FREEDOM

The Freedom project was born from the desire to apply some of the latest and innovative technologies to the simple daily tasks.

The goal of the project is to provide new and simple tools to people who have impaired vision or mobility difficulties.

The neighborhood in which the person moves, and even the house in which lives, in certain situations, can become a sort of obstacle course. Solving the physical problems cannot always be done but helping overcome the obstacles is.

Today's technology provides us with several electronic, informatics and communication instruments that properly examined and implemented contributes today, and will provide more and more in the near future possible solutions to make it easier to interact with all, and to make people more independent if possible.

The work accomplish has led to the implementation of three systems:

- Enlarger and text Reader

- Digital Controller

- Communicator

These systems may be used separately, but primarily, integrated with each other inside a unique system free.dom.

Text Enlarger and Reader

People with visual impairment have relatively the need for an instrument solution with a system capable of reading texts that is both easy to use and powerful features.

The product manufactured, according to the project, exceeds the basic characteristic of a, paper or digital text reader, is a personal digital assistant, capable of storing documents, certificates, bills and phone book agenda, but also newspapers, music, books, films and whatever you may need or think.

The system, absolutely portable and lightweight, can be stored in its designed small bag and be used for example at the post office or the bank to read documents, bills, contracts.

We have exceeded the idea of a bulky and heavy equipment to read texts with an all in one system that includes: 10-inch touch-screen computer with 5000 gr of weight. long-life batteries, memory ram and hard disk of considerable size, a lightweight and flat scanner with a 12-megapixel digital video camera. All integrated in a single impact resistant casing.

The captured images are processed in a few seconds, turned into a legible text and displayed enlarged. The electronic voice assistant can read aloud the text.

A simple voice guided procedure establishes the organization and cataloging through categories of all the documents, providing simultaneously the subsequent search and retrieval of the documents from the digital archive.

Freedom is absolutely flexible and configurable to suit the user:

Do you want to read a document? Turn on the scanner and with the simplicity of making a photocopy Freedom will register the document and read it aloud.

Are you at the bank or the post office and you want to read a certificate or a utility bill?

Turn on the digital camera and take a picture, Freedom will read aloud it for you.

Do you need to enlarge the text written on a contract done specifically so it cannot be read?

The Freedom Scanner or video camera will read for you all hidden clauses.

You don't know how to use the computer; you have a visual or a severe motor impairment that keeps you from using a keyboard or a mouse?

Freedom is equipped with a voice assistant that will guide you step by step during all the process and reduce your actions into a click of a mouse, or even follow solely your voice instructions.

Do you want to catalog all your texts and then search them easily and without difficulties?

The voice assistant will guide you through the categories to find your documents and at the same time will guide you in the search and retrieval of documents from your digital archive. With equal ease and versatility, Freedom can be your assistant at home or office. Freedom is designed to be a portable device integrated in an appropriate case, nevertheless can be installed on desktop computers or notebooks and communicate with small or large scanners, and even with today's fastest and powerful copy machines. Its large capacity to store documents and turn them into reading documents allows you to store catalog and search your digital archives of all sorts and sizes.

Digital controller

Individuals with mobility impairments who need assistance more or less in a continuous basis. Performing every day simple actions can be often insurmountable obstacles and become waivers. The idea was to create a digital controller capable of interpreting the needs and interact with the surrounding world.

Today much has been done: from the television remote control, the opening of a window or switch on the heater, the ability to make a phone call, read an email or chat on

Facebook. All of these operations today can be accessible to all, thanks to the potentiality of Free.dom.

The system was conceived and executed as a tool to be used by people with different abilities.

The final product through voice commands, mouse or touchscreen can interact with the hardware or software devices to activate the electronic actuators, which are connected on wireless, conveyed waves or electrical 220v power line, to the computer itself.

A person with reduced mobility can adjust with this simple instrument the inclination of the bed, call a friend or activate an alarm. In the event of absolute impossibility of movement, the system is designed to interact with a special optical marker (eye tracker) that by intercepting the movement of the eye allow the user to interact with the computer software in the first place, and then, thanks to the system of actuators, with whom and what surrounds him.

Communicator

The system controller interfaced has a facilitated communication software that controls the requests in order of priority and importance.

The communicator has the objective to compose words and sentences that can be selected by the user using visual images o vocal cues.

The text composition software and speech synthesizer complement the functionality of system allowing the maximum flexibility.

The communicator can be started in the programming mode. You can access the various modes through two distinct icons on the pc desktop.

Setup mode

From the programming home screen the therapist can, access the menu shown on the left of the screen, enter new words, phrases and exercises to adapt the program to the individual user.

The buttons 1 and 2 allow you to change the categories and subcategories in which the words used in then communicator are divided.

Keyword button allows you to change the words available in this section of the communicator. New words can be added and can be connected to an image. Then when the user foresees a sentence in the communicator will be able write it directly or make use of the logical sequence buttons on the communicator by choosing subject, verb, etc.

The Dictionary button allows to modify and add the words that are suggested in the section "compose sentences with the help of the dictionary." In this section, the program suggests words to be written using as a base the dictionary.

With the "Words to be scan" button, allows you to modify and add the words that are suggested in the section "select sequential images". In this section, the therapist combines words and images, and determines the order in which they should be displayed.

The button "phrases" enables the therapist to build a series of sentences more or less logical or complex. Such phrases can be divided into single words that could then be reassembled by the end user with the help of audio-visual suggestions.

The phrases composed can also be arranged with a timeline in order to build up a variable audio-visual level of difficulty.

The "Upgrade data" button allows reconstructing the listings of the program. The other buttons on communicator, "Exercises with sentences" and "create sentences with the help of Dictionary", Compose sentences with the help of the images allowing a preview for the user.

By using the modality " Alphabetical communicator"

The program opens on a blackboard base, from which you can access to various exercises proposed by clicking the left mouse on the relative buttons, icons or text. In general by clicking the right button you can close the windows that are open from time to time.

The end user have access to:

- In the "communicator" Section you can build sentences by writing the text directly or by using the words prepared for him by his therapist and linked to certain categories and subcategories through images association.

- In the "communicator by images" Section you can communicate by selecting the images combined with texts chosen by the therapist and ordered according to predetermined sequences.

- In the "calculator"   Section you can practice with the four elementary algebraic operations.

-   In the "text writing prediction" Section you can write or choose the words trying to respect the rules of grammar and logic.

- In the "Web" Section by clicking on the icons you will have access to selected sites of history, geography, arts, games etc.

- In the " Phrase Exercises" Section the program will submit always new exercises and with various levels of difficulty besides from those prepared by the therapist. The user

must recompose the exact phrase, from the proposals presented as single words, arranged at random, and may use the various aids available.

Scanning symbolic communicator

The section is devoted to the end user that wants to use only the communicator images with an automatic scanning and predisposed symbols.

In the "communicator through images", the person can communicate by selecting the images combined with texts prepared by his therapist and ordered them according to predetermined sequences.

The user selects them with the click of a mouse or other pointing device.

There are some active function keys to facilitate the use of the procedure. These function keys can be used on keyboards, keypads or on specific pointers. The pages are displayed sequentially according to the numerical order prescribed by the therapist.

User mode as a symbolic communicator

The section is devoted to the end user who wants utilize only the communicator though images.

The communicator through images may communicate by selecting the images combined with texts prepared by the therapist. The user selects them only by the click of a mouse or other pointing device.

There are some active function keys to facilitate the use of the procedure. These function keys can be used on keyboards, keypads or on specific pointers. The pages are displayed in a numerical order prescribed by the therapist.

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