Preliminary Design Document

Easy Life Co.

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11.01.2010

easy life

Components of Product Design:

In order to run a shopping software with a simple interface that lets the elderly and disabled people make shopping orders, the Easy Shop Panel basically includes a touch screen monitor, a Braille Alphabet numpad, a loudspeaker, a mini computer and a GPS/GSM module.

Each component is designed and used for the easy usage of elderly and disabled people. As a whole system, both elderly people who are not familiar with computer and have difficulties to see, and disabled people who cannot see or have physical disabilities, can give shopping orders easily through the Easy Life panel.
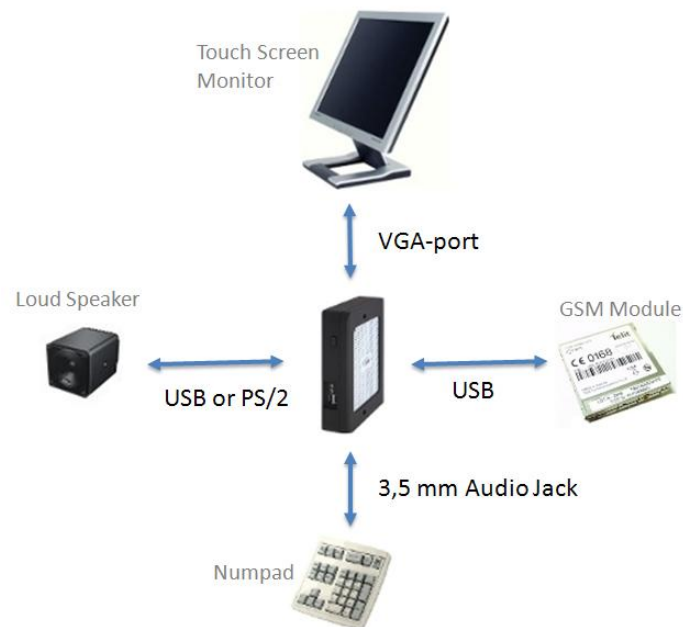
Figure 1: Connections of hardware parts

Monitor (EL-001-003)

A bright, thin, 13-15 inch size LCD monitor is to be mounted on the operating hardware part. A touch screen monitor whose resolution is either 640x480 or 800x600 will make the usage of it much easier for elderly people. This display is going to be connected to the operating part, so in order to connect this display to the mini-PC component, the monitor should have a RGB or USB input port.

Numpad (EL-001-006)

Numpad is for people who cannot use touch screen monitor or people who are visually impaired. For visually disabled people's usage, numpad will be modified with embossing stickers, which are prepared in Braille Alphabet. Numpad will be connected through USB port to the Mini-PC of the product. All of the buttons will be as easy as possible for usage of older and disabled people. Control buttons must be in a logical and reasonable placement with relatively large font sizes. To increase the convenience for visually impaired people, the numpad should be placed horizontally.

- The buttons that can be operated by pressing non-stop should be avoided for the convenience of elderly people. In addition, roll buttons should be avoided and all controls must require one button press.

Loudspeaker (EL-001-007)

Basic loudspeaker will help user to command the program. The main reason to use a loudspeaker is helping visually impaired people. Sound system will pronounce repeat all of the actions, which are made by user and the program. So, user can follow the process of shopping. This system also helps older people, who cannot use monitor and numpad, to follow the process

Mini PC (EL-001-004)

Mini-Computer part is the main part of the product. In this part, a linux distro will be operated. By using linux distribution, java program which will be used for both main program and user interface of the product. Mini-computer will be controlled by both numpad and touch screen (optionally). User interface will be optimized for touch screen drivers. Mini-computer will only include basic parts to be able to run Linux Distribution, Java, USB connection.

- In Mini PC, we will use a very basic linux distro, java environment and will process very simple applications. Therefore, the CPU should have around 1-1,66 Ghz of speed.

- In order to provide connection with the monitor, numpad and GPS module, it must have USB and RGB output ports.

GSM GPRS Module + External SIM Card (EL-001-005)

This module gets the order information from program at mini-pc and forwards orders to the dealers by SMS and/or Fax. Java runtime program generates a text file, which includes order list and location information of the user. By using GSM part of the module text file will be sent to dealer.

- The size of this module must be small enough to be mounted inside the mini PC used.

- It must have fax sending function.

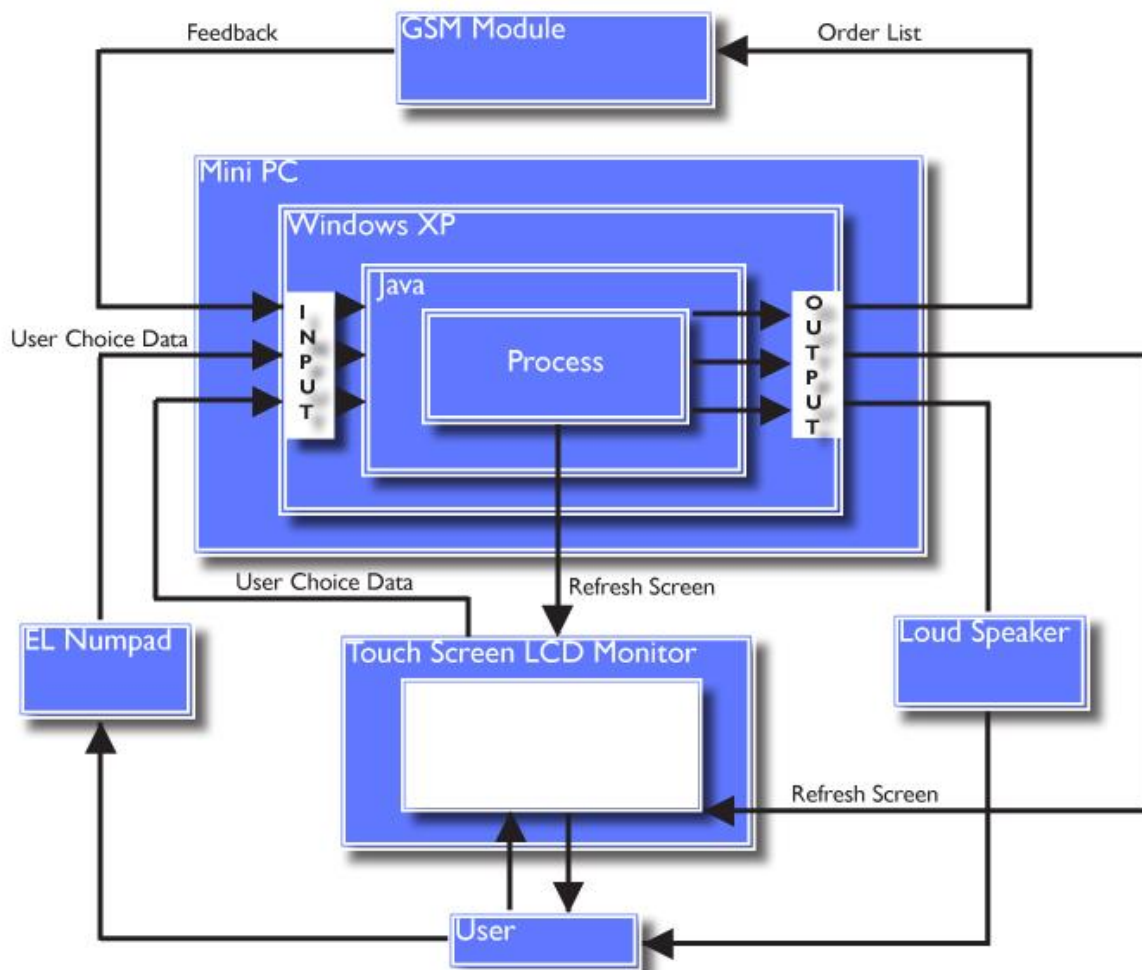**How does the system work?**

Figure 2: Scheme of work principle of product

- Firstly, when the system is turned on, the mini PC starts running the pre-installed software. This software includes the shopping options such as, water, food, drinks, pharmacy and personal care and the available product information for these titles.

- The user observes the options and sub-options on the LCD screen and navigate in the software by touching the screen or using the numpad. Optionally, in every command and navigation, the voice control system repeats all the titles and helps the user.

- While the user chooses some products, the software adds them to a cart. When the user wants to check out, the software prepares a fax or SMS text note including all the orders in the cart. Since the system has already been registered the user data such as address, name and phone at the start up and installation of the panel, it directly adds user information to the fax or SMS text note.

- Finally, the software sends this message to the GPS/GSM module via its serial port. GPS/GSM module prepares this text note to be sent over local phone line or to be sent to base station via GSM line. Once the message reaches to the base station or phone line, it is transmitted to the dealer's receiver and recorded. Then, the dealer prepares the cart and delivers it to the user's place.
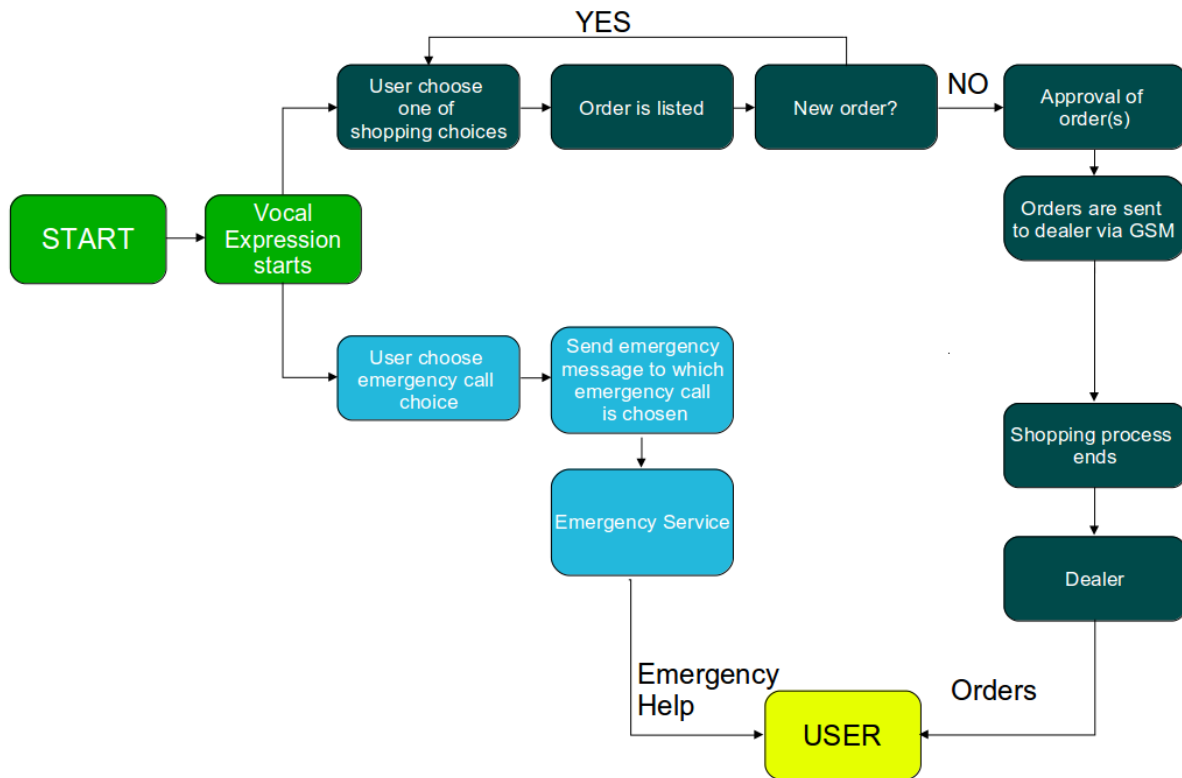
Figure 3: Working principle of the product

Graphical User Interface

User interface will include large icons designed for flawed sighted users, also there will be sound feedback for all the operations for users with hearing problem. For easyness a numped will provide input, this numped will have Braille Alphabet inscribings on it for again flawed sighted users. Graphical User Interface will be consist of two main part; emergency and convenience store. User will be able to use both parts easily by using icons only. Every icon will have corresponding visual cue on it like a picture of water contanier. After choosing an icon, user will be able to choose amount from another interface with same principle.

Figure 4: Screenshot of User-interface of the product

Process of Product starts with User's "START" command by using ON/OFF button. Then software of the product starts the process and vocal expression starts with the process. User interface of the program starts at the Touch-screen monitor. User has 2 main types of choices, one is shopping options and the other is emergency call options. If user chooses one of shopping options, the shopping list of a product category which is chosen by user. For example, user chooses "Meat and Meat Products", a list of products will be given to the user. This list will list main products of that category. After user chooses one product, program add that product to the list and waits for another shopping choice. If user chooses another category, shopping process continue until the user finishes shopping and approving/accepting the order list. After order list is approved, an order list will be generated by the software. This order list contains a header part and order part. In header part, information of user (ID, Address, what type of physical handicape he/she has) is added by the software. These information will be added to Easy Life Panel when user gets the Easy Life Panel from Easy

Life Co. In the order part, the orders of the user lists. If user directly chooses emergency call options list of emergency calls will be occured and if user chooses one of them, Easy Life Panel directly send emergency call to the service which is selected.

Software Structure

- Software will be designed and implemented on Java technology.
- It is going to run on JRE (Java runtime environment).
- It will be compatible with every operationg system but our product will use Linux.
- Software will communicate with the gsm module to convey the input gathered from user to the server or emergency centers.