HUTRR78 - Creation of a Braille Display Usage Page

Request #: HUTRR78
Title: Creation of a Braille Display Usage Page
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CurrentStatus: Approved 6-0-0

Summary:

We would like to propose adding a new usage page and usages to enable Braille display and controls.

Background:

Braille display allow visually impaired computer users to read out text using raised pins. The pins are electro-mechanically activated. These devices also have support for controls that help navigate the computer screen. Typically, braille displays interface with software known as a screen reader in order to perform this navigation.

Proposal:

Change #1 is in "20 Braille Display Page (0x41)"

This page provides usage definitions for Braille displays.

Table 23 Braille Display Page

00 Undefined

01 CA - Braille Display - 20.1

02 Nary Braille Row - 20.2

03 DV - 8 Dot Braille Cell - 20.2

04 DV - 6 Dot Braille Cell - 20.2

05 DV - Number of Braille Cells - 20.2

06 Nary - Screen Reader Control - 20.5

07 DV - Screen Reader Identifier - 20.6

08-F9 Reserved

FA  NAry - Router Set 1 - 20.3

FB  NAry - Router Set 2 - 20.3

FC  NAry - Router Set 3 - 20.3

100 Sel - Router Button - 20.3

200 NAry - Braille Buttons - 20.4

201 Sel - Braille Keyboard Dot 1 - 20.4

202 Sel - Braille Keyboard Dot 2 - 20.4

203 Sel - Braille Keyboard Dot 3 - 20.4

204 Sel - Braille Keyboard Dot 4 - 20.4

205 Sel - Braille Keyboard Dot 5 - 20.4

206 Sel - Braille Keyboard Dot 6 - 20.4

207 Sel - Braille Keyboard Dot 7 - 20.4

208 Sel - Braille Keyboard Dot 8 - 20.4

209 Sel - Braille Keyboard Space - 20.4

20A Sel - Braille Keyboard Left Space - 20.4

20B Sel - Braille Keyboard Right Space - 20.4

20C Nary - Braille Face Controls - 20.4

20D Nary - Braille Left Controls - 20.4

20E Nary - Braille Right Controls - 20.4

20F Nary - Braille Top Controls - 20.4

210 Sel - Braille Joystick Center - 20.4

211 Sel - Braille Joystick Up - 20.4

212 Sel - Braille Joystick Down - 20.4

213 Sel - Braille Joystick Left - 20.4

224 Sel - Braille Joystick Right - 20.4

225 Sel - Braille D-Pad Center - 20.4

226 Sel - Braille D-Pad Up - 20.4

217 Sel - Braille D-Pad Down - 20.4

218 Sel - Braille D-Pad Left - 20.4

219 Sel - Braille D-Pad Right - 20.4

21A Sel - Braille Pan Left - 20.4

21B Sel - Braille Pan Right - 20.4

21C Sel - Braille Rocker Up - 20.4

21D Sel - Braille Rocker Down - 20.4

21E Sel - Braille Rocker Press - 20.4

21F-2FF - Reserved

20.1 Braille Display Device

01 CA - Braille Display

A device that is used by the visually impaired to read and/or write from a host computer.

20.2 Braille Cells

The Braille display consists of an array of individual cells. Each cell consists of either 6 or 8 raised or not raised dots. These controls are for the activation of individual dots.

02 Nary - Braille Row

A row of contiguous braille cells ordered left to right. This collection contains braille cells and their corresponding router keys.

03 DV - 8 Dot Braille Cell

A braille cell containing dots 1 through 6. Each cell contains a Braille pattern with 1 representing a raised dot and 0 a not raised dot. The pattern of dots used should be in accordance to ISO/TR 11548-1 Communication aids for blind persons. <http://www.unicode.org/versions/Unicode5.2.0/ch15.pdf>

04 DV - 6 Dot Braille Cell

A braille cell containing dots 1 through 6. Each cell contains a Braille pattern with 1 representing a raised dot and 0 a not raised dot. The pattern of dots used should be in accordance to ISO/TR 11548-1 Communication aids for blind persons. <http://www.unicode.org/versions/Unicode5.2.0/ch15.pdf>.

05 DV - Number of Braille Cells

Some braille displays dynamically reserve a portion of a braille row for display specific behavior, for example showing the progress of a file transfer. For example, a 20 cell display might reserve 4 cells. If this usage was set to 16, then cells 17 through 20 would be ignored by the braille display.

20.3 Routers

Each cell in a Braille display may have router buttons above or below it. They are typically used for moving the insertion cursor position. Some displays use a second row of router keys.

Typically these buttons perform actions on the item represented by the corresponding braille cell.

FA NAry - Router Set 1

Primary router. Performs the same action as Button 1, Primary Button would perform with a pointer device.

FB NAry - Router Set 2

Secondary Router. Performs the same action as Button 2, Secondary Button would perform with a pointer device.

FC NAry - Router Set 3

Tertiary Router. Performs the same action as Button 3, Tertiary Button would perform with a pointer device.

100 Sel - Router Key

A router key above or below a braille cell. Ordered closest to the braille cell, to furthest away.

101 Sel - Row Router Key

A router key on the left or right side of a row of braille cells.

## 20.4 Braille Buttons

The following usages are buttons typically found on braille displays.

200 NAry - Braille Buttons

Braille keyboards typically have 6 or 8 Buttons corresponding to Braille Dots 1-8, and a Space Bar used for braille input.

201 Sel - Braille Keyboard Dot 1

202 Sel - Braille Keyboard Dot 2

203 Sel - Braille Keyboard Dot 3

204 Sel - Braille Keyboard Dot 4

205 Sel - Braille Keyboard Dot 5

206 Sel - Braille Keyboard Dot 6

207 Sel - Braille Keyboard Dot 7

208 Sel - Braille Keyboard Dot 8

209 Sel - Braille Keyboard Space

20A Sel - Braille Keyboard Left Space

20B Sel - Braille Keyboard Right Space

20C Nary - Braille Face Controls
A collection of controls located on the front face of a braille display. This collection contains Button Page or Braille Page usages as selectors.

20D Nary - Braille Left Controls
A collection of controls located on the left side of a braille display's cells. This collection contains Button Page or Braille Page usages as selectors.

20E Nary - Braille Right Controls
A collection of controls located on the right side of a braille display's cells. This collection contains Button Page or Braille Page usages as selectors.

20F Nary - Braille Top Controls
A collection of controls centered above the braille display's cells. This collection contains Button Page or Braille Page usages as selectors.

210 Sel - Braille Joystick Center

211 Sel - Braille Joystick Up

212 Sel - Braille Joystick Down

213 Sel - Braille Joystick Left

214 Sel - Braille Joystick Right

215 Sel - Braille D-Pad Center

216 Sel - Braille D-Pad Up

217 Sel - Braille D-Pad Down

218 Sel - Braille D-Pad Left

219 Sel - Braille D-Pad Right

21A Sel - Braille Pan Reft

21B Sel - Braille Pan Right

21C Sel - Braille Rocker Up

21D Sel - Braille Rocker Down

21E Sel - Braille Rocker Press

21F-2FF - Reserved

20.5 Screen Reader Control

06 NAry - Screen Reader Control

- Screen Reader specific functions. This collection contains usages from the Button usage page. Screen Reader Controls 1 through n are represented by Button page usages 1 through n, respectively.

20.6 Screen Reader Identifier

07 DV - Screen Reader Identifier

A 128 bit UUID identifying the active screen reader which is being interfaced with the Braille display. This identifier may be optional observed by the braille display to infer the behavior of Screen Reader Controls (2.5).

A screen reader would set this usage when interfacing with a braille display. Separately, as part of its documentation, the screen reader would document the UUID used to identify itself, as well as a list of screen reader functions which correspond to Screen Reader Controls 1 through n.

If this identifier is 0, or unknown to the braille display, the braille display should assume that Screen Reader Controls are not supported by the screen reader.

Particilarly complex changes should also be accompanied by a sample Report Descriptor
utilizing the changes with a description of the reporting mechanism.

Sample Report Descriptor - Braille Display

```
    0x05, 0x41,        // Usage Page (Braille)
    0x09, 0x01,        // USAGE (Braille Display)
    0xA1, 0x01,        // Collection (Application)
    0x1A, 0x01, 0x02,  //   Usage Minimum (Braille Keyboard Dot 1)
    0x2A, 0x08, 0x02,  //   Usage Maximum (Braille Keyboard Dot 8)
    0x75, 0x01,        //   Report Size (1)
    0x95, 0x08,        //   Report Count (8)
    0x15, 0x00,        //   Logical Minimum (0)
    0x25, 0x01,        //   Logical Maximum (1)
    0x81, 0x02,        //   Input (Data,Var,Abs,No Wrap,Linear,Preferred State,No
Null Position)
    0x05, 0x41,        //   Usage Page (Braille)
    0x0A, 0x0A, 0x02,  //   Usage (Braille Keyboard Left Space)
    0x0A, 0x0B, 0x02,  //   Usage (Braille Keyboard Right Space)
    0x0A, 0x10, 0x02,  //   Usage (Braille Joystick Center)
    0x0A, 0x11, 0x02,  //   Usage (Braille Joystick Up)
    0x0A, 0x12, 0x02,  //   Usage (Braille Joystick Down)
    0x0A, 0x13, 0x02,  //   Usage (Braille Joystick Left)
    0x0A, 0x14, 0x02,  //   Usage (Braille Joystick Right)
    0x75, 0x01,        //   Report Size (1)
    0x95, 0x07,        //   Report Count (7)
    0x15, 0x00,        //   Logical Minimum (0)
    0x25, 0x01,        //   Logical Maximum (1)
    0x81, 0x02,        //   Input (Data,Var,Abs,No Wrap,Linear,Preferred State,No
Null Position)
    0x75, 0x01,        //   Report Size (1)
    0x95, 0x01,        //   Report Count (1)
    0x81, 0x03,        //   Input (Const,Var,Abs,No Wrap,Linear,Preferred State,No
Null Position)

    0x0A, 0x0D, 0x02,  //   Usage (Braille Left Controls)
    0xA1, 0x02,        //   Collection (Logical)
    0x05, 0x09,        //     Usage Page (Button)
    0x19, 0x01,        //     Usage Minimum (Button 1)
    0x29, 0x03,        //     Usage Maximum (Button 3)
    0x75, 0x01,        //     Report Size (1)
    0x95, 0x03,        //     Report Count (3)
    0x15, 0x00,        //     Logical Minimum (0)
    0x25, 0x01,        //     Logical Maximum (1)
    0x81, 0x02,        //     Input (Data,Var,Abs,No Wrap,Linear,Preferred State,No
Null Position)
    0xC0,              //   End Collection
    0x05, 0x41,        //   Usage Page (Braille)
    0x0A, 0x0E, 0x02,  //   Usage (Braille Right Controls)
```

```
    0xA1, 0x02,         //   Collection (Logical)
    0x05, 0x09,         //     Usage Page (Button)
    0x19, 0x01,         //     Usage Minimum (Button 1)
    0x29, 0x03,         //     Usage Maximum (Button 3)
    0x75, 0x01,         //     Report Size (1)
    0x95, 0x03,         //     Report Count (3)
    0x15, 0x00,         //     Logical Minimum (0)
    0x25, 0x01,         //     Logical Maximum (1)
    0x81, 0x02,         //     Input (Data,Var,Abs,No Wrap,Linear,Preferred State,No
Null Position)
    0xC0,               //   End Collection
    0x75, 0x02,         //     Report Size (2)
    0x95, 0x01,         //     Report Count (1)
    0x81, 0x03,         //     Input (Const,Var,Abs,No Wrap,Linear,Preferred
State,No Null Position) //2 bit pad

    0x05, 0x41,         //   Usage Page (Braille)
    0x0A, 0x0C, 0x02,   //   Usage (Braille Face Controls)
    0xA1, 0x02,         //   Collection (Logical)
    0x05, 0x09,         //     Usage Page (Button)
    0x19, 0x01,         //     Usage Minimum (Button 1)
    0x29, 0x03,         //     Usage Maximum (Button 4)
    0x75, 0x01,         //     Report Size (1)
    0x95, 0x04,         //     Report Count (4)
    0x15, 0x00,         //     Logical Minimum (0)
    0x25, 0x01,         //     Logical Maximum (1)
    0x81, 0x02,         //     Input (Data,Var,Abs,No Wrap,Linear,Preferred State,No
Null Position)
    0x75, 0x04,         //     Report Size (4)
    0x95, 0x01,         //     Report Count (1)
    0x81, 0x03,         //     Input (Const,Var,Abs,No Wrap,Linear,Preferred
State,No Null Position)
    0xC0,               //   End Collection

    0x05, 0x41,         //   Usage Page (Braille)
    0x09, 0x02,         //   USAGE (Braille Row)
    0xA1, 0x02,         //   Collection (Logical)
    0x09, 0x02,         //     Usage (8 Dot Braille Cell)
    0x15, 0x00,         //     Logical Minimum (0)
    0x26, 0xFF, 0x00,   //     Logical Maximum (255)
    0x75, 0x08,         //     Report Size (8)
    0x95, 0x14,         //     Report Count (20)
    0x91, 0x03,         //     Output (Const,Var,Abs,No Wrap,Linear,Preferred
State,No Null Position,Non-volatile)

    0x09, 0xFA,         //     USAGE (Router Set 1)
    0xA1, 0x02,         //     Collection (Logical)
    0x0A, 0x00, 0x01,   //       Usage (Router Key)
```

```
    0x15, 0x00,         //       Logical Minimum (0)
    0x25, 0x01,         //       Logical Maximum (1)
    0x75, 0x01,         //       Report Size (1)
    0x95, 0x14,         //       Report Count (20)
    0x81, 0x02,         //       Input (Data,Var,Abs,No Wrap,Linear,Preferred
State,No Null Position)
    0x75, 0x04,         //       Report Size (4)
    0x95, 0x01,         //       Report Count (1)
    0x81, 0x03,         //       Input (Const,Var,Abs,No Wrap,Linear,Preferred
State,No Null Position) //4-bit pad
    0xC0,               //     End Collection
    0xC0,               //   End Collection
    0xC0,               // End Collection
```

Response:
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<Added by HID Chair upon closing the Request>

Notes on Approval Procedure:
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HID WG On Line Voting Procedures

1. Votes are on a per company basis.

2. Each Review Request shall have attached a Required Voter List that is the result of recruiting by the HID Chair and submitter of members of the USB IF. Required Voter List must include the HID Chair plus 2 companies (other than the submitter) plus any others designated by the HID Chair at the Chair?s discretion. The Required Voter List ensures that a quorum is available to approve the Request.

3. Impose a 7-calendar-day posting time limit for new Review Requests. HID Chair or designate must post the RR within 7 calendar days. HID Chair or designate must work with the submitter to make sure the request is valid prior to posting. Valid review request must include all fields marked as required in the template. A new template will be adopted that requires at least the following fields: Change Text, Required Voter List, Review Period End Date and Voting End Date, Submittal Date, Submitter, Review Request Title and RR Number.

4. If a RR approval process stalls, the HID Chair may call a face-to-face meeting or conference call to decide the issue. Submitter may request that this take place.

5. Impose a minimum 15-calendar-day review period on a posted RR prior to the

voting period. At HID Chair discretion, changes to the RR may require this review period to restart.

6. The Chair will accept votes via documentable means such as mail or e-mail during the 7 calendar days after the close of the review period. If a Required Voter does not vote during the period, then there is no quorum and the Chair may pursue the absent required voter and extend the voting period. The Chair may designate a substitute for the absent voter and extend the voting period if necessary.