Some Aspects Regarding Elderly Patients Acceptance of an ICT Mobile Platform

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Abstract: This paper presents a study of the degree of comfort experienced by the senior users of a mobile ICT-based hand-held platform, intended to monitor basic health signals and convey biometric signals to a remote server-resident medical database. The paper highlights the amendments applied to the communication technology-enabled platform in order to boost the elderly patient's decision to accept and use electronic technologies at home. The paper covers exclusively the technical adjustments the elderly people have to make to adapt to a new life in a physical electronic environment.

Keywords: e-Health, elder patient, ICT, electronic environment

1 Introduction

Romanian elderly people are the main health consumers and aid receivers from different medical, social and family resources. The common healthcare, the one that hospitals and medical centers are supplying for the elderly people, causes the elderly population to migrate from home to medical premises at huge expenses and time-consumption. In the last couple of years a major progress towards home healthcare electronic services has been developed to assist elder people. The management of assistive technologies is mainly subjected to local/regional policies therefore small scale e-health solutions have been implemented.

This paper studies the degree of approval acquired by the use of a large scale e-health mobile ICT platform by elderly patients. The platform is aiming to monitor basic health signals (heart beats, blood pressure, temperature, glycemic index) and convey biometric signals to medical database residing on a remote server. The paper highlights facts that have elder patients convinced to agree with and use electronic technologies at home. The paper copes exclusively with technical aspects that elder people should be able to deal with in an electronic environment.

2 Tools and Methods

An ICT mobile platform has been designed to (1) acquire basic bio-signals from medical devices, (2) feed a medical database residing on a remote server with patient medical data and (3) allow the elderly patient to connect to a private area network. The electronic interface provides the elderly patient with wireless (Bluetooth, ZigBee, RFID, NFC, IrDA) and wire (FCC68, optic) connectivity, logic mainframe and a bunch of interoperable heterogeneous applications.

The main topics the mobile ICT platform is dealing with considers:

- elderly people's acceptance for Internet and appended technologies;
- mainstream products intended/designed for elderly people needs;
- legal and technological aspects;
- interoperability constraints.

We have investigated senior citizen groups from different areas across the country to find out reasons for homecare platform acceptance. Interviews and work-shops have been the main tools to inquire needs and collect opinions. Approximately 400 people of 65+ years old answered/commented questions and formulated needs. The main requirement regarded difficulties that elderly people confront in understanding/using the technologies supporting the platform.

The technical criteria below have been derived from this investigation in order to complete/improve the platform design:

- Small size and light weight for portability
- Medical-oriented appearance for a better recognition
- Easy-push minimized keyboard
- Friendly operating menu
- Intuitive commands
- Biometric access
- Open functionality for future development

4 Results

The platform has to position the technology tier beyond any user awareness so as it manifests through the functions performed. Platform's fully automated functions prevent the elderly patients from having to approach embedded technologies. The paradigm of technology usage is to shift the balance towards the user for a total acceptance, as long as the technology spectrum fits the specific requirements.

Analysing the elderly patients' reactions when playing/interacting with the ITC platform we have concluded that the electronic user interface should be reasonable small and lightweight for hand-held quality and accomplish **mobility** for incorporated heterogenic technologies.

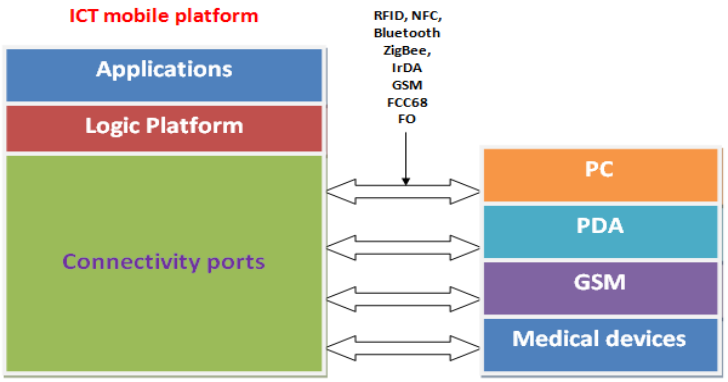
The tool **appearance** should be familiar, yet medically oriented, so that the elderly user recognises it quickly, the screen should have large digits, a minimum 1024 x 768 resolution, a 10000:1 contrast or better.

The device can be operated via a 0.1N…0.5N push-force keys and/or via voice-controlled commands.

The menu should be **friendly and intuitive**, so that the necessary training to operate the device saves time and costs. We have taken into account the platform capability to alert START/STOP functions.

In order to ensure a **quick and safe access** to the medical device, we have endowed the platform with **biometric access** features. The biometric access prevents the elderly users to memorize passwords and keeps intruders off system.

The **open functionality** key-feature provides the device with the potential of new functions having been added in the future according to new developments.



1. ICT mobile platform

The platform design has entirely relied on acceptance and security requirements which elderly people have demanded for regular handling/usage. A platform prototype has been integrated into a county wide homecare network. Practitioners or medical nurses involved in the project recommended the platform to elderly patients so as the latter get confident with technologies and practices. Also, family doctors trained elderly patients to learn and benefit from platform resources.

5 Conclusions

No matter how high the technology will grow up in the field of the homecare systems, there will be no real success if the targeted elderly users won't be able to benefit from it.

The platform provides the elderly users and homecare services providers with:

- **improved quality of life**
- **sustainability of health and social services** in terms of financial and human resources
- **new jobs and business opportunities** for European industries
- awareness, shared understanding and joint approaches
- **best practice exchange** within stakeholder groups, studies, benchmarking
- **investment** in and take-up of proven solutions through the ICT Policy Support Programme, Innovative public procurement, Regional Funds
- **research and innovation** within **AAL (Ambient Assistant Living) Programme**

Implementing the homecare systems in the Information Society is a **social necessity** as well as **an economic opportunity.** ICT has great potential for providing solutions, but **needs a comprehensive policy support , a complete understanding of elderly people's needs and to be user friendly.**

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