PRESTO System
Accessibility Framework

May 2010
**Introduction**

PRESTO has taken a proactive approach to providing accessibility in the design and implementation of the PRESTO System which is demonstrated in a number of areas:

- PRESTO has brought together an ad hoc Accessibility Advisory Group to provide input on a variety of accessibility issues;

- Used best practices of leading organizations including the Canadian Standards Association and the Americans with Disabilities Act for device design and placement in the absence of legislated AODA standards for accessibility of fare equipment;

- Implemented Audible “sound bites” that indicate successful or unsuccessful completion of a fare transaction in consultation with members of the Accessibility Advisory Group and the Canadian Hearing Society;

- Produced, American Sign Language videos and placed them on the PRESTO website to provide information to the hearing impaired about the use of the PRESTO System;

- Implemented the www.prestocard.ca website to meet WACG 1.0 guidelines, which was the current standard when the website was designed. As these guidelines evolve, the website will be evaluated for enhancement;

- Engaging the accessibility community on the use of PRESTO in the real transit environment;

- Planning ongoing improvements in light of customer and transit operator feedback, and regulatory changes.

The PRESTO program approach is designed to allow transit customers with disabilities to be self-reliant and able to use the transit e-fare payment system at their own convenience with independence and dignity. To this end, PRESTO is committed to continued improvement to its e-fare payment system so fare payment is accessible and inclusive for all Ontarians and visitors to the province (including persons with disabilities).
The purpose of the PRESTO Accessibility Framework is to provide a basic structure to address any accessibility issues and describe the measures that have been taken to identify, remove and prevent barriers to persons with disabilities under the PRESTO e-fare program, and identify areas for future improvements.

**PRESTO and Service Provider Commitment**

PRESTO and its partners are committed to continued improvement to the PRESTO e-fare payment system so fare payment is accessible and inclusive for all Ontarians and visitors to the province (including persons with disabilities).

Ontario is making progress toward building an accessible province by 2025. The Ontarians with Disabilities Act, 2001 and the Accessibility for Ontarians with Disabilities Act (AODA), 2005 have laid the foundation to meet this goal. Under the various Acts, Ontario is moving to develop a range of standards that will remove the barriers faced by persons with disabilities.

PRESTO and its Transit Agency Partners are cognizant of the 2005 AODA requirement for Ministries to have regard to accessibility for persons with disabilities. The current AODA proposed accessible transportation standard requires fare media to be “generally” accessible.

Unlike Transit Agency Partners within the Greater Toronto-Hamilton Area, the City of Ottawa is federally regulated in regards to accessibility. As a result, PRESTO will monitor federal legislation, policy and standards that would apply to OC Transpo in Ottawa and ensure the standards and requirements are adhered to, be it the Province’s AODA or federal regulations.

The PRESTO System interacts with customers through the call centre/IVR, website and card reader devices. Participating Service Providers are responsible for providing in-person customer service to PRESTO System users, including persons with disabilities. Efforts to ensure accessibility commitments are met must be a collaborative effort.

To implement this direction, the PRESTO System and Transit Partners are committed to the following:
• Implementing approved government requirements based on the Ontario Accessibility Standards Development Committees responsible for identifying accessibility standards. These provisions are related to policies, practices, procedures, timelines, technical standards, etc.

• Providing appropriate training to PRESTO System employees who are responsible for interacting with the public and persons with disabilities as well as employees who participate in developing policies, practices and procedures governing the provision of accessible services.

• In collaboration with various stakeholders, developing and implementing a process to inform customers of the range of PRESTO accessible services and to include information on alternative and/or interim solutions when these services are temporarily unavailable.

• Developing and implementing a PRESTO feedback process on how services are provided to persons with disabilities. This includes making information about the feedback process readily available to the public.
PRESTO Activities Completed

The PRESTO has undertaken a number of activities to ensure the PRESTO e-fare system accommodates persons with disabilities and their related accessibility requirements. The activities listed below represent the work completed to date.

Experience and Expertise

PRESTO Accessibility Advisory Group

The PRESTO Project Office established an external ‘advisory’ group to assist in ensuring the PRESTO System is accessible to persons with disabilities. The PRESTO Accessibility Advisory Group is made up of representatives from Municipal/Regional Transit Agencies who are directly involved in accessibility issues (eg. ParaTransit) as well as individuals representing various accessibility organizations, such as:

- The Canadian Hearing Society
- Ethno-Racial People with Disabilities Coalition of Ontario
- March of Dimes
- Ontario Association of the Deaf
- Learning Disabilities Association of Ontario
- Community Living of Ontario

The various group members have experience and involvement with public and private sector advisory boards and understand the needs of individuals with various disabilities. This Advisory Group has already provided valuable input through its review of and comment on the components of the PRESTO System (eg. devices, graphic representation, functional application, device visual and sound development, etc). The Advisory Group’s input has been very useful in verifying and supporting the usability and overall accessibility of the various PRESTO System devices.
Accessibility Consultants

As part of PRESTO’s development, the services of an accessibility consultant was retained to review and make recommendations on a variety of accessibility items (public website design/functionality, device “graphics” and “sound bites”, man-machine interface device messaging, ASL Videos, etc) designed to meet the needs of persons with disabilities. Findings and recommendations have been built into the Framework.

Devices and Installation

Currently, there is no AODA standard on the design, height or location of fare media devices. PRESTO was able to draw on the standards set by leading organizations including:

- The Americans with Disabilities Act,
- Canadian Standards Association Accessible Design for Self-Service Devices and Automated Bank Machines
- City of Toronto’s Accessibility Design Guidelines for Ticketing Machines, Card Access Systems & Security Systems and ATM’s/Bank Machines
- The experiences of Trans Link System’s OV-chipkaart in the Netherlands and the developing Rejsekort System in Denmark, both clients of Accenture and Thales, were used in the system design as well.

Recommendations drawn from these organizations concerning device placement and positioning in stations have been incorporated into the PRESTO Device Installation Guidelines. The PRESTO Device Installation Guidelines provide technical teams with the guidelines to ensure device arrangements are generally accessible and usable.
Customer Communications

PRESTO Website

The new PRESTO website was launched in conjunction with Stage 1 on November 30th, 2009, and has been designed to meet Web Content Accessibility Guidelines (WCAG) level 1.0. WCAG are part of a series of web accessibility guidelines published by the World Wide Web Consortium’s ‘Web Accessibility Initiative’. They consist of a set of guidelines on making content accessible, primarily for persons with disabilities, but also to address the needs of all users. Web accessibility involves removing barriers for a wide range of disabilities, including visual, auditory, physical, speech, cognitive, language, learning, and neurological disabilities.

WCAG includes a variety of guidelines or general principles of accessible design which need to be adhered to. The PRESTO Website has been built to meet these guidelines, and in addition work has been undertaken to add features to enhance overall accessibility, such as American Sign Language (ASL) videos.

WCAG 2.0 was published as a recommendation by the World Wide Web Consortium on December 11, 2008. WCAG 2.0 defines how to make web content more accessible to people with disabilities. With the on-going development of the website and with PRESTO’s overall evolution, PRESTO will work to migrate from the WCAG 1.0 to the WCAG 2.0.

American Sign Language Videos

PRESTO has developed a series of American Sign Language (ASL) videos for customers that are hearing impaired or deaf. It is important to recognize that ASL is frequently the first language of many people in this passenger segment. A hearing impaired passenger can obtain information from the website in order to use the PRESTO Farecard System as seamlessly as any other passenger.

ASL videos will enhance accessibility of the website, making it fully accessible to the hearing impaired. The videos deliver relevant information to PRESTO customers via an ASL interpreter, a video narrator and through closed-captioning. The videos will introduce the PRESTO System and provide instruction on how to obtain, register and load the e-fare card. In total 16 videos were produced, eight each in English and in French on the following subjects:
- PRESTO Introduction
- How to purchase your PRESTO card?
- How and why to register your PRESTO card?
- How to activate your PRESTO card?
- How to load value onto your PRESTO card?
- How to use your PRESTO card to make a fare payment?
- How to log-in to the PRESTO website and manage your account?
- How to contact PRESTO?

The advantage of using ASL is that it is a standardized format throughout North America. ASL is widely used in Canada, not only by people who are hearing impaired, but also by educators, interpreters for the deaf, people with hearing who have deaf friends or relatives, and students who have studied ASL in high school or college. PRESTO is opening the doors to interact with a much broader community of people, laying the foundation for an open and comprehensive forum for communication.

**System Operations**

**Device Sound Bites**

PRESTO devices will communicate with customers through an on-screen Man-Machine Interface (MMI), a lighting system and sound bites. The sound bites, along with the MMI and supporting lighting system, will indicate a successful or unsuccessful transaction. The sound bites assist customers in determining the state of their transaction and convey a sound to reflect a successful or unsuccessful tap of the PRESTO card. PRESTO needed to develop a set of sound bites that was short yet able to convey a clear and distinctive positive or negative tone for a live transit environment for all customers but in particular for customers with visual impairments.
The sound bites to be used on a variety of card reader devices were chosen through a lengthy process. A sound studio was hired to develop an initial 14 "Families of Sounds". The PRESTO Marketing and Communications Subcommittee, comprised of representatives from the 10 transit agency partners, pared the 14 families down to 6 “Families of Sounds”. PRESTO staff proceeded to conduct testing with participating Service Provider operational staff and reduced the sound bites to 3 families. In addition, a series of onsite transit environmental sound impact assessments were conducted resulting in improvements to sound bite strength, intensity, and clarity within the confines of device speaker capability (67 decibel level).

The PRESTO Accessibility Advisory Group reviewed the final three families which resulted in a single “Family of Sounds” through a mix/matching of sound bites which was subsequently reviewed by the Canadian Hearing Society, confirming the effectiveness of the sound bite selections. The sound bites are to be reviewed regarding their overall usability once the e-fare system has launched and customers are able to interact with PRESTO devices in multiple live environments.

**Accessibility Testing**

Conducting accessibility testing and satisfying the policies outlined within the AODA is very important to the overall success of the PRESTO System. PRESTO has worked with Accenture, the PRESTO System integrator, to better define and ensure delivery of accessibility requirements. Over the course of PRESTO’s development the Accessibility Advisory Group and accessibility consultants have been involved to ensure the PRESTO System will be usable and meet the initial needs of individuals with various impairments, such as:

- Multiple physical or sensory impairments
- Visual impairment
- Hearing impairment
- Cognitive limitations
- Mobility aid restrictions
The PRESTO Accessibility Advisory Group, and guests from organizations representing persons with disabilities within the Greater Toronto and Hamilton Area (GTHA), were invited to review and test the new PRESTO System device hardware (June 2008) and software (April 2009). These are the devices and systems to be installed in buses, stations and stops that will be widely used by the general public.

Participants tested the draft PRESTO software for the following devices:

- GO Station Tap-on Device (GO Station Fare Transaction Processor)
- TTC Station Tap-on Device (TTC Station Fare Transaction Processor)
- Check Balance Device (Card Query Device)
- Driver Control Unit (DCU)
- Bus Tap-on Device (Municipal Service Provider - Bus Fare Transaction Processor)

An accessibility consultant facilitated the various sessions and guided participants through the testing process and recorded reactions and comments. The feedback received and issues identified in the Accessibility Framework are specific to limitations faced by customers with disabilities.

PRESTO has been able to take the feedback received from the testing sessions to slightly modify the PRESTO System for Stage 1 deployment. Currently, PRESTO is exploring options to address some of the issues and concerns that could not be addressed for the initial launch in November 2009.

**Testing: PRESTO System Modifications**

After reviewing the comments from the Accessibility Advisory Group, it was determined that high priority changes would be made to the PRESTO software for the initial system launch. Most of the adjustments were regarding the man-machine interface (device messaging), the need to confirm device placement in stations, and improving customer education through effective accessible marketing and communications materials.
Using the input from the Accessibility Advisory Group, PRESTO prioritized the activities to respond to comments. Prioritization was largely based on whether changes could be made within current contract commitments. These items were separated and the required adjustments were made for rollout. Some of the suggested changes will be explored for next-generation PRESTO devices. These potential adjustments could not be made at this juncture due to the pre-project schedule. PRESTO will begin the development process for next-generation devices once system implementation is completed in the GTHA and Ottawa, likely sometime after 2011.

Some suggested changes will be deferred until further feedback is provided for supporting the change once PRESTO has gone live. For example, several comments were made regarding sound bites. The sound bites will be reviewed for their overall effectiveness once the e-fare system has launched and customers are able to interact with PRESTO devices in the live environment.

PRESTO also recognizes the need for customer education and clear communications to customers on how to use the devices, card and system overall. To summarize, PRESTO will be focusing on changes that can be implemented for the initial launch while the remaining suggestions related to devices, software and overall usability will be addressed as PRESTO continues its evolution.
PRESTO Strategy

The Province has adopted the overall principle that Ontario be "barrier free" and inclusive to all, including persons with disabilities. The Accessibility for Ontarians with Disabilities Act, 2005, makes Ontario the first jurisdiction in Canada to develop, implement and enforce mandatory accessibility standards which apply to both the private and public sectors.

Established accessibility standards are becoming better known such as:

- Americans with Disabilities Act (ADA)
- UK Disability Discrimination Act (DDA)
- US Section 508 (Accessible electronic and information technology)
- W3C Web Content Accessibility Guidelines (WCAG)

PRESTO, the provincial e-fare system, has made significant progress towards ensuring the PRESTO System is accessible to persons with disabilities and complies overall with the AODA direction. However, PRESTO also recognizes additional work and continual development is required to meet its overall commitment. Going forward, PRESTO as an operation will be responsible for meeting AODA requirements with respect to Customer Service and Communication (ex. PRESTO website and call centre). All other aspects of accessibility such as device design, placement, and installation, as well as customer service locations require direct Service Provider involvement.

As a result, PRESTO has developed a strategy to address outstanding accessibility issues. The strategy has five objectives:

- Ensure accessibility is a Service Provider driven initiative
- Ensure PRESTO meets broader AODA policy mandate
- Ensure PRESTO System general usability for persons with disabilities
- Continually engage the accessibility community in PRESTO’s development
- Be proactive and encourage constant user feedback
Engaging Persons with Disabilities and Service Providers

PRESTO has polled the ad hoc external advisory group to assist with accessibility issues, however, it is important to receive feedback from persons with disabilities that are active users of the system. PRESTO will reach out to the Accessibility Advisory Committees of each Service Provider to encourage feedback from actual users of the system with a variety of disabilities.

PRESTO will take a proactive approach and engage individual and groups representing persons with disabilities in the evolution of the e-fare system and in any future development.

As a result of this engagement, PRESTO will collect information and bring recommendations on accessibility issues to the Steering Committee.

Outstanding Accessibility Issues

Currently, the PRESTO System software and devices are locked-down for manufacturing, implementation and deployment for PRESTO Stages 1 through 3. It is important to recognize some feedback received from the Accessibility Testing was not able to be tested and/or put into action in the initial stages as the device and software designs were largely complete. Also, it is important to state that all feedback received will not necessarily result in system changes. The PRESTO System must balance not only Accessibility requirements, but Privacy requirements, system usability and overall customer service. The following issues will be reviewed in the future, in addition to issues identified during PRESTO’s deployment:

- **Device Design**
  - Suggestion for greater contrast of tap-on/off area from the rest of the device so it is easier to locate for the visually impaired
  - “Correction” and “Override” buttons on station tap-on/off devices should be more identifiable for the visually impaired
  - Balance Checker (CQD) should have greater visual differentiation from station tap-on/off devices (currently, they look and feel very similar)
A PRESTO device refresh or redesign can be accommodated in the next-generation devices, likely to occur after implementation and full deployment of the PRESTO e-fare system in the GTHA and Ottawa, likely after 2011. Due to the rapid change in technology and the uncertainty in the evolution of payment media for e-fare systems (Pay-Pass tags/Cards, Mobile Phones), next-generation PRESTO devices may be significantly different in design, technology and usability.

- **Man-Machine Interface (MMI)**
  - Enhance font size for those with visual impairments

PRESTO is using a text size (i.e. display font size) for all customer displays of a minimum of 7.5mm in height based on the upper case letter “I”. Text size larger than 7.5mm is recommended where it can be appropriately accommodated. The text is a sans serif font with highly contrasting colour compared to the background which is consistent with the requirements of the City of Toronto’s Accessibility Design Guidelines. Adjusting Man-Machine Interface (MMI) is largely subject to changes to software. However, enhancing font sizes requires changes to software but also a significant redesign of PRESTO device screen displays. As a result, enhancing font sizes is not scheduled for the short term and is also likely to occur after PRESTO’s GTHA and Ottawa deployment.

- **Physical Location of Devices**
  - Devices should be installed in a manner which allows persons with a visual disability to locate the device but without being a hazard to their movement, or when installed on buses, blocks the driver’s view.
  - The height of the devices may be an issue for persons with a mobility device (i.e. wheelchairs and scooters). CSA Standards for self-payment devices are being used to establish the height of devices.

- **Audio Sound Bites**
  - Ensure sound bites are adequately distinct in live-environment
  - Volume at acceptable levels in the live environment
Both ‘Sound Bites’ and the ‘Physical Location of Devices’ will be reviewed once PRESTO is deployed and feedback can be received by users in the live environment. PRESTO device sound bites were developed in a thorough and lengthy process and ‘Installation Guidelines’ have been established to direct technical teams in the placement and installation of devices. As a result, significant usability issues are not anticipated. However, PRESTO will gather additional feedback and review the overall usability of the devices for persons with disabilities. Given the broad range of users, including persons with disabilities, it will be challenging to find a solution that meets everyone’s needs.

**Para Transit Application**

The policies outlined within the AODA require that public transportation providers administer the same fare media options to all passengers, or ‘equivalent’ alternative options to ParaTransit customers. ParaTransit services have unique characteristics which differentiate them from conventional public transit services, particularly the use of contracted services such as taxis and vans from Service Providers. The PRESTO System design envisioned developing a Para Transit solution for rollout after deployment to conventional transit. The solution will be designed to meet accessibility standards and be compliant with applicable AODA guidelines. PRESTO completed work on potential options for a common ‘core’ program solution. The solution options require a thorough review and are not ‘locked-down’.

Business requirements were gathered from all participating ParaTransit SPs. A provincial ParaTransit solution assessment was initiated to help determine the core solution to be offered to all ParaTransit SPs. The main objective of the exercise was to evaluate and recommend options for implementing a PRESTO ParaTransit solution. Key guidelines framing the efforts include:

- Ensuring compliance with AODA direction, such as providing the same fare media options to all passengers and proving alternative options where fare media is not yet accessible.
• Provide equivalent service, from a customer perspective, for:
  
  - Utilizing the PRESTO card on participating ParaTransit and conventional transit services as a means of payment that can replace cash, tickets, paper passes and transfers.
  
  - Utilizing existing and future PRESTO features such as:
    
    o Registration benefits;
    
    o Auto-load, Auto-Renew;
    
    o Service provided across multiple channels (Web, Call Centre, TPT, SPOS);
    
    o Additional payment media

• Allow application of the PRESTO card across the ParaTransit service including:
  
  - SP-operated services
  
  - Contracted services including taxis

The main challenge to date has been finding an economically and operationally acceptable means of extending the PRESTO solution to contracted Para Transit services. Upon development of final solution options and a recommended approach, the recommended approach will then be reviewed with the PRESTO Accessibility Advisory Group to obtain their feedback before proceeding to development. Once a solution is approved, an implementation plan will be determined for a deployment in conjunction with the ongoing PRESTO System launch schedule.
**Moving Forward**

PRESTO has made significant progress to ensure the overall usability of the e-fare system for persons with disabilities. However, further work is still to be completed to enhance the accessibility of the system. Due to the complexity of the system, a phased approach will be undertaken, and outstanding and evolving accessibility issues will be identified and addressed by:

- Reviewing and updating the Accessibility Framework, at a minimum, once a year.

- Engaging Service Provider Accessibility Advisory Groups to educate them about PRESTO and to seek advice on usability of the PRESTO system by customers with a variety of disabilities;

- Engaging Service Provider Accessibility Advisory Groups for accessibility human factors testing on the devices designed specifically for use within their service area;

- Monitoring AODA guidelines as they evolve and respond appropriately;

- Ensuring accessibility is incorporated in design of new devices such as the Self Service Device currently under discussion;

- Post 2012 System Device Software Review: Take this opportunity to make appropriate adjustments to PRESTO System to accommodate the needs of the accessibility community based on experience using the live system. Focus will be on software upgrades, adjustments and implementation; and

- Post 2012 Device Refresh/Redesign: During the design process of next-generation PRESTO devices, place continual focus on the needs of customers with impairments and disabilities. Input from the PRESTO Accessibility Working Group will be taken into account for next-generation PRESTO devices.