A DEVELOPMENT OF A MUA TO MAKE PICTOGRAPH MAIL FOR CHILDREN

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ABSTRACT

In recent years, children have begun using computers actively. With this situation, they are beginning to learn how to operate a mail user agent (Hereafter, called MUA) to adaptation to an information society. However, the user interface of general MUAs is not

designed with them in mind. Specifically, many unnecessary menu items exist on the user interface of general MUAs. Moreover, the menu text contains many difficult characters (called Kanji) in Japan. In this situation, it is difficult to say that children could learn how to operate the MUA without being confused by the complex user interface. We consider it to be important that even children who have not learned Kanji can use the user interface. To solve this issue, we have developed a MUA that has a simple user interface only represented in Hiragana. In order to create a simple user interface for child use, it is necessary to reduce the number of menu items. Along with this, the number of available functions on this MUA has decreased. However, we think it is rather important to prevent the confusion and unexpected behavior of children. It is also necessary to devise a function to make an e-mail to attract the interest of them. Therefore, we have implemented a function to generate pictograph mail easily.

We are using the XML-based User Interface Language (Hereafter, called XUL) to build a user interface for children. It is a language used to build the user interface of Mozilla applications like Firefox and Thunderbird. By using it, we can customize the user interface of Thunderbird to fit any purpose. By these improvements, we think children will be able to use the MUA actively and with enjoyment without falling into confusion.

Keywords: Mail User Agent, User Interface for Children, Edutainment, Pictograph

INTRODUCTION

People have utilized the computer in various scenarios, such as in business and in private. In recent years, children have become computer users as well as adults. Elementary schools in our country have established computers and a network to adapt to the information society. With such a situation, forms of children's learning have been changing significantly. Now, children are learning operating and application skills for computers, such as how to use the Internet, and they are beginning to use email. However, general MUAs (mailer) have not been developed for them. For example, there are many unwanted menus and buttons on the interface. In this situation, it is difficult for them to use a mailer satisfactorily with the complex user interface.

To solve this issue, we have developed a mailer to make pictograph mail that has a simple user interface for children (Shinya et al., 2012) (Bo et al., 2012). By using it, they can create emails without being confused by complex operations. Moreover, it prevents

unexpected behavior from incorrect operation. We believe that these efforts lead to improvements in their learning to communicate by email to adapt to an information society.

USER INTERFACE OF GENERAL MUA

In Japan, children are learning operating and application skills for computers, such as how to use the Internet. They are beginning to learn to use email. However, general MUAs are not designed with them in mind. For example, it contains many menu items and buttons. Such an interface contains many items which are unnecessary for them, as shown in Fig. 1 (Mozilla Japan., 2012). In addition, the menu items contain many difficult characters (Kanji) in Japan. This is due to the reason that Japanese has three types of characters called 'Hiragana', 'Katakana' and 'Kanji'. Among them, 'Kanji' has a more complex shape than other characters and it is difficult for younger students in elementary school to understand. Incidentally, children are learning 'Kanji' gradually at each grade in elementary school. However, low-grade children cannot understand many 'Kanji' characters on the user interface. Because of this, it is unlikely that they can learn to operate a MUA without falling into confusion, and may lead to some unexpected behavior. In summary, it is important that the user interface is usable even before the children learn Kanji. To solve this issue, we have developed a MUA that has a user interface for children.

Figure 1 An Example of User Interface of General Mailer (Mozilla Thunderbird)

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To solve the issue described in section 2, we have developed a MUA that has a simple user interface for children. In this section, we describe the developed user interface and their functions.

Figure 2 View of the Mailer for Children

User Interface for Children

We have developed a MUA that has a simple user interface for children as an add-on for Mozilla Thunderbird. Specifically, we removed unwanted menu items from the existing user interface of the Thunderbird as shown in Fig. 2. Because of this, the user interface was simplified and can prevent the unexpected behavior of children. In addition, we translated ‘Kanji’ to ‘Hiragana’. Table 1 shows examples of translated representation on the “Edit” menu. The new menu is only represented from Kanji to Hiragana. Figure 3 shows an example of specifying the notation of the menu items using XUL. To change the notation on the user interface, it is necessary to specify a menu item to modify and set a notation to overwrite, as shown in lines 17-19 (Figure3). Because of this, children will be able to read representations of menu items and understand a teacher’s instructions. As described in section 2, children who are low-grade students in elementary school cannot understand

many 'Kanji' characters. However, they have already learned 'Hiragana' and could understand it. Therefore, we translated the menu text from 'Kanji' to 'Hiragana.' By using our mailer, they can write e-mails without confusion and operate the program easily.

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01:  <?xml version="1.0"?>
02:  <overlay id="emozimap" xmlns="http://www.mozilla.org/keymaster/gatekeeper/there.is.
only.xul">
03:    <menubar id="mail-menubar">
04:      <menu id="menu_Edit" accesskey="e">
05:        <label class="menubar-text" value="へんしゅう"/>
06:        <menupopup id="menu_EditPopup" onpopupshowing="InitEditMessagesMenu()">
07:          <menuitem key="key_undo" accesskey="u" id="menu_undo">
08:            <label class="menubar-text" value="もとにもどす"/>
09:          </menuitem>
10:          <menuitem key="key_redo" accesskey="r" id="menu_redo">
11:            <label class="menubar-text" value="やりなおし"/>
12:          </menuitem>
13:          <menuseparator id="editMenuAfterRedoSeparator"/>
14:          <menuitem key="key_cut" accesskey="t" id="menu_cut">
15:            <label class="menubar-text" value="きりとり"/>
16:          </menuitem>
17:          <menuitem key="key_paste" accesskey="p" id="menu_paste">
18:            <label class="menubar-text" value="はりつけ"/>
19:          </menuitem>
20:        </menupopup>
21:      </menu>
22:    </menubar>
23:  </overlay>

```

Specifying of the target you want to override

Notation of the menu item you want to override

Figure 3 An Example of Definition of User Interface by Using XUL

Table1 Examples of Representation of the Menu Item (on “Edit” Menu)

Default notations of menu items	New notations	In English
編集	へんしゅう	Edit
元に戻す	もとにもどす	Undo
やり直す	やりなおす	Redo
切り取り	きりとり	Cut
貼り付け	はりつけ	Paste

Function of Translation to Pictograph Mail

After the development of the user interface for children, we developed a function so that children could create sentences of email without complex operations. This function translates to pictograph from ‘Hiragana’ in the body of the email automatically. ‘Hiragana’ and ‘Katakana’ are pronunciation characters of the Japanese language, and children are learning them in first grade of elementary school. Words consist of some pronunciation characters. However, Japanese words consist of a pronunciation character. For example, one ‘Hiragana’ “は” means a leaf in its own. This function translates into a sentence with figures that are represented by single pronunciation characters. Specifically, first the function divides the entered sentence into single characters. Then it automatically translates each character to figures. Finally, it provides a mail sentence that contains translated figures, as seen in Fig. 4.

By using this function, children can make pictograph mail by easily entering sentences. We believe that children can use the email more aggressively by enjoying solving cipher texts in each other’s emails. Incidentally, we packaged the user interface and the function as an add-on. Because of this, you can easily install it by opening the packaged file in Mozilla Thunderbird (Mozilla Developer Network., 2012).

Figure 4 An Example of a Display for the Creation of Pictograph Mail

CONCLUSION

In this paper, we reported the features of the MUA we developed. It has a simple user interface for child use, and the function to generate pictograph mail easily. Moreover, we packaged these devising as add-ons. Because of this, you can install the user interface and the function for children into your Mozilla Thunderbird without a complicated process. By this improvement, we think children can use e-mail actively and with enjoyment. In addition, we believe that these efforts will lead to improvements in their learning to communicate by e-mail to adapt to an information society.

As our next step, we will conduct an evaluation experiment. Then, we will attempt to more improve our MUA to be used widely for children.

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