Chapter 17
In–TIC for Mobile Devices:
Support System for Communication with Mobile Devices for the Disabled

Cristina Diaz Busch
University of A Coruña, Spain

Betania Groba González
University of A Coruña, Spain

Alberto Moreiras Lorenzo
University of A Coruña, Spain

Thais Pousada García
University of A Coruña, Spain

Iván Mourelos Sánchez
University of A Coruña, Spain

Laura Nieto Riveiro
University of A Coruña, Spain

Javier Pereira Loureiro
University of A Coruña, Spain

ABSTRACT

The In-TIC system for mobile devices (in Spanish: Integration with Information and Communication Technologies system for mobile devices) represents an approach towards the area of technical aids for mobile devices. The mobile telephone is a device that makes our lives easier, allowing us to be permanently accessible and in contact, to save relevant information, and also for entertainment purposes. However, people with visual, auditory or motor impairment or the elderly still find these devices difficult to use. They have to overcome a range of difficulties when using mobile telephones: the screens are difficult to read, the buttons are too small to use, and the technical features are too complicated to understand.

At present, the main advances in mobile technology have been aimed at improving multimedia-messaging services and reproducing videos and music. This new support system adds accessibility to mobile telephones, making them easier to use for the people who need them the most, people with reduced physical or mental capacities who cannot use a conventional mobile.

INTRODUCTION

Accessibility in IT systems has undergone significant progress in recent years. The most widely used operating systems – Windows, Linux and MacOS, are all equipped with accessibility options, such as screen magnifiers, text to voice synthesizers, and improved keyboard and mouse access for people with motor problems. There are also numerous PC applications that considerably improve their accessibility, making it possible to personalize the input interfaces, improving access to the applications needed to interact with the computer.

The technology used in mobile devices has progressed rapidly in recent years, offering services that until now were only available in personal computers. Their small size and constantly improving multimedia, communication and calculation capacities make it possible to develop increasingly complex applications, which until recently were unthinkable for these devices. The use of Information and Communication Technologies (ICT) represents a clear advance for modern-day society in general, although there are groups of people with special needs who still find it very hard to use this technology, such as people with hearing and visual deficiencies, motor problems or the elderly.

It is necessary to transfer the progress achieved in terms of accessibility in the field of personal computing to mobile devices. In technological terms, it is possible to include a voice synthesizer in a mobile device to help the blind, and it is also possible to carry out videoconferences, which allow the deaf to communicate using sign language.

The current situation shows that great progress has been made in this field, although we still have a long way to go. The greatest advances in terms of accessibility in mobile technology have been aimed at the blind, making devices more accessible by using voice synthesizers to guide users through the menus, and the options that are available. In the case of people with hearing difficulties, physical impairment or mental deficiencies, fewer adaptations have been made to date. However, in the case of people with hearing difficulties improvements have been made to devices, which despite not having been designed for this purpose, have proved to be useful for the deaf, such as text messages, MMS and video conferences.

In the case of people with different types of physical and mental disabilities, it is necessary to find the correct technology for each degree of disability. In this case it is very difficult to include all of the adaptability features necessary for these groups in one single device. As a result, devices must be adapted individually for each specific case by a professional who works on a daily basis with the disabled. Mainly, these will be Occupational Therapists, although they may also be speech therapists or educators. These professionals have to evaluate the abilities of each user and define the adaptations required in order to increase the user's degree of autonomy, in this case making it easier for them to use mobile telephones.

In order for this to be possible, an adaptable environment has been implemented that makes it possible to easily define interfaces for mobile devices that make them easier to use by disabled persons. Using this environment, a conventional mobile can be adapted to the requirements of different groups of disabled persons, mainly with physical or mental problems. By using this environment it is possible to provide professionals in this field with new IT tools that help them to encourage the use of mobiles by people with special needs, providing them with access to these devices.

Also, we have the environment that operates in mobile devices based on Windows Mobile, which assigns keyboards defined using this environment and allows disabled people to interact with the mobile device using the options considered appropriate for them. As a result, the device will have an interface that is designed to be accessible, and specifically configured according to the abilities of the person in question.

As a result, there are two different environments that consist of a series of applications.

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