com/detailed_specification_pages/solidtek_super_compact_mini_keyboard.html

Evoluent Essentials Full Featured Compact Keyboard: https://evoluent.com/products/ekb/

Additional Compact/Mini Keyboards: http://ergocanada.com/ec_home/products/compactmini_1.html

One Handed Keyboard

Maltron Single Hand Keyboard

Maltron single handed keyboards are designed to meet the needs of individuals who need to type with one hand. The shape of the keyboard matches natural hand movement and the key arrangement minimises finger movement. The design raises typing speed and relieves frustration. The letter layout has been designed taking into account the limited number of keys that can be accessed quickly and comfortably using one hand. The ergonomic shape also prevents strain and repetitive stress injuries.

Both Left and Right hand models are designed for "Touch Typing". These keyboards have Push-On Push-Off keys for Shift, Control and Alt functions; essential for single hand operation. Windows keys are also included.

The keyboard is available USA English and French and is connected to the computer with a USB connector.

More information can be found here: https://www.maltron.com/store/p19/Maltron_Single_Hand_Keyboards_-_US_English.html

English Keyboard Layout: https://www.maltron.com/usa.html

Click & Type

Click N Type is a free on-screen keyboard available to download from the Internet. It's resizable, customisable, switch-accessible and free! But is it suitable for you (or your pupil)? Does it have the features that you need and will it meet your needs?

Read my review below and try it for yourself by visiting Lake Software ⧉. Or take a look at some other on-screen keyboards that I have reviewed.

Click N Type first appears as a small floating keyboard, that can be easily resized by dragging the edges of the window. As you resize the window, the keys and fonts get bigger as well. The letters remain fairly small inside larger keys and there's no apparent way of increasing this font size any further.

Keyguards for Keyboards

Keyguard is an assistive device that helps people from pressing unwanted keys due to tremors or involuntary movements. It is a cover that can be placed on a variety of difference devices that blocks involuntary keystrokes.

Keyguard offers individual/customizable designs in both foam and acrylic (soft vs hard) material for any device that requires manual entry.

More information can be found on the Keyguard Assistive Technology website

Pointing device / Mice

There are a variety of options available to minimize or mitigate pain that is aggravated by work related to "heavy mousing" and typing, such as large amounts of document creation and mouse navigation in department application for extended periods of time.

Standard mouse access can often be modified with the operating system changes mentioned above. Also, there are many low tech alternatives to pointing and clicking. These include using keyboard short-cuts and different commercially available pointing devices (e.g. larger mouse, trackball or joystick).

In our opinion the best mouse is no mouse and keyboard shortcuts and navigation should be used as much as possible.

Alternative Mice

Alternative pointing devices can be used to replace the mouse. This may include the use of trackballs, Roller Mouse, joysticks, trackpads, switches, etc.

A Trackball is a stationary device that holds a ball that you can freely maneuver in any direction. It separates the movement of the pointer from the mouse clicks, especially useful for those who have less fine motor control and for those who find a sustained grip on the traditional mouse uncomfortable. Many trackballs offer the left and right mouse buttons plus one or two more which can be programmed to be a double click or 'click and drag' functions.

Joysticks are gaming related pointing devices. A joystick might work well for someone who has difficulties with other pointing devices.

Trackpads are a touch sensitive flat surface – you drag your finger on the surface to control the screen cursor. You can get a track pad and attach it to your computer. Most laptops offer a built-in trackpad that is positioned in front of the keyboard. Trackpads are available from most computer or stationary suppliers, and are available in a variety of formats.

During our InfoSession, we likely demonstrated the Ergo Hands Free Touchpad that offers the additional benefit of being able to mount in different positions using a variety of proprietary mounting options, including a flex arm assembly. More information on the touchpad and its accessories is available at the link below.

http://www.handsfreetouchpad.com/

Mouse input can also be given by high tech pointing devices, which transmit the location of a transmitter or reflective dot on the user's head to the computer system, or follow the movement of the users' eye. Separate switches or just dwelling on a location are used for mouse clicks and drags. These devices are frequently used with on-screen keyboards for text input by people with limited movement.

Hoverstop Mouse

When using a mouse, individuals tend to leave their hand on the mouse even when they are not actively using the mouse. Doing this causes tension in your arm, neck, and shoulder. Over a long period this can lead to strain and injuries.

To avoid these potential injuries and to train better habits, the Hoverstop active ergonomic mouse can provide you with the feedback to change your habits. When you are actively using the mouse, it works like any other 3 button mouse with a scroll wheel. After 10 seconds of passive (non) mouse use, the mouse will vibrate.   This vibration reminds you to take your hand away and rest your hand and relax until you need to use the mouse again.

More information on the Hoverstop mouse can be found here:

https://www.ergocanada.com/detailed_specification_pages/hoverstop_bv_hoverstop_mouse.html

The SteadyMouse Project

SteadyMouse is assistive software designed to help you manage the effects of tremors and involuntary movements when using a mouse.

The software works by detecting and removing shaking motions before they reach your cursor, and by blocking accidental clicks. The SteadyMouse provides the following features:

- Anti-tremor filtering to remove shaking motion
- Automatic blocking of unintentional mouse clicks
- A unique Icon Targeting System to snap your cursor to where it was trying to go
- An easy global on/off toggle via the Num-Lock key

More information can be found on the SteadyMouse website.

Non-LED/LCD Monitors

LED and LCD computer displays create eye strain by making our eyes dry, inflamed, deeper myopia, and even cause dizziness, headache, etc. This is often referred to as CVS (Computer Vision Syndrome). More information can be found on WebMD https://www.webmd.com/eye-health/computer-vision-syndrome#1.

Many clients who have found LED and LCD displays problematic can have success using older CRT (Cathode Ray Tube) monitors or E-ink (electronic ink) style monitors to cause significantly less strain on their eyes.

E-ink is an electronic paper technology, characterized by high visibility contrast, wide viewing angle and low power requirements. Current E-ink display panels produce grayscale images and the most common use is in e-readers such as the Kindle or Kobo. These display panels are designed to replicate the look of newsprint, ease eye-strain and provide visual clarity to the user.

There are currently two manufactures who make e-ink displays that are compatible with GC computers. There is Dasung from China that manufactures the PaperLike series of displays and Onyx who designs in California and China who manufactures the Boox series of tablets that can be used as a monitor. Both products are manufactured in China like most electronics. The Dasung website information is sparce however their product is the easiest to use. The Onyx website is simpler to use and has a significantly better support site however the device is also a tablet and may cause security concerns.

They use ambient-light-reflecting display technology to make natural, clear images on the screen that are illuminated by light in the environment rather than a backlight.

[DASUNG-Paperlike,World's First E Ink Monitor (dasungtech.com)](dasungtech.com)

[Versatile Android E Ink Tablets, eReaders &Writing Tablets | Official BOOX](#)

You should speak with your IT department about what device is best for your environment. We have purchased the devices from Phaselock Systems in Ottawa.

Overlays

Generally overlays are used with paper, however some individuals do use them to modify their computer displays. Coloured overlays are sheets of translucent or transparent coloured plastic that can be placed over a page of a book so as to colour the text beneath without interfering with its clarity. Coloured overlays reduce the perceptual distortions of text that some people experience.

Coloured overlays are also used to alleviate the symptoms and signs of visual fatigue when reading. Some of the main symptoms are:

- glare from the page
- headaches when reading
- sore eyes when reading
- movement/blurring of print
- onset of symptoms varies and may depend on lighting conditions, style of text and quality of paper

Computer glasses

A loss of natural focusing power affects reading and seeing a smartphone or computer display clearly and comfortably. Computer displays are usually positioned 20 to 26 inches from the user's intermediate zone of vision — closer than driving "distance" vision, but farther away than reading "near" vision. Adaptations such as bifocals can provide clear distance and near vision, but intermediate vision often remains a problem. Progressive lenses or trifocals offer some help for intermediate vision, but often don't have a large enough intermediate zone for comfortable computer work.

Computer glasses assist in focussing in that intermediate zone. Without computer glasses, many users often end up with blurred vision, eye strain, and headaches. To compensate for blurred vision, individuals may lean forward, or tip their head to look through the bottom portion of their glasses. Both of these actions can result in neck, shoulder, and back strain.

It is important to consult with an eye care professional to find the solution that best meets your needs.

Bright Field Magnifier (Fisheye lens/Dome)

A Bright Field Magnifier (Fisheye lens/Dome) is a desktop magnifier that looks like a paper weight. It is used by placing the magnifier directly on the document/object to be magnified. Its design incorporates a calculated light guidance that directs all possible illumination onto the document/object. This provides a brighter field of view without an additional light source.

Further information can be found at:

https://www.eschenbach.com/products/stand-bright-field-magnifier-1420.asp

Auditory Distraction

We looked at reducing auditory distractions. During the session, we provided basic information about:

- Workplace 2.0/GC Workplace
- Noise dampening and muffling (see attachment)
- White noise & white noise generators
- Sound baffling and material

The best way to prevent sound from the ear is using complete-covering ear muffs. Ear muffs fit over the entire outer ear to form an air seal so the entire circumference of the ear canal is blocked, and they are held in place by an adjustable band. As sound is actually transmitted through vibrations in the air, these products are excellent, as they not only prevent sound from getting into the air of the ear canal, they also dampen the vibrations that occur in the air of the ear canal. Though they are quite large, they are remarkably comfortable to wear for long periods of time. They are most suitable for conditions in which sudden loud sounds or a low level of constant noise is present.

Another solution is an earplug. These products come in a number of different forms, which are useful for a variety of circumstances, work situations and recreation. There are many different shapes and sizes to find the best fit for each person. Used together with the ear muffs will give the best results that can be achieved. These products are disposable and should be discarded after they show signs of deterioration. Earplugs must be snugly sealed so the entire circumference of the ear canal is blocked. An improperly fitted, dirty or worn-out plug may not seal and can irritate the ear canal.

Reducing distraction with technology

Visual distraction

Intermittent or constant movement in the workplace can be huge distractions for some individuals, causing a decrease in work efficiency and increasing anxiety. Solutions range from seating location within the office to relocation to a closed workspace.

Removing visual distractions

Microsoft Windows, Internet Explorer and Office offer methods to reduce visual distractions on the computer. For more information follow the following tips on the Microsoft Website:

- https://support.microsoft.com/en-ca/help/27930/windows-10-make-it-easier-to-focus-on-tasks
- https://www.microsoft.com/en-us/Accessibility/default.aspx?v=t

Look for settings and options geared towards Learning and Vision. The site makes reference to the Microsoft Narrator and Dictate, while the tools do work they are not nearly as effective as 3rd party tools such as Text Aloud or Dragon Professional.

Auditory Distraction

We discussed with GC Workplace the need to eliminate distractions as much as possible. We discussed noise cancelling headsets and/or white noise generators as possible options to minimize distractions.

To reduce audio distractions, we recommend using a headset that covers both ears and also include a good microphone with a USB sound pod (built in or external) as average microphone plug in for the built in sound card does not perform well with voice recognition technology.

We looked at reducing auditory distractions. During the session, we provided basic information about:

- Workplace 2.0/GC Workplace and the need to eliminate distractions as much as possible
- Noise cancelling/dampening and muffling
- White noise & white noise generators
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Headphones

A variety of headphones are available. Each individual's fit is unique and AAACT recommends that headsets be tried on for comfort prior to purchasing a specific model. Some individuals are not comfortable wearing something covering their ears for long periods of time. Some individuals are not comfortable wearing things in their ears. You will need to determine your comfort level with the options listed and it is best that you try out various options prior to your purchase.

Headphones with a 3.5mm tip ring sleeve (TRS) connector will allow you to listen to your computer/phone in stereo. Headsets will have a 3.5mm tip ring ring sleeve (TRRS) connector and support a microphone and stereo audio, and can be used with most cellular phones and computers. It should be noted that the microphone feature may not be supported by all computers without an adapter.

Noise Cancellation

We recommend using a headset with noise cancellation technology to reduce audio distractions. With the shift to working from home or any location; an important consideration is a headset with integrated microphone that is supported by Microsoft teams. A list of devices that are certified for Microsoft Teams can be found here: https://www.microsoft.com/en-ca/microsoft-teams/across-devices/devices/category?devicetype=36&filterIds=44&page=1

We recommend consulting the list above for a complete list of devices. Many of the headsets are available from our Office Supplies, Supply arrangement holders E60PD-19OSFB/***/**. A list of current suppliers can be found on buyandsell.gc.ca

Below are a few headsets our clients have used with success in the past.

USB Wired only:

Wired USB and TRRS:

Wireless with USB Dongle supporting Bluetooth:

Wireless not supporting Bluetooth:

Earbuds

There are a wide variety of earbuds available. Earbuds offer the benefit of being small and portable, but should only be used by a single individual for hygienic reasons.

Bone Conduction

We recommend using a bone conduction headset to enhance audio without affecting hearing aids. It also allows users to hear and be aware of their surrounding environment while using the headset, as it does not cover the ears.

We all hear sounds through both our bones and our ear drums. Most sounds are heard by our ear drums. The ear drum converts the sound waves to vibrations and transmits them to the cochlea (or inner ear). But in some cases vibrations are heard directly by the inner ear – bypassing your ear drums. In fact, this is one of the ways you hear your own voice. This is also how whales hear.

Bone conduction was discovered by Ludwig van Beethoven, the famous 18th century composer who was almost deaf. Beethoven found a way to hear music through his jawbone by biting a rod attached to his piano.

Eardrums are extremely sensitive. Healthy eardrums allow us to hear and distinguish a variety of notes, pitches and decibel levels. Listening to loud sounds – especially for an extended period of time

can damage the eardrums. This is a primary source of hearing loss. Eardrum damage is cumulative and more likely to occur with old age. Listening to loud music on your portable device may seem fun when you are young, but it is likely to lead to hearing loss as you get older. This is of primary concern to blind users who often experience this later in life after a lifetime of using earphones or ear buds constantly. Also, a number of users have experienced hearing loss due to an ear infection caused by extended ear bud/headphone use.

Bone Conduction bypasses the eardrums. In bone conduction listening, the headphones perform the role of your ear drums. Audio Bone headphones decode sound waves and convert them into vibrations that can be received directly by the Cochlea – so the ear drum is never involved. This also makes it much easier to hear sounds around you while listening to a bone induction headset.

Bone conduction is a safer way to listen. Bone conduction does not use your eardrums, so there is less stress on your ears. Since Beethoven's discovery, many scientists and universities have researched bone conduction, and research shows that bone conduction is safer for your ears than conventional listening.

The following is a list of bone conduction headphones available to consumers. AfterShokz are our preferred brand as we have extensive experience with them.

- AfterShokz
  - http://www.aftershokz.com/
  - https://www.canadacomputers.com/search/results.php?keywords=aftershokz
- Audio bone
  - http://www.audioboneheadphones.com/
  - http://www.audioboneheadphones.com/product/audio-bone-headset-microphone-amplifier/
- Panasonic
  - http://shop.panasonic.com/spartan/RP-HGS10-G.html
  - http://shop.panasonic.com/support-only/KX-TG2388B.html

Bose Noise-Masking Sleepbuds

Another alternative is the Bose noise-masking sleepbuds. These are worn inside of the ear and produces soothing masking noise. They are primarily designed for sleep but can also be used while awake.

https://www.bose.ca/en_ca/products/wellness/noise_masking_sleepbuds/noise-masking-sleepbuds.html#v=noise_masking_sleepbuds_silver

Medium Technical Considerations

Below are medium complexity tools and techniques that we discussed during the InfoSession. In most government departments, you will require the intervention of your IT department to implement these solutions successfully. Depending on the comfort level of the individual and the level of support available from the departmental service desk, items in this section may not require AAACT intervention. When a client is added to the departmental SLA, AAACT is more than happy to help implement these solutions with the client and their Service Desk/IT.

Macros

Macros are programmable computer access techniques that specifies how a certain input sequence will automate common tasks. Through the use of supplemental specialized software programs and/or hardware pieces (e.g. programmable mouse, X-Keys, foot pedals) repetitive tasks can be automated. These solutions can be highly customized to provide additional functionality to the user.

A demonstration version of this program is available on the web at http://www.macros.com.

Hardware Switches

Hardware switches allow you to implement macros and automate repetitive keystrokes and keyboarding or mousing activities. This simplifies tasks that are done numerous times or in a repetitive fashion. Also, simple functions, such as selecting text, opening Outlook, filtering emails, one touch keys for saving, printing or any function that can be keyboarded can easily be recorded as a one touch macro. The most common tools used for this are listed below:

- X-Keys: http://xkeys.com/XkeysKeyboards/index.php
- Kinesis Freestyle Pro: http://www.ergocanada.com/detailed_specification_pages/kinesis_corporation_freestyle_pro_keyboard.html
- Xbox Adaptive Controller: https://www.xbox.com/en-US/xbox-one/accessories/controllers/xbox-adaptive-controller

For the switch interface AAACT uses a combination of the X-Keys 12 switch interface, StealthSwitch3 or the Kinesis Savant Pedals.

- http://ergocanada.com/ec_home/products/switchesinterfaces_1.html
- http://ergocanada.com/ec_home/products/footswitches_1.html

Gaming Mice and Programmable Mice

Logitech is the largest manufacturer of gaming mice we use for our clients. They work similarly to the mice provided by our computer manufacturers but offer additional buttons that can be programmed for different tasks using macros. The latest generations of Logitech mice do not require software to be installed on the computer where the product will be used only on the one programming the device.

Rate Enhancement

There are a variety of supplemental adaptive computer hardware and software options that can help users enhance their computer interaction experience. These technologies have the added benefit of reducing errors and the amount of physical activity required for traditional typing and mousing tasks.

Predictive text

Predictive text is a technology that can increase the rate of a user's text output, regardless of whether they have a disability or not. Like the name implies, predictive text uses artificial intelligence to predict what words you will type before you type them. This is similar to what your phone does when you are texting. This Word prediction software assists with reducing the number of required keystrokes, by

predicting the word you are typing based on word frequency and context. Some software may also include features such as spell checking as you type, speech synthesis, and short cuts for frequently used words. Word prediction is particularly helpful if you type slowly or if you have difficulty with spelling or finding the appropriate words to use or have difficulty using the keyboard.

WordQ & Penfriend

WordQ and Penfriend are tools that are primarily used to assist writing that work in any application. They use predictive text to make it easier to independently write more effectively. They are available in both English and French.

WordQ and Penfriend use predictive text to make writing more efficient. As you type, an overlay appears next to your typing with word suggestions. To select a word and insert it, type the number next to the word suggestion that you wish to insert.

WordQ and Penfriend also get smarter with their suggestions as you continue to use them. For example, we type the phrase "Shared Services Canada" often. If we were using WordQ or Penfriend and typed the word "Shared", WordQ and Penfriend will automatically select "Services" as the next suggestion before we even begin typing, and then "Canada" after that. This can result in significant time savings on your typing and reduce strain caused by using the keyboard.

WordQ: https://www.quillsoft.ca/wordq5

Penfriend: http://www.penfriend.biz/

Office AutoCorrect

In Microsoft Office you can insert text automatically with either blocks of preformatted text from your AutoText gallery, or with words, phrases, or sentences that Word automatically completes after you've typed only a few characters.

Under Options > Proofing > Office AutoCorrect, the text in the left column of the list, under **Replace**, will be set to automatically be replaced with the text in the right column, under **With**.

More information on Office AutoCorrect can be found at the following link: https://support.office.com/en-us/article/choose-autocorrect-options-for-capitalization-spelling-and-symbols-e7433b94-f3de-4532-9dc8-b29063a96e1f

FastFox Text Expander Software

FastFox is another tool to reduce the amount of physical activity required for typing. It is a text expander software that allows you to insert your most commonly used text quickly and easily and is ideal for anyone who types the same text repeatedly. It allows you easy access to regularly used text using abbreviations or other text shortcuts and you can also easily insert longer phrases, paragraphs, documents, and images. FastFox also learns your most commonly typed phrases and suggests them to you as you type, so you can select and insert text as you type.

FastFox Text Expander Software: https://www.nch.com.au/fastfox/index.html

Video demonstration of FastFox: https://www.nch.com.au/fastfox/tutorial.html

Note Taking

Note taking on the computer can be a powerful and efficient tool for any individual and critical for anyone who has difficulty working with paper notes. We generally recommend two different tools for this type of activity. The first one is a quick and easy tool that can replace post-it notes and sketch pads beside the computer. The 2nd is more of an interactive Journal and note taking tool.

Flashnote

We demonstrated how Flashnote is an easy to use tool to take digital notes using your laptop. It can be opened at the press of a keyboard shortcut of your choice. You can open, save and close the application in a few seconds. It opens on the last note saved in it. Items in Flashnote can be copied to the clip board for use in other applications such as Outlook and Word. The database is a simple text based file that can be backed up to the network and shared as needed.

Many of our users have used Flashnote extremely effectively as a digital whiteboard for taking notes, jotting down material and parking ideas for later use. Additionally, capturing the information that is jotted into Flashnote and moving it into outlook.

http://softvoile.com/flashnote/

Microsoft OneNote

Microsoft OneNote is a computer program for free-form information gathering and multi-user collaboration. It gathers users' notes (handwritten or typed), drawings, screen clippings and audio commentaries. The tool can be used to replace an employee's hand written note books and supplemented with content from other Microsoft Office Applications. The GC already has OneNote included as part of our licensing agreement with Microsoft for all GC departments.

Mind Mapping

Mind mapping is a highly effective way of expressing and obtaining information. Mind mapping is a creative and logical means of note-taking and note-making that literally "maps out" your ideas. A Mind Map is a diagram used to visually organize information. A mind map is hierarchical and shows relationships among pieces of the whole. It is often created around a single concept, drawn as an image in the center of a blank page, to which associated representations of ideas such as images, words and parts of words are added. Major ideas are connected directly to the central concept, and other ideas branch out from those.

Mind maps can be drawn by hand, either as "rough notes" during a lecture, meeting or planning session, for example, or as higher quality pictures when more time is available. You can put your ideas down in any order, as soon as they occur. You are not constrained by thinking in order. Simply, record any and all ideas, then reorganizing them later. Software is also available to make mind maps quickly and efficiently. Tools such as MindView and MindManager allow you to create them almost effortlessly with the computer. We generally recommend MatchWare's MindView to clients in organisations that have not standardised on a different tool as it offers integration with the Microsoft Office Suite.

Links to Mind Mapping solutions that AAACT has used with clients:

- MindView
  - https://www.matchware.com/mind-mapping-software
- MindManager
  - https://www.mindjet.com/mindmanager/

Livescribe

Please note: Currently there is a shortage in the micro-chops used to produce these pens so the current versions of the pen are not available from the vendor.

The Livescribe Smartpen is a ballpoint pen with an embedded and digital audio recorder. When used with digital paper, it records while you are writing and synchronizes those notes with any audio it has recorded. This allows users to replay portions of a recording by tapping on the notes they were taking at the time the recording was made. It is also possible to select which portion of a recording to replay by clicking on the relevant portion of a page on-screen, once it has been synced to the Livescribe Desktop software.

More information on the Livescribe pen can be obtained here: https://us.livescribe.com/.

It may be possible to obtain older version of the Livescribe pen from 3rd party re-sellers. Two older versions of the Livescribe Smartpen are: the Livescribe 3 and the Livescribe Echo. The Livescribe 3 works using an application on your smartphone, whereas the Echo is self contained on the pen itself. The Livescribe Echo can also connect to your computer which will allow users to transfer the audio files from their Smartpen to their computer.

Writing Assistance

There is a wide range of adaptive technology tools available to help individuals who struggle with writing. Some of these tools help employees circumvent the actual physical task of writing, while others facilitate proper spelling, punctuation, grammar, word usage, and organization.

Microsoft Editor

Windows 10 has free accessibility features such as Microsoft Editor which provides writing support.

We have little experience using Microsoft Editor so we are unable to comment on its usefulness. There is software that performs very well, is used throughout the GC and we have extensive experience with. This software is called Antidote. We are mentioning Microsoft Editor first because of its integration with the Microsoft Suite and the ease to which it could be accessed and tried out. For more information on Microsoft Editor, the following information and links provide a starting point to explore further.

https://support.microsoft.com/en-us/office/microsoft-editor-checks-grammar-and-more-in-documents-mail-and-the-web-91ecbe1b-d021-4e9e-a82e-abc4cd7163d7?ui=en-us&rs=en-us&ad=us

Microsoft Editor is an AI-powered service that helps bring out your best writer in more than 20 languages, whether you are writing a Word doc, composing an email message, or posting on a website like LinkedIn or Facebook.

Editor underlines the issues it finds. Select the underlined word or phrase to accept or ignore the suggestion.

Editor is available as a browser extension for Edge and Chrome, and it's being added to Word and Outlook apps. The free service lets you nail the basics of grammar and spelling. Additionally, with a Microsoft 365 subscription, Editor offers advanced grammar and style refinements like clarity, conciseness, formality, vocabulary suggestions, and more.

Microsoft Editor browser extension

As a browser extension in Edge or Chrome, Editor helps you compose and correct Gmail messages, social media posts, and anything you write on the web. Sign in with your Microsoft account for free to get basic spelling and grammar checking. Or sign in with your Microsoft 365 account to get refinements beyond the basics.

For more information about the browser extension, see Check grammar and spelling with the Microsoft Editor browser extension.

Word for the web

Editor is included in Word for the web. Sign in with your Microsoft account for free to get basic spelling and grammar checking. Or sign in with your Microsoft 365 account to get refinements beyond the basics, including readability statistics.

Customers who sign in with an Microsoft 365 account should see Editor right away. It will take a few weeks for Editor to roll out to all user accounts.

For more information about Editor in Word for the web, see Check grammar, spelling, and more in Word for the web.

Word for Microsoft 365

Editor has been updated in the Windows version of Word for Microsoft 365 to check for more issues than it did in Word 2016 and 2019. The updated user interface is more closely aligned to Word for the web. Look for Editor on the Home tab.

For more information about Editor in Word for Microsoft 365, see Check grammar, spelling, and more in Word.

Outlook.com and Outlook on the web

Editor is included in Outlook on the web and Outlook.com when you're signed in with your Microsoft 365 account. If you don't see Editor right away, check back later; it will take several weeks for Editor to be available to all user accounts.

For more information about Editor in Outlook.com and Outlook on the web, see Check spelling, grammar, and clarity in Outlook.com and Outlook on the web.

Check grammar, spelling, and more in Word

Word for Microsoft 365 Word for Microsoft 365 for Mac Word 2019 [More...](#)

[Word for Microsoft 365](#) [Word 2016, 2019](#) [Word for macOS](#) [Word 2013](#)

Microsoft Editor runs in Word for Microsoft 365 to analyze your document and offer suggestions for spelling, grammar, and stylistic issues, like making sentences more concise, choosing simpler words, or writing with more formality.

To use Editor, on the **Home** tab choose **Editor**.
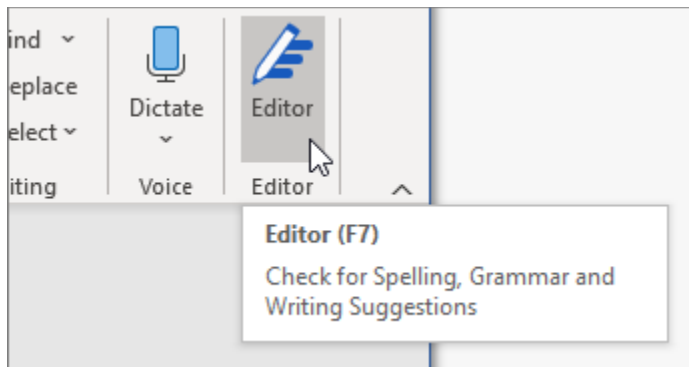
Reviewing suggestions

To focus on the issues you care most about, choose a correction or refinement type, like Grammar or Clarity. Then, use the arrows near the top of the pane to step through each of that type of issue.
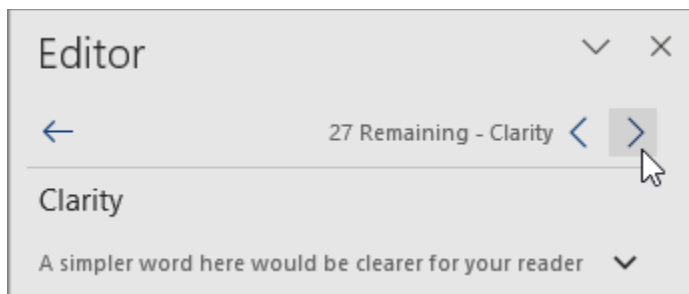
Choose a suggestion to incorporate it into your document. If you don't like the suggestion, choose **Ignore Once**. Or, if you never want this type of suggestion, choose **Don't check for this issue**.
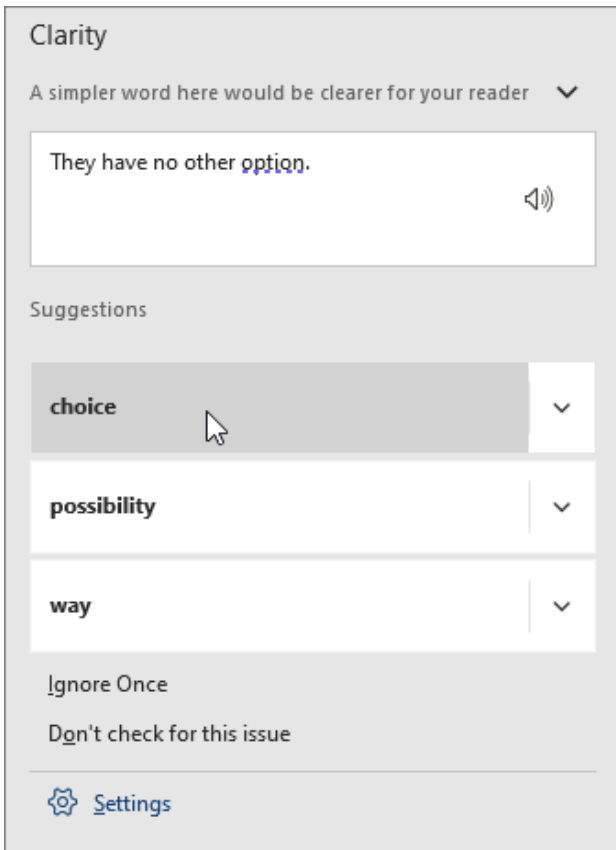
Note: If you change your mind about an issue you ignored, close and reopen the document, and go back to Editor. Editor will find the issue again.

Tailor what Editor checks for

By default, Editor checks for several categories of issues, and the suggestions may or may not suit your writing style. To finely tune Editor for suggestions you want, do the following:

In the Editor pane, choose **Settings**.
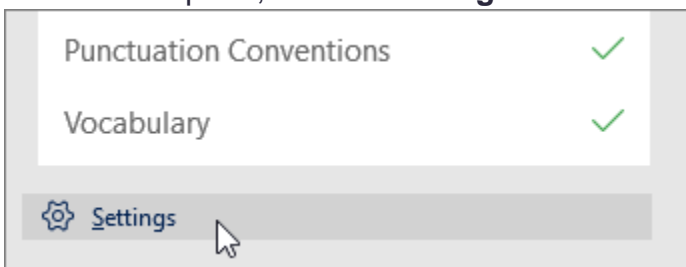
In the Word Options dialog box, next to **Grammar & Refinements**, choose **Settings**.
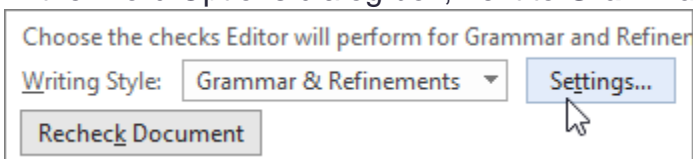
1. Scroll through the list of options. Select issues you want Editor to check, and clear the issues you want Editor to ignore.

Note: Choosing **Reset All** returns to the default settings.

2. Choose **OK**.

Tip: Editor is designed to empower you to bring out the best in your writing. We are continually making updates to its suggestions and experimenting to learn which suggestions are most welcome. If you have feedback for us, choose Help Improve Office? at the top of the Word window to open the Feedback pane.
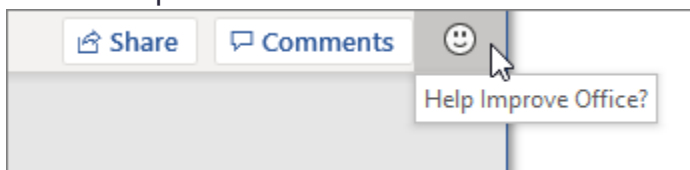
[Editor is running, even when the pane is closed]

You might notice Editor's red, blue, and purple underlines in your document even when the Editor pane is closed. That's because Editor is always running in the background, checking for spelling, grammar, and some style issues.

Right-click the underlined text to see the suggestion. Use context menu to:

▪ Listen to the suggestion by clicking the arrow next to the suggestion and then choosing **Read Aloud**.

▪ Skip this instance of the issue by choosing **Ignore Once**.

▪ Tell Editor to stop checking for this issue by choosing **Don't check for this issue**.

▪ Fine tune the settings for this type of issue by choosing the **Options** link.

▪ Get more information about the issue by choosing **See More**.
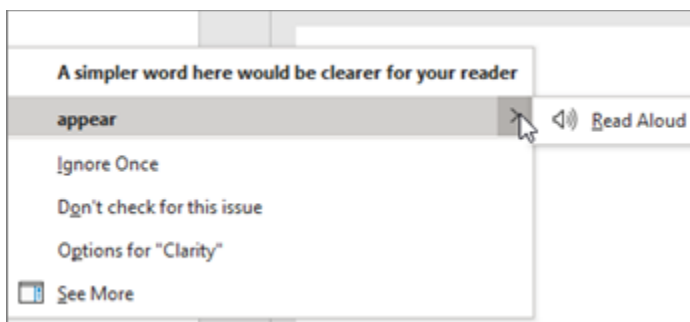
[Checking more than one language]

Your document might be written in more than one language, or you might want to switch to another language for Editor to check. If you are set up to use multiple authoring languages (**File** > **Options** > **Language**), Word detects the language you're writing in, and Editor will check for issues in that language.

However, you might be writing in a language that Word doesn't detect automatically. In that case, you can get Editor to check text in that language by selecting the text and going to **Review** > **Language** > **Set Proofing Language**, and then choose your language.
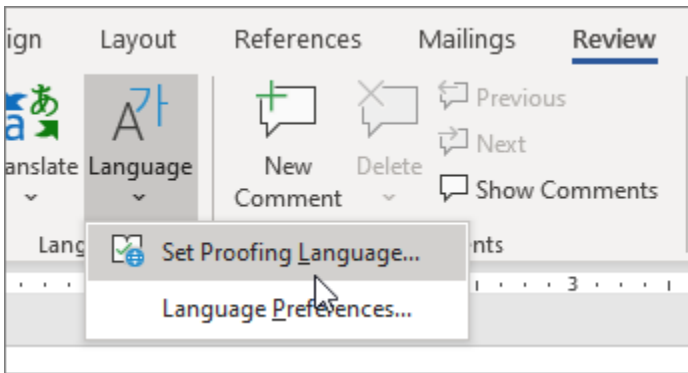
When Editor is checking more than one language, the Editor pane lists corrections and refinements for each language in the document.
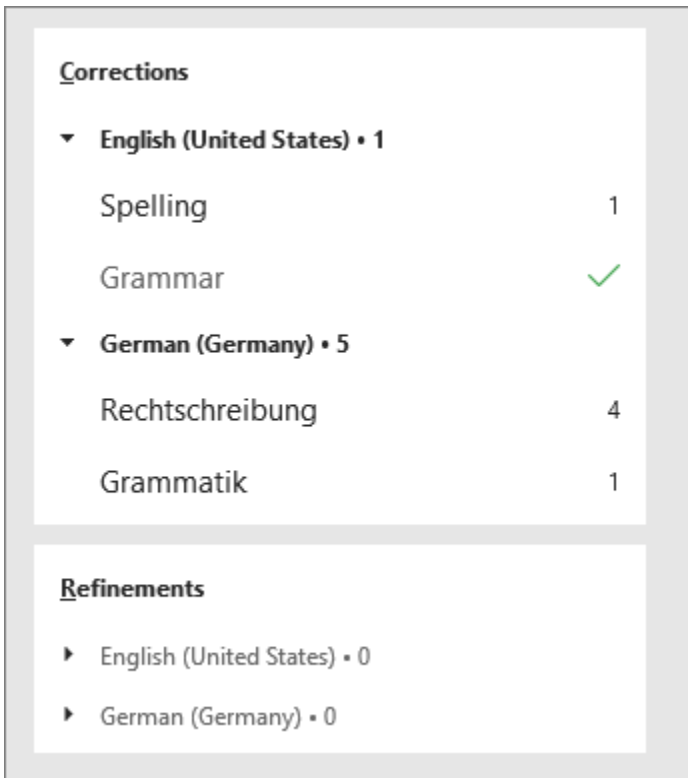
For information about the issues that Editor checks in various languages, see Editor's spelling, grammar, and refinement availability by language.

Editor on the web

When you work on documents in Word on the web, Editor provides a rich set of features that are coming soon to Word for Windows. Even when you're not using Word, the Editor browser extension helps you with writing on websites like LinkedIn, Twitter, Facebook, and Gmail.

Editor for Resume Assistant

When you are working on your resume, Editor checks for issues like reference to first person, vague verbs, unsuitable expressions, and more.

1. Go to **Review** > **Resume Assistant**.

2. Enter the **Role** and **Industry**. At the bottom of the Resume Assistant pane, switch Editor's resume checking on or off.

Voice Recognition (Microsoft Office 365)

Voice recognition is an important tool that can be used to replace the keyboard and, in some cases, mouse entirely. Users who struggle with dexterity, Repetitive Strain Injury, mobility, and learning disabilities may find a voice recognition tool useful.

Certain versions of Office like **Office 365** include a built-in dictate tool you can access through an icon on the Ribbon to dictate, its not as powerful as Dragon Professional but for some type of users it is sufficient. The Office 365 dictate feature only provides assistance in dictating (writing), it **does not** provide assistance in navigating your computer (i.e., it does not allow you to control the computer with your voice). The dictate feature is also available in Outlook.

You can consult you IT department to see if the feature can be made available to you.

Antidote

Antidote is an extremely powerful spelling and grammar tool. It works in both English and French, and allows employees to easily check spelling, grammar, word usage, and more in an easy to use fashion. Antidote is significantly more powerful than the built in spelling and grammar checker in Microsoft Office. For example, Antidote can suggest alternate sentence structures in order to enhance document readability, and provide alternative words and phrases depending on the message you are trying to convey in your documents or emails. More information about Antidote can be found on their website: http://www.antidote.info/

Some departments may already have a department wide licence for Antidote, meaning that the employee would not have to have it purchased for them. Please check with your local service desk to see if this is the case before starting the procurement process on this piece of software.

Reading assistance

Individuals with many different disabilities may have difficulty with reading. This may involve having difficulty identifying words in print, understanding printed text or remembering what is read. It can also involve difficulty with the medium the text is on and/or interacting with the medium itself ex: monitors or books; or the inability to read effectively due to screen fatigue or loss of vision. There are many assistive technology tools to help with reading including both hardware and software.

Windows 10 has free accessibility features such as ReadAloud and Immersive Reader which provide multi-modal reading support, including reading out text aloud. The GC is currently implementing Windows 10 across the government so, if your department currently does not have Windows 10, it should be installed soon.

For more information on ReadAloud and Immersive Reader, the following information and links provide a starting point to explore further.

ReadAloud

https://www.microsoft.com/en-ca/p/readaloud/9wzdncrdn3ms?activetab=pivot:overviewtab

ReadAloud is a very powerful text-to-speech app which can read aloud web pages, news, documents, e-books or your own custom contents. ReadAloud can help with your busy life by reading aloud your articles while you continue with your other tasks. This app can be of great help to students with their reading assignments and also improve their reading speed. For visually impaired people or individuals with difficulty reading, this app can be of great assistance.

Some of the prominent features of the app are:

- Simple, clean and intuitive interface.
- Intelligently extracts readable contents from web pages.
- Supports EPUB, PDF, DOC, DOCX, TXT file formats.
- Clipboard monitor for easy content sharing. • In-app dictionary support.
- Direct sharing ability from other apps, like Edge browser.
- Sentence highlighting with auto scrolling.
- Customizable font style and size in the Reader.
- Customizable color scheme with ability to create custom color scheme.
- Control rate, pitch and volume of the speech.
- Pronunciation editor for correcting the pronunciation of certain words.
- Change settings on the fly without leaving the reader.
- Multi language support. Note: Some features are available only on Windows 10. PC screenshots are for the Windows 10 app.

Immersive Reader?

https://www.microsoft.com/en-ca/education/products/learning-tools

https://schoolsict.co.uk/what-we-do/office-365/learning-tools/immersive-reader

Immersive Reader is a free tool available in Window 10 and Office 365 that implements proven techniques to improve reading and writing for people, regardless of their age or ability. Immersive Reader can improve reading comprehension and increase fluency for English language learners. It can help build confidence for emerging readers learning to read at higher levels, and offer text decoding solutions for students with learning differences such as dyslexia.

Why Should I Use Immersive Reader?
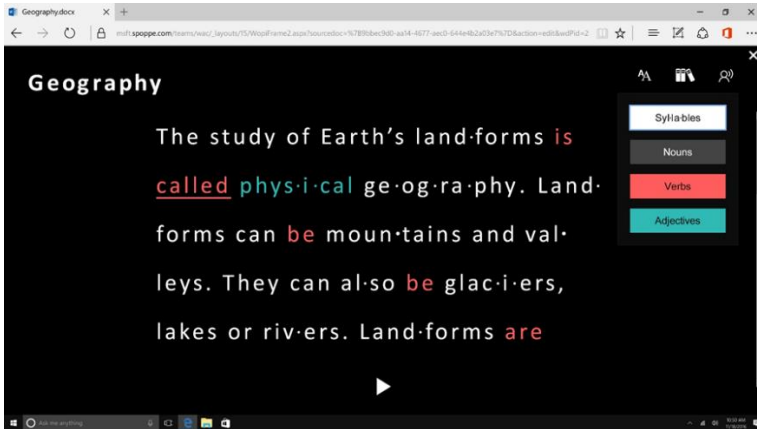
Immersive Reader lets you:

- Change font size, text spacing, and background colour.
- Split up words into syllables.
- Highlight verbs, nouns, adjectives and sub-clauses.
- Choose between two fonts optimised to help with reading.
- Read out text aloud, and change the speed of reading.

Immersive reader can even work with pictures scanned from books, not just text typed directly into MS Office. The Optical Character Recognition (OCR) built into OneNote can actually decipher text within a picture, and then make that available in the Immersive Reader.

Immersive Reader Offline Extension

https://www.microsoft.com/en-ca/p/immersive-reader-offline-extension/9pjzqz821dq2?activetab=pivot:overviewtab

With this extension, you can use Immersive Reader without an internet connection. Microsoft Immersive Reader is a free tool that supports literacy development for learners regardless of age or ability. Immersive Reader uses proven techniques to enhance:

- Reading comprehension
- Language learning
- Decoding for readers with dyslexia

Immersive Reader also powers Grammar Tools and Dictionary for Microsoft Edge.

Windows 10 version 16299.0 or higher

Immersive Reader, included in OneNote Learning Tools, is a full screen **reading** experience to increase readability of content in OneNote documents. ... For OneNote for **Windows 10**, Mac, or iPad, open OneNote, then select View > **Immersive Reader**.

TextAloud

We spent time with TextAloud demonstrating how it offers multi-modal reading and how its features can be configured to highlight each word, sentence or both. We explored some of the 100s of voice synthesizers available to use with it as well as discussed the pros and cons of the various options. We explored how the tool can be used for e-mail, web and word documents from within the native applications without the need to copy and paste text. We explained the demo process and the importance of testing various text to speech engines using your laptop and examples of your work to pick the best text to speech engine for your work and preferences.

More information about TextAloud can be found on the manufacturer's website: http://nextup.com/. We are able to loan the TextAloud software when you are added to your department's SLA with AAACT.

Document Conversion/OCR: Abbyy FineReader

Abbyy FineReader uses OCR to read non-text based documents, such as PDFs. It converts document scans into editable text that can be saved as Microsoft Word or Excel documents and read by other document readers, such as TextAloud. More information can be found on the Abbyy FineReader website: https://www.abbyy.com/en-ca/finereader/

Not all PDFs can be read with a document reader. This is due to the way the PDF was created. Some PDFs are based on scanned images to provide the text. The only way to be able to read them is to convert the scanned document to text.

Reading Printed Text

Closed Circuit Television/Video Magnifier

Closed Circuit Television (CCTV) or a Video Magnifier is an electronic magnifier that uses a camera and a screen to make text easier to read. The camera image will be magnified and the contrast can be increased, making it even easier to read. The time to consider a CCTV magnifier may begin when you need more than standard eyeglasses and possibly even require more than a traditional magnifying glass to see, read, and write with maximum available visibility. Features as simple as color viewing with a black and white contrast-viewing mode, or as advanced as computer connectivity, split screen monitor viewing, and multiple focus/magnification settings are available. Some CCTVs offer the ability to read documents out loud using built in OCR.

Hand-Held Magnifier

- Optelec - Pebble HD
  - https://ca.optelec.com/products/evpebble-pebble-hd.html
- Eschenbach - Visolux Digital HD
  - https://www.eschenbach.com/products/video-magnifiers-hand-held-visolux-digital.asp
- Humanware - Explorē 5 Handheld Electronic Magnifier
  - https://store.humanware.com/hca/explore-5-handheld-electronic-magnifier.html

Portable video magnifiers include:

- The Optelec Traveller HD
  - https://ca.optelec.com/products/traveller-hd.html#overview

Desktop CCTVs include:

- Clearview HD with Speech
  - https://ca.optelec.com/products/cvc-hd-ocr-22-eu-clearview-c-24-hd-speech.html

Feel free to contact us for more information.

OrCam

OrCam uses a camera mounted on eyeglass frames to help the visually impaired interact with their surroundings. OrCam's system can read newspapers, street signs and recognize common items and familiar faces, dictating text into the user's ear with just the point of a finger. The camera takes a picture of the text, runs it through Optical Character Recognition (OCR) and then uses text to speech technology, and reads the text aloud to the user.

The OrCam MyEye 2: https://www.orcam.com/en/myeye2/

Complex Technical Considerations

More complex technical solutions often require knowledge to use and greater knowledge to implement. If you require assistance with implementing the changes, your departmental service desk should be able to assist. Some technical solutions may require in depth knowledge and experience with adaptive technology. These issues can be addressed by AAACT during the intake and assessment phase after being added to the SLA.

Screen Enhancement Applications

The number 1 tool in use in the Public Service is **Dolphin SuperNova**, formerly known as Lunar. The Dolphin suite offers 3 products to help employees with progressive vision loss. The first application is Supernova Magnifier that offers colour replacement, focus highlights and screen magnification. Supernova Magnifier with Speech adds the ability to have Supernova read aloud interface elements or text. The third product, Supernova Reader Magnifier or Supernova Access Suite includes a full fledge screen reader allowing users to rely solely on speech when they choose to. Supernova is unique in that it allows users to use the same keyboard commands as the leading screen replacement technology known as Job Access with Speech or JAWS.

Dolphin Supernova: https://yourdolphin.com/products/all

Dolphin Supernova Demo: https://www.youtube.com/watch?v=oxBCapWFqmw

Technical Requirements for SuperNova

- Intel Core i5 processor (Intel Core i7 preferable)
- Windows 10 64-bit

- 8 GB of RAM (16 GB preferable)
- NVIDIA Quadro graphics card
- Solid state drive
- 10GB of free space
- Logitech programmable mouse or gaming mouse
- No pre Windows password authentication enabled on the laptop or desktop (e.g. BitLocker code or McAfee Full disk encryption) as the end user may not be able to read the information on the screen
- Headset if using speech options

Laptop Specific Requirements for Screen Enhancement

- If a docking station is desired, the laptop must come with a physical docking station or a Thunderbolt 3 docking station as USB docks are not supported by the software
  - Similarly, monitors must be connected directly to the laptop. Laptops connected through a USB dock are not supported
  - Thunderbolt 3 docking stations only support video passthrough in all departments, unless a change to the CDOE baseline security settings is made. This means that only monitors and power can be connected to the docking station. A USB hub should be purchased for employees in this case so that they have enough USB ports for multiple devices.
- Laptops should be secured by a lock that does not require vision such as the ACCO Brands, Kensington ClickSafe Cable Lock. Available on the notebook NMSO from Lenovo Canada
- When weight is not an issue, a full keyboard layout with numeric keypad is recommended
- There are very few laptops available on the standing offer with Quadro graphics or dedicated graphics. It is likely that the employee will be best served by a workstation class Ultrabook that has a Quadro graphics adapter. Some standard NMSO systems can be configured with GeForce graphics when special ordered. AAACT has seen better results with Quadro graphics versus GeForce. A technical exemption will be required to order any suitable computer through Shared Services. The AAACT Team will be happy to help with drafting this justification for any client, regardless of their status on the SLA.
- Computers AAACT has used in the past with success include:
  - Lenovo ThinkPad P53s (Category 3.0N) https://www.sscitpro-spcapproti2.com/product-p/HW-SO-N-3.0N-LEN.P53s.htm
  - Lenovo ThinkPad P1 2G Category 9.0N https://www.sscitpro-spcapproti2.com/product-p/HW-SO-N-9.0N-LEN.P12G.htm
  - HP Z-Studio X360 G6 i7 Category 9.0N https://www.sscitpro-spcapproti2.com/product-p/HW-SO-N-9.0N-HPC.Zstudi.htm

ZoomText

The competing product to Dolphin SuperNova is ZoomText, manufactured by Freedom Scientific. We do not recommend that users who are new to screen enhancement technology use ZoomText, as it is less stable and experiences more bugs and glitches than SuperNova does. However, if an employee is a long time user of ZoomText, we are happy to support their continued use of the software if they so choose. Please note that certain features may only be available on SuperNova, which may necessitate switching from ZoomText depending on the employee's condition.

Vision Replacement Technology

Vision Replacement Technology is used by individuals with some form of severe visual impairment, where the person no longer relies or never relied on their vision to consume information. The information is often presented in a different modality such as through Braille or a Text To Speech Engine. Microsoft's Windows, Windows Mobile, Linux, Blackberry OS, macOS, iOS, Google's Android and Chrome OS (among others) all have solutions for blind users that make use of screen reader software for a variety of devices.

Screen Readers attempt to identify and interpret what is being displayed on the screen. The information is then represented to the user with text-to-speech, sound, haptic icons or a Braille output device. The screen reader keeps track of events that happen (such as windows opening) and actions that are performed on a device with a physical keyboard, D-Pad, Trackball or joystick when movement is performed. On a device with a touch screen, it alters the way the touch screen behaves and provides touch based methods of interaction.

There is also Touch Exploration Technology, which allows a blind person to explore the screen with touch without activating the items on the screen. The screen reader can also provide feedback about screen items by providing audio or haptic alerts. It also provides spoken text as controls and information when touched. A set of additional gestures are provided to move around on the screen from item to item and to activate specific screen reader functions (such as reading a block of text).

There are few different tools in the marketplace such as JAWS, HAL/Dolphin Screen Reader, and Serotek System Access. The tool that AAACT recommends is the latest version of JAWS with a Software Maintenance Agreement in order to receive updates to the product going forward. This is critical, as GC computers running Windows 10 are receiving software updates on a quicker schedule, meaning that JAWS must be updated frequently to remain fully functional on an ongoing basis.

Using JAWS with Microsoft Teams and Office 365

It is critical that clients using JAWS and Teams install the most recent script files to enable JAWS or Fusion users the ability to interact with Microsoft Teams effectively. There may also be other script files available for other applications. Feel free to contact us should you have difficulty using JAWS with other applications.

Doug Lee Scripts

This script has worked wonders for a number of our JAWS and Fusion clients. It has provided a stabilising effect, meaning the user is no longer jumped from region to region without any notification to the user. It has helped immensely with the labeling of page elements for example, accurately describing the chats, reading the times messages were sent, reading any message out loud when they are received, among many other things.

There are also a number of other small bug fixes that the author of the script has listed on the script's website: https://www.dlee.org/teams/.

Kurzweil 3000

We generally do not recommend Kurzweil 3000 to new users. The technical requirements and restrictions and lack of integration of the software in the Windows environment are generally not a good fit for new users. We will support the use of Kurzweil 300 for users that have had extensive use with the software.

There are multiple types of learning disabilities, including dyslexia, ADHD, and memory retention. Individuals with these types of disabilities need a variety of technologies and techniques to assist them in day to day work and learning.   Kurzweil 3000 is designed to assist reading, comprehension, writing, and the ability to better structure and express ideas. **Please note that all features provided for by Kurzweil 3000 are only available in the Kurzweil 3000 screen**.

Kurzweil 3000 does this through a variety of features available. These include but are not limited to: built in text magnification, create MP3, identify and tag specific text with notes (both written and audio), word prediction, OCR, spell check, speech-to-text, change the background and text colour, and map ideas with Brainstorms and Graphic Organizers.

Other tools can do specific tasks that Kurzweil 3000 does but are able to be integrated with the Windows environment and the Office Suite which Kurzweil 3000 is unable to do.

Voice Recognition and Dragon Professional

We believe the other possible solutions such as WordQ will bring an immediate benefit without the additional learning curve associated with Dragon Professional. We are presenting information on DNS to inform you of DNS as a possible solution for you in case the current proposed solutions are not of sufficient benefit or your condition worsens in the future.

We briefly touched on Voice Recognition & Dragon Professional. With respect to Dragon Professional there is an extensive learning curve. In order to properly use the software, there is a minimum 90 hours required to simply build the basic vocabulary file and train the software to recognize the client's voice and speaking style.

In addition to the basic hours, there is a vocabulary building component that may be required, depending on the nature of the business the client is involved in. Needless to say, the required training is key and the employee would need to be prepared to spend a set allotment of time on a regular basis in order to develop a decent level of proficiency and accuracy with the software. The software can be used to control all aspects of the computer interface and can be tailored for specific job functions or tasks.

To get a quality experience with DNS, we recommend the purchase of a USB microphone. Wireless headsets are not recommended as a first microphone when just starting out with Dragon Professional. It is important that when initially learning Dragon Professional that the setup is as straight forward as possible in order to minimize problems and allow the emphasis to be placed on learning and training the system.

Headsets

A wired headset will yield the best experience, response time, performance and provide Dragon Professional with the highest quality audio information. These elements are necessary before evaluating wireless headsets with Dragon Professional. By doing this you will be able to judge and

select the proper headset (wired or wireless) and evaluate its performance and experience and be able to compare it to the experience you had with the recommended wired headset. One aspect of choosing a microphone headset is with a headband that has 1 or 2 ear pieces. There are also headsets that do not have a headband, but is positioned over the ear and behind the neck.

Wired headsets should connect to the computer via the USB port and if that option is not available for your selected headset it is critical to use a USB based sound card for optimal performance. We have had many unsuccessful attempts with using the built in microphone port on most laptops for voice recognition.

You can consult Nuance's website for their results with microphones:
http://support.nuance.com/compatibility/Search.asp?PRO=DNS&CID=12

You can also consult Nuance's website for their other compatible headsets (wired and unwired):
http://support.nuance.com/compatibility/default.asp

We would generally recommend a headset that has 6 dragons from the above list.

We have had great success with the Jabra, VXI, Plantronics and Sennheiser brands of headsets.

Headsets can be found from multiple vendors, and should be available from stationary suppliers as well as resellers of equipment from the Computer or Audio-Visual National Master Standing Offers. If you have difficulty finding one please contact us and we can let you know what suppliers have been used by other clients recently.

For user who needs to write in English and French we recommend to purchase the French version of Dragon Professional has the French comes when the capability to dictate an French and English. The English version will only offer to dictate in English.

Technical Requirements for Dragon

For voice recognition products such as Dragon Professional, a more powerful computer is required. You should make sure that any machine using Dragon has, at minimum, the following components:

- Intel Core i5 Processor (Intel Core i7 is preferable)
- 64-bit version of Windows 10
- 16 GB of RAM
- Solid state drive
- Mechanism to automatically back up voice profile (batch script to automatically back up to USB key, 2nd hard drive, or share drive space. Consult with your IT service desk for more information.)
- No pre Windows password authentication is enabled on the laptop or desktop (e.g. BitLocker code or McAfee Full disk encryption) as the end user may not be able to interact with the information on the screen
- Headset (see headset recommendations above)

Procurement

AAACT does not procure computer peripherals, software, or literature for its clients. AAACT can provide information on where items are available in the marketplace. We may also be able to provide generic procurement advice that we have obtained while helping clients in your or other departments.

It is the responsibility of the client, the client's management, and the department's procurement officers to acquire a quote from the appropriate vendor for any product you wish to purchase. In many situations, it is critical that specific requirements be met, but a multitude of options can meet those requirements in the marketplace. Where multiple options will adequately meet the needs of the employee, AAACT leaves it to the discretion of the client and their associated teams to decide which equipment to order. AAACT leaves it to the discretion of the client's department to decide what vendor to purchase equipment from, unless a specific guideline applies to a commodity from Treasury Board or Public Service and Procurement Canada. If further information is required, please feel free to contact us.

Loans

For clients added to their department's SLA with AAACT, loans of most equipment and software are available. Loans are generally given for a period of three to six weeks to determine suitability in accommodating an individual. This allows the employee time to try different methods of accommodation before having the department purchase tools that may not meet the individual or workplace's needs. Some tools available for loan include:

- Keyboards
- Mice
- Software tools (TextAloud, SuperNova, Dragon, etc.)
- Switches/macros

As a general rule, AAACT does not loan headsets, microphones, or furniture items to client departments. Other exceptions may apply. For more information on which tools are available for loan, please contact us.

Smartphones

Telephones/Smartphones and their accessories

Many of the tools and techniques we discussed for your workstation can also be applied to your smartphone as well. Settings present within the phone's operating system can enable high contrast themes, magnification, and multi-modal reading without having to install additional software. We are happy to help you configure these settings and demo these features during our first in person visit.

All smartphones in use in the government have pros and cons to their usability for persons with disabilities.

Dictation

The way dictation works on a smartphone is different than how it works on your computer. On a smartphone, the audio of you dictating to the device is sent to the cloud, processed by many different servers, and the corresponding text is returned to the phone. These servers can be located anywhere in the world, and would thus be subject to the laws of the countries that the audio passes through. Therefore, dictation is disabled by default on all GC smartphones, but can be enabled for certain individuals with disabilities depending on the device.

For Android devices, dictation functions by default on the personal side of the phone. However, it is disabled in the Workspace (which includes work email, calendar, etc.) and is unable to be enabled as of January 2019. SSC's mobile devices team is exploring solutions to enable this feature in the Workspace.

For iOS devices, dictation is disabled by default throughout the device, but **can** be enabled for certain individuals with disabilities upon approval of your department's IT Security group. You should also receive training on when it is inappropriate to use dictation on the device.

Screen Reader

Both Samsung and iPhone devices include screen readers in their operating system. The screen readers on both devices are comparable in features and functionality.

For Android devices, the screen reader currently functions as intended on the personal side and personal apps. It is currently not available in the Workspace (which includes work email, calendar, etc.) as of January 2019. SSC's mobile devices team is exploring solutions to enable this feature in the Workspace in the future.

For iOS devices, the screen reader works throughout the operating system due to the way the device is secured.

Hearing Loss/Impairment

Individuals who do not use assistive listening devices such as hearing aids or cochlear implants can benefit from using Samsung Galaxy devices as they have a hearing test available within the device. This feature, after the hearing test is completed by the user, will re-shape the audio output of the device to match the user's listening profile.

Hearing Aids

Bluetooth Adapters/Neck Loops

Individuals who have hearing aids that are not specifically designed for iOS devices or are comfortable using neck loops/Bluetooth adapters should get an iOS or high end Android device such as the Samsung Galaxy S series that meets their needs. Lower end devices may not offer audio customization features.

Bluetooth Transmitter/Receiver Adapter

A Bluetooth transmitter/receiver adapter is a device that assists users with hearing aids to optimize their auditory experience. It specifically supplements limitations with the users' or work place technologies:

- if the neck loop or plug-in unit used with your hearing aids or cochlear implants does not have a physical output connection, or
- the neck loop or plug-in unit does not include an adapter that can plug into a 3.5 mm audio port, or
- connecting directly via Bluetooth is not an option for security or technical reasons.

 A Bluetooth transmitter/receiver adapter can be used to assist in all of these situation. One Bluetooth transmitter/receiver adapter that we have used and often recommend is the Mpow Basic Bluetooth Transmitter and Receiver (https://www.xmpow.com/collections/wireless-receiver/products/mpow-bh283a-bluetooth-5-0-transmitter-and-receiver). The transmitter/receiver is paired to your Bluetooth-enabled neck loop device and is then plugged into a physical 3.5 mm stereo audio port on a Polycom, conference phone, computer, or other electronic device. Audio can then be transmitted more directly to the user, avoiding having to use the limited audio capabilities from standard office audio equipment.

Designed for iOS/MFi Compatible

There are many hearing aids in the marketplace that have the ability to connect directly to Bluetooth iOS devices without the use of a neck loop. These hearing aids use a variation on the Bluetooth 4.0 low power standard. As of January 2019, only iOS devices support this feature natively. There is talk in the industry of Google making it available in the Android operating system and on phones they build, such as the Pixel. For more information on how the technology works, please visit the blog post below from a major hearing aid manufacturer.

https://gnresoundblog.com/2014/06/17/mfi-hearing-aids/

External Assessment Options

AAACT can provide recommendations and advice on various workplace situation and technologies. There are other areas, however, were the AAACT team is unable or less qualified to provide information or advice. There are various areas outside of the Federal Government where more specific information and advice can be obtain to assist you with your challenges. The following information provided is NOT a recommendation from AAACT or an exhaustive list of services available in the community. This information is provided to you so that you are able to explore support and options outside of the government to better understand and deal with the challenges you are facing.

Note that current employee insurance or departments themselves can cover the costs associated with theses specialists.

Vestibular Rehabilitation

The vestibular system consists of the organs in the inner ear which detects head position and movement, as well as the parts of the brain that process that information. Our ability to perceive head movement, stay upright, and see clearly when in motion is dependent on the vestibular system.

Vestibular disorders can come from pathologies in any area of the complex vestibular system. Disorders can arise "out of the blue" or stem from factors such as trauma (car accidents, falls, etc.), inner ear infections, aging, medications, tumors or other brain-related issues, or as symptoms of other diseases/conditions.

Symptoms can include dizziness, vertigo, unsteadiness or falls, blurry vision while moving, motion sensitivity, and nausea or vomiting. It can also create other complications, like poor concentration, decreased activity, movement restriction, reclusiveness, anxiety, and depression.

It may be possible to treat issues with the vestibular system with Vestibular Rehabilitation. This therapy is a research-based approach where individualized techniques are used to help the brain compensate for problems in the vestibular system. This treatment also uses maneuvers that are done to correct mechanical dysfunctions in the vestibular part of the inner ear.

Vestibular Rehabilitation is an exercise based program with the goal of improving balance and reducing problems associated with dizziness, vertigo, motion sensitivity, imbalance, migraines etc. An assessment of balance, leg strength and flexibility, gait, visual stability, neck mobility and positional tests are completed after which the physiotherapist who is specifically trained in this area creates a program for the patient.

Occupational Therapy Assessment

An **Occupational Therapy assessment** is a process that usually involves an in-person meeting and a written report. The assessment evaluates how an individual is able to perform daily routines within all environments where they interact. Based on the findings of this assessment, interventions are suggested to enable the individual to perform all tasks as independently as his/her abilities allow. This will help an individual to achieve or maintain their maximum level of independence and to develop practical life skills so that they can participate to his/her full potential in the home and work environment.

Neuropsychological Assessment

A **Neuropsychological assessment** is a performance-based method to assess cognitive functioning. This method is used to examine the cognitive consequences of brain damage, brain disease, and severe cognitive impairment.

Neuropsychological tests evaluate functioning in a number of areas including: intelligence, executive functions (such as planning, abstraction, conceptualization), attention, memory, language, perception, sensorimotor functions, motivation, mood state and emotion, quality of life, and personality styles. The areas addressed in an individual's evaluation are determined by the referral question (what the referring doctor and individual wants to know), individual's complaints and symptoms, and observations made during interview and test administration.

There are three broad goals of neuropsychological assessment:

1. Determine the nature of any underlying problem,
2. Understand the nature of any brain injury or resulting cognitive problem and its impact on the individual, as a means of devising a rehabilitation program or offering advice as to an individual's ability to carry out a certain tasks (for example, fitness to drive, or returning to work),
3. Assessments may be undertaken to measure change in functioning over time, such as to determine the consequences of a surgical procedure or the impact of a rehabilitation programme over time.

Opticalm Visual Stress Clinic

The Opticalm Visual Stress Clinic was established in December 2015 and assists individuals with post-concussion vision issues, learning disabilities, migraines, and other neurological difficulties who suffer from light and pattern sensitivity, reading difficulties, vestibular issues, anxiety, and perceptual distortions.

The Opticalm Visual Stress clinic is an HCAI approved health care facility, licensed by the Financial Services Commission of Ontario (FSCO) to be a service provider for motor vehicle accident claimants. We have supplier arrangements with the Government of Canada, local school boards, and WSIB for workplace injury insurance.

Opticalm offers a variety of products, such as custom filter solutions and services that can increase tolerance of the visual environment, increase ability to read, reduce vestibular issues, and improved visual perception leading to reduced anxiety in public spaces or when driving.

More information can be found at: https://www.opticalm.ca/

Inclusive Workplaces and Meetings

Changes to the team environment, including team meeting can be of use to you but also have a beneficial effect on your co-workers as well. The Guide to inclusive meetings provides the information required to conduct more inclusive meetings.

https://www.canada.ca/en/employment-social-development/programs/disability/arc/inclusive-meetings.html

Implementation Planning and Next Steps

1. Review this material and provide feedback to AAACT
2. Try out the Immediate Implementation Options and Low Technical Considerations provided in the document above
3. Purchase and implement simple equipment such as monitor arms
4. Due to the complex requirements of any software solution this employee will make use of, we recommend consulting with your IT department/Service Desk to look at replacing the individual's current laptop with one that meets the specifications in Annex A.
5. Consult with your department's Facilities/Accommodations/Workspace services team to implement lighting/desk/other workspace changes
6. Work with Furniture Suppliers or Facilities/Accommodations/Workspace services team to try new chairs or desks.

7. Due to the complex nature of the employee's needs, it is AAACT's opinion that the employee should be added to your department's SLA with AAACT. Management should contact PRIMARY CONTACT to request that the employee be placed on the department's SLA with AAACT.
8. Due to the complex nature of the employee's needs and training requirements for Dragon Professional, it is AAACT's opinion that the employee should be added to your department's SLA with AAACT. Management should contact PRIMARY CONTACT to request that the employee be placed on the department's SLA with AAACT.
9. Should further involvement from AAACT be desired, management should contact PRIMARY CONTACT to request that the employee be placed on the department's SLA with AAACT.
10. The employee should have their manager send an email to AAACT so that the employee can receive further service from us such as being loaned technology and software. There is no additional cost for SSC employees.
11. Due to the complex nature of the employee's needs, it is AAACT's opinion that the employee should be added to a departmental Service Level Agreement (SLA) with AAACT. Presently, ACOA does not have a SLA with AAACT. Our Service Level Agreement (SLA) is available to departments and for individuals. We have departmental SLAs signed with the majority of GC departments and some agencies/crown corporations. There are 2 initial steps in setting this up. First, requesting the SLA package from us at aaact@ssc-spc.gc.ca and, 2nd, identifying the primary contact for the SLA. The primary contact usually sits in the HR unit of a department and helps identify areas/stakeholders that need to be involved with us. You can request the SLA package from the AAACT email address. Should you wish to pursue this further we recommend a call with our Manager (Jeffrey Stark) to discuss further.

We trust that you found that your time was well spent on this InfoSession, and we are happy to assist you going forward as needed. Should you have any further questions on this subject, please do not hesitate to contact us at aaact-aatia@ssc-spc.gc.ca. Please note that we likely cannot answer any procedural questions on your internal acquisition procedures, but will gladly address any accessibility or accommodation question you may have.

The information contained in this InfoSession Summary are not recommendations. They are the information and similar technologies covered during the session. You do not need to consult with AAACT if you decide that some of the things covered during the InfoSession would assist you and that they could be readily implemented. If you require our assistance to further explore solutions and obtain recommendations, you will need to be added to your Departmental Service Level Agreement (SLA). Please note that no matter how you proceed, you will need to be aware on how the implemented solutions are impacting you. If at any time while using the solutions, current or new, you experience discomfort or pain, stop the activity immediately and consult your medical/licenced professionals and the AAACT team. AAACT will work with you and your medical/licenced professional to determine different solutions that will not aggravate your condition or cause new ones.

Annex A – Computing Requirements

General Requirements for Users of Adaptive Technology

As a general rule, adaptive computer technology requires more resources to run. To help mitigate any issues, we recommend you work with your IT department/Service Desk to make sure your system meets the minimum requirements below.

- Intel Core i5 Processor minimum
- 64-bit version of Windows 10
- 8 GB of RAM
- When possible, upgrade to a solid state drive

If a new computer is in the works you should make sure it can do the following:

- At least 8 GB of RAM (16 GB is preferable)
- Intel Core i5 or better
- Solid state drive
- 64-bit version of Windows 10
- Office 2013 (Office 365 or 2016 is preferable)
- Weight should be considered. We recommend laptops under 2.3 kg (5 pounds). For clients with physical injuries, laptops closer to 1.4 kg (3 pounds) are preferable.
- For individuals using screen replacement software (JAWS), they may prefer to have a full keyboard with a numeric keypad.

Technical Requirements for Screen Enhancement

- Intel Core i5 processor (Intel Core i7 preferable)
- Windows 10 64-bit
- 8 GB of RAM (16 GB preferable)
- NVIDIA Quadro graphics card
- Solid state drive
- 10GB of free space
- Logitech programmable mouse or gaming mouse
- No pre Windows password authentication enabled on the laptop or desktop (e.g. BitLocker code or McAfee Full disk encryption) as the end user may not be able to read the information on the screen
- Headset if using speech options

Laptop Specific Requirements for Screen Enhancement

- If a docking station is desired, the laptop must come with a physical docking station or a Thunderbolt 3 docking station as USB docks are not supported by the software
  - Similarly, monitors must be connected directly to the laptop. Laptops connected through a USB dock are not supported

- Thunderbolt 3 docking stations only support video passthrough in all departments, unless a change to the CDOE baseline security settings is made. This means that only monitors and power can be connected to the docking station. A USB hub should be purchased for employees in this case so that they have enough USB ports for multiple devices.
- Laptops should be secured by a lock that does not require vision such as the ACCO Brands, Kensington ClickSafe Cable Lock. Available on the notebook NMSO from Lenovo Canada
- When weight is not an issue, a full keyboard layout with numeric keypad is recommended
- There are very few laptops available on the standing offer with Quadro graphics or dedicated graphics. It is likely that the employee will be best served by a workstation class Ultrabook that has a Quadro graphics adapter. Some standard NMSO systems can be configured with GeForce graphics when special ordered. AAACT has seen better results with Quadro graphics versus GeForce. A technical exemption will be required to order any suitable computer through Shared Services. The AAACT Team will be happy to help with drafting this justification for any client, regardless of their status on the SLA.
- Please contact AAACT for a list of systems on the NMSO with Quadro Graphics Card.

Technical Requirements for Individuals with Mobility/Dexterity Challenges

Individuals in this category benefit from the lightest possible system that meets their preferences. Tablets may be a good option in this case. Your IT department/Service Desk should be able to recommend a system with the above requirements that weighs close to 1.5 kg, possibly less.

The workstation should be configured without pre-Windows password authentication is enabled on the laptop or desktop (e.g. BitLocker code or McAfee Full disk encryption) as the end user may not be able to interact with the information on the screen.

Technical Requirements for Dragon

For voice recognition products such as Dragon Professional, a more powerful computer is required. You should make sure that any machine using Dragon has, at minimum, the following components:

- Intel Core i5 Processor (Intel Core i7 is preferable)
- 64-bit version of Windows 10
- 16 GB of RAM
- Solid state drive
- Mechanism to automatically back up voice profile (batch script to automatically back up to USB key, 2nd hard drive, or share drive space. Consult with your IT Service Desk for more information.)
- Headset (see headset recommendations above)

Annex B – Keyboard Shortcuts

Below are the links to the Keyboard Shortcuts for some of the most popular tools in use by the Government of Canada.

Microsoft Operating Systems

General Keyboard Shortcuts for Microsoft Windows (Applies to all versions)

https://support.microsoft.com/en-us/help/126449/keyboard-shortcuts-for-windows

Keyboard Shortcuts for Microsoft Windows

NOTE: Be sure to select the correct version of Windows from the drop down list at the top of the page.

https://support.microsoft.com/en-ca/help/12445/windows-keyboard-shortcuts

Keyboard Shortcuts for Windows Accessibility Features:

NOTE: Be sure to select the correct version of Windows from the drop down list at the top of the page.

https://support.microsoft.com/en-ca/help/13810/windows-keyboard-shortcuts-accessibility

Keyboard Shortcuts for Microsoft Applications included with Windows

NOTE: The support article only covers Windows 8.1 and Windows 10; however, many of the shortcuts will work with older versions such as Windows 7.

https://support.microsoft.com/en-ca/help/13805

Keyboard Shortcuts for Internet Explorer 11

https://support.microsoft.com/en-us/help/15357/windows-internet-explorer-11-keyboard-shortcuts

Microsoft Office

For all the Knowledge Base articles for Microsoft Office, it's important to select the version of Office you are currently using as some Shortcuts only apply to certain versions.

The selection can be made near the top of the article.

Word

https://support.office.com/en-us/article/Keyboard-shortcuts-for-Microsoft-Word-on-Windows-95EF89DD-7142-4B50-AFB2-F762F663CEB2

Excel

https://support.office.com/en-us/article/Excel-keyboard-shortcuts-and-function-keys-for-Windows-1798d9d5-842a-42b8-9c99-9b7213f0040f

Outlook

https://support.office.com/en-us/article/keyboard-shortcuts-for-outlook-3cdeb221-7ae5-4c1d-8c1d-9e63216c1efd

PowerPoint

PowerPoint 2013 & 2016 https://support.office.com/en-US/article/Use-keyboard-shortcuts-to-create-your-presentation-EBB3D20E-DCD4-444F-A38E-BB5C5ED180F4

OneNote

OneNote 2013 https://support.office.com/en-US/article/Keyboard-shortcuts-in-OneNote-2013-65DC79FA-DE36-4CA0-9A6E-DFE7F3452FF8

OneNote 2016 https://support.office.com/en-US/article/Keyboard-shortcuts-in-OneNote-2016-for-Windows-44b8b3f4-c274-4bcc-a089-e80fdcc87950

Teams

https://support.office.com/en-us/article/keyboard-shortcuts-for-microsoft-teams-2e8e2a70-e8d8-4a19-949b-4c36dd5292d2

Skype for Business / Office Communicator / Microsoft Link

https://support.office.com/en-us/article/Keyboard-shortcuts-in-Skype-for-Business-42ff538f-67f2-4752-afe8-7169c207f659?ui=en-US&rs=en-US&ad=US

Other Applications

Mozilla Firefox

https://support.mozilla.org/en-US/kb/keyboard-shortcuts-perform-firefox-tasks-quickly?redirectlocale=en-US&redirectslug=Keyboard+shortcuts

Adobe Reader & Adobe Acrobat

https://helpx.adobe.com/acrobat/using/keyboard-shortcuts.html

Annex C – Jeff's, Guy's and Michel's Input

The following links have been provided for Jeff, Guy and Michel to either review what has been written or write or make notes/suggestions for what still needs to be written. The links are in the same order they are in the documents and use the names of the

Read through/verify what has been written

Vision Disabilities

Light Sensitivity

Low Vision

Teleworking

Vision Replacement Technology

Things that still need to be written

Typical vision Loss (Aging)

Clarity (Mild/Medium/Severe)

Field of vision (Mild/Medium/Severe)

No Vision

Screen Magnification Techniques

Screen Reader Techniques

Braille

The last link is for Kurzweil 3000. We have nothing there and I was wondering if we just need a general statement that we don't normally recommend its use but we will support it if the client is a long time user.

Kurzweil 3000