Canadian Transportation Agency

Office des transports du Canada

Implementation Guide Regarding Automated Self-Service Kiosks

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Introduction

This implementation guide provides information for carriers and terminal operators on automated self-service kiosks to assist them in ensuring that their automated self-service kiosks are accessible, thereby meeting the objective of section 1.3 of the Communication Code, which is to ensure that carriers and terminal operators provide automated self-service kiosks that offer independent access to travel-related services for persons with disabilities.

This implementation guide is organized in terms of hardware and software standards for self-service kiosk accessibility. These standards apply in respect of kiosks used for ticketing, check-in and choosing travel-related amenities such as seating and meal upgrades and Internet access. See the section on "Other Self-Service Kiosks" for information applicable to automated self-service kiosks used for such things as parking and the provision of travel-related information (e.g. regarding hotels and ground transportation).

Note: Provision/section numbers in B651.2-07 are shown in brackets for ease of cross-referencing this implementation guide to the CSA standard.

Hardware standards

General

Height of controls (5.1.2)

The centerline of operating controls or input and output components should be located 400 mm (40 cm) to 1200 mm (120 cm) from the floor.

Note: The range identified in this section describes the upper and lower limits that a seated user can reach when facing a device without being obstructed. Where an object needs to be grasped and then removed from a component (e.g. a boarding pass), the centerline of the component should be located between 400 mm (40 cm) and 1200 mm (120 cm) from the floor. This is particularly important when the characteristics of the object (e.g., weight, size and temperature) can affect its safe retrieval. Locating components within this range also allows users to reach over obstructions up to 500 mm (50 cm) deep to grasp controls or objects.

Biometrics[1] (5.1.3)

An accessible self-service kiosk that incorporates biometrics should provide a second (preferably non-biometric) identification method for its use.

Displays

Position of monitors (5.3.1)

Monitors should be positioned to:

a. be free from obstructions above or around the screen;
b. be viewable from standing and seated positions (including persons seated in wheelchairs);
c. provide sufficient brightness to overcome ambient conditions; and
d. minimize glare and reflections.

Touch screen displays (5.3.2)

A device that incorporates a touch screen should enable activation of audio instructions for using the device through:

a. touching an area on the screen that is adjacent to a tactile identifier on the bezel surround (an outside frame surrounding the glass or plastic display); or
b. insertion of an audio jack into a receptacle adjacent to the screen.

Touch screens should:

a. be usable with items such as a prosthetic limb or stylus; and
b. provide audible and visible feedback to indicate that the screen has been touched.

Audio

Automated self-service kiosks should include the following hardware audio components:

Headphone jack (5.9.4)

When a headphone is used to securely provide private information in an audible format, the jack receptacle should:

a. be 3.5 mm (1/8 in) in diameter;

[1] Biometrics: the use of a physical attribute for identifying an individual (CAN/CSA B651.2, page 6).

b. have a funnel-shaped surround;
c. be identified with a tactile symbol;
d. allow the user to control the volume through software;
e. have a maximum volume of 120dB; and
f. have a default volume set at the middle of the adjustment range. Volume should return to the default level when the headphone is detached or the transaction is completed.

Note: A jack that accepts both stereophonic and monophonic headphones should be used.

Handsets (5.9.5)

When handsets are used to provide audible information, they should:

a. have a flux coil;
b. have a handset cord that is at least 1000 mm (100 cm) long;
c. allow the user to control the volume through software or a volume control switch built into the handset;
d. have a maximum volume of 120 dB; and
e. have a default volume set at the middle of the adjustment range. Volume should return to the default level when the handset is returned to the cradle or the transaction is complete.

Insertion slots

Slot location assistance (5.4.1)

Insertion slots for notes (e.g. passports), coins, or other media should have a colour-contrasted surround or a lead-through indicator light.

Orientation (5.4.2)

When a note reader accepts notes (e.g. passports) in only one orientation, the orientation should be identified on a tactile pictograph used to indicate the location of the reader.

Note:

1. Currency readers that read currency notes in all four orientations should be used.
2. Currency readers with escrow are preferred because they hold the note until the transaction has been completed.

Tapering (5.4.3)

Coin and token slots should be tapered to facilitate insertion.

Card or document readers

General (5.5.1)

Readers should provide feedback by visual and audible cues on the successful and unsuccessful reading of a card or document (e.g. passport).

Readers should be identified by a tactile graphic symbol that:

a. is easily seen and understood;
b. represents the card or document in question; and
c. identifies the orientation necessary for insertion of the card or document.

Swipe readers (5.5.2)

Swipe readers should be able to read a card or document when it is swiped in either direction.

Notes:

1. a two-headed swipe reader increases usability because the card or document can be swiped with the stripe on either side;
2. the more a card or document protrudes from the slot of a swipe reader, the easier it is for people with limited manual dexterity to use the reader;
3. swipe readers should be oriented vertically.

Dip readers (5.5.3)

Dip readers should be able to read a card when it enters and exits the reader.

Notes:

1. people with limited hand mobility can have difficulty inserting or retrieving an item from a dip reader because greater dexterity is required for manipulation.
2. dip readers should be oriented horizontally.

Motorized readers (5.5.4)

The slot of a motorized card reader should be oriented horizontally.

The slot of a motorized reader should be beveled at its edges and should have:

a. a high colour contrast with the surrounding area; or
b. an indicator light at the slot.

Notes:

1. Beveling the edges of a reader slot increases ease of identification by tactile means and reduces the degree of accuracy required for insertion;
2. Illuminating the surrounding part of the slot can be helpful.

For removal, the card should protrude at least 25 mm (2.5 cm) from the slot and a force not greater than 22 newtons should be required to withdraw the card.

Flatbed document scanners (5.5.5)

Flatbed document scanners that use a light source that emits light in the visible spectrum should be positioned such that the light does not shine into the eyes of the user.

Bar code scanners (5.5.6)

The effective scan area should be discernible visually and tactilely. Successful scans should be indicated by audio and visual feedback.

Notes:

1. Contactless bar code scanners should be used; and
2. Omni-directional scanners with a light source that emits light in the visible spectrum should be used.

Keys for keypads and keyboards

Pinpads (5.6)

Pinpads should:

a. be telephone style with the number 1 at the top left and the number 5 in the centre;
b. have the number 5 marked with a raised dot that is 0.7 ± 0.1 mm (0.07 ± 0.01 cm) high and has a diameter not less than 0.5 mm (0.05 cm);
c. have numeric keys separated by at least 3.2 mm (0.32 cm), measured from the edges of the keys;
d. have an OK/ENTER key that is located at the bottom right of the pinpad;
e. be angled from the fascia of the machine; and
f. have a surface that minimizes glare (e.g., sandblasted aluminum or stainless steel).

Note: the location and use of a pinpad's function keys should be included in both the audio and visual instructions for using the device.

Feedback (5.7.1)

Key activation should provide feedback as specified in the section on input/control devices and input feedback (software) of this guide.

Key surfaces (5.7.2)

The surface of every key should:

a. have a minimum dimension of 13 mm (1.3 cm);
b. be concave or non-slip;
c. be raised a minimum of 1 mm (0.1 cm) above the adjacent surface;
d. have a maximum edge radius of 0.5 mm (0.05 cm); and
e. minimize glare.

Key characters or symbols (5.7.3)

The characters or symbols on keys should:

a. be colour contrasted with the background by at least 70 percent (e.g., white characters on matte black keys);
b. be of the largest practicable size, using a broad stroke (e.g., bold text); and
c. use a sans serif font (e.g., Helvetica, Swiss, Arial, or Univers).

Data entry devices (5.8)

Data entry devices, such as physical keyboards and touchscreens, should comply with Annex C of CAN/CSA B651.2.

Output components

Output through a slot (5.9.1)

Cash and documents (e.g., boarding passes, tickets and receipts) issued from a device through a slot should protrude a distance of at least 25 mm (2.5 cm) from the surface of the slot's front edge.

Note: the optimum distance is 30 mm (3.0 cm).

The force necessary for users to remove cash, receipts and other items from a slot should not be greater than 22 newtons.

Output to a bin or receptacle (5.9.2)

When boarding passes, tickets, receipts and other items are dispensed into a bin or receptacle, the bin or receptacle should be of sufficient size for users to retrieve them without the use of fine motor control.

Where a bin or receptacle is equipped with a vandal-resistant cover, the cover should be designed to allow users unimpeded access to the items being dispensed.

Printed output (5.9.3)

Printers in a self-service kiosk should:

a. be able to print upper- and lower-case text;
b. support a sans serif font; and
c. produce text that is colour contrasted with its background (e.g., black on white).

Note: a minimum font size of 14 points should be used or, when this is not possible due to the fixed size of a receipt, a size as close as possible to 14 points. Printers that support a variable font and receipt size should be used.

Software standards

Note: Software applications should be designed so that the user's attention is directed toward completing one task at a time.

Input/control devices and input feedback

Accidental activation (6.2.1)

There should be a way for a user to undo any effects of an unintended action caused by accidental activation.

Adjustable time (6.2.2)

Where user input is required to complete a task, the time allowed for completion should be adjustable through a question posed to the user (e.g., "Do you need more time?").

Active input modes (6.2.3)

When more than one method of input is available, only one should be active at a time. For example, if a pin pad is used to input information, an accidental press of a touch screen should not send an unintended command to the system.

Feedback (6.2.4)

Feedback mechanisms, such as audible alerts and vibrations, should be provided visually as well as tactilely and/or audibly to indicate that the system has received input.

Note: providing audible feedback is important when the control surface does not depress or move (e.g., touch screens). The volume should be at least 20 dB above the anticipated ambient level when visual and audible feedback are the primary mechanisms. When visual and tactile feedback are the primary mechanisms, the volume does not need to be greater than 20 dB above the anticipated ambient level.

Warning tones and warning information (6.2.5-6.2.6)

The duration and frequency of warning tones should differ from the duration and frequency of auditory confirmation tones.

Note: the user needs to be able to distinguish between normal confirmation tones and error/warning tones. Mid-frequency tones should be used because people with hearing loss lose the ability to detect low- and high-frequency tones.

Error or warning information should repeat in a suitable manner for as long as it is relevant to the task or until the user cancels it.

Dynamic display of Information

Fonts (6.3.1)

A legible font should be used. Script fonts and other highly stylized fonts should be avoided. Fonts should have:

a. true ascenders and descenders (the parts of a letter that extend above or below the baseline of a font);
b. uniform stroke width; and
c. variable width, so that "i" characters are narrower than average and "m" characters are wider.

Notes:

1. Fonts should be selected on the basis of font size to minimize the pixilation effect; and preference should be given to simple sans serif styles.
2. Every font should allow users to clearly distinguish between characters such as X and K, T and Y, I and L, I and 1, O and Q, O and 0, S and 5, and U and V.

The largest practicable font size should be used. When technically feasible, users should be given the option of increasing the font size.

Note: 14-point or larger text should be used.

Written text and instructions (6.3.2)

Text should be presented using upper- and lower-case characters.

Text should be left-justified, with a ragged right edge to improve readability.

Instructions should:

a. be written in plain language;
b. use the active voice; and
c. be phrased as positive commands that focus on what to do rather than what not to do.

When information is presented in a form that extends across several screens, the text should not automatically scroll and the user should control the pace of reading.

Abbreviations and acronyms should be avoided, except for the names of organizations or brands.

When instructions include numbered lists, Arabic numerals should be used (i.e., 1, 2, 3, etc.).

Colour contrast (6.3.3)

Characters and their background should be colour contrasted.

Notes:

1. Colour combinations with a high contrast include white/black, yellow/black, and navy blue/matte white. Colour combinations to avoid include yellow/grey, yellow/white, blue/green, red/green, black/violet, and red/black; and
2. The application should give the user the ability to switch between dark background/light text and light background/dark text. Dark text on a light background minimizes glare from the light source. However, light text on a dark background has been found to be easier to read for people with low vision.

Colour may be used for the coding of indicators or buttons, provided that a redundant feature such as a shape or an icon is also used.

Graphics and video (6.3.4)

Where voice output is used, audio descriptions for graphic images central to the task should be provided.

Text characters should not be used for drawing lines, boxes or other graphic symbols (e.g., ASCII art).

Text captioning should be provided for all visual multi-media output having a soundtrack. Captioning should be closed and able to be controlled by users.

When video is used, descriptive video should be available and able to be activated by users.

Audio (6.3.5)

Insertion of a headphone jack should:

a. be automatically detected to initiate audio instructions; and
b. activate the option to blank the screen.

The audio should have two distinguishable voices: one for instruction and the other for dynamic content.

Note: Consideration should be given to allowing users to vary the speed of speech. Allowing users to choose a male or female voice will accommodate a greater frequency tolerance and range for users.

Abbreviated text should be pronounced in full in audio (e.g., "ON" as "Ontario" and "e.g." as "for example"). Numbers should be pronounced in single-digit format (e.g., "12" as "one two").

Software applications should inform users of the:

a. locations on the machine where input is required and output is provided; and
b. style of keypad or keyboard (e.g., telephone pad, numeric pad, QWERTY keyboard) when used.

User options (6.4)

Users should have the option of selecting the modes of displayed output prior to the commencement of the transaction (e.g., captioning, screen font size, background/foreground colour, and blanking of the screen).

Output (6.5)

When audio output has been selected, the most important information on the printed output should be read first (e.g., for an airline ticket, the gate number, flight number, seat number, and boarding time).

Other self-service kiosks

Carriers and terminal operators covered by the Communication Code are encouraged to meet the accessibility standard to the CAN/CSA B651.2 with respect to other dispensing machines and travel-related information kiosks (e.g., parking ticket and ground transportation kiosks).

Where other self-service kiosks have not yet been made accessible to persons with disabilities, then an equivalent level of service is to be provided to those persons who are unable to use the self-service kiosk independently.

Other self-service kiosks should be appropriately identified with the international symbol of access.