

# WEARIT@WORK: Wearable Ward Round Support



## Introduction

Fast access to medical information at the right moment is a crucial task for the whole healthcare domain. In some cases the life of a patient can depend on it, but even in everyday routine, fast access to information means reducing of expensive examinations and saving money.

Through scenarios based on real hospital situations, we are going to demonstrate how wearable technology can improve the work of physicians and nurses by:

- Improving availability of information,
- Presenting information in the actual context of the treatment situation,
- Improving communication and knowledge sharing and
- Reducing the efforts for data management and documentation.

## The problem

Medical information in hospitals, formerly captured and stored on paper in different locations, is now more and more available over electronic devices. Clinical information systems store the information provided by physicians during examinations and therapy. Laboratory results are delivered in huge amounts to electronic medical records. New devices in the fields of Computed Body Tomography, Magnetic Resonance Imaging and Ultrasound deliver high-resolution images of the human body, which provide valuable information in different diagnostic situations.

The access to medical information is often critical because the progress of treatment of a patient depends on the information the physician has. Fast access to stored examination results can not only result in money/time savings by avoiding repeating certain exams, but also can reduce the number of unpleasant and even unhealthy examinations for a patient.

Although nowadays electronic patient information is available, it is spread over different information systems which have limited communication capabilities between themselves. As a rule, medical information is only accessible at a few designated workplaces within the current IT infrastructures. Most of them are by definition stationary. On the other hand, the medical treatment process is very much distributed over the whole hospital in a sense that both patients and physicians change their locations within the hospital most of the time.

wearIT@work was set up by the European Commission as an Integrated Project to investigate "Wearable Computing" as a technology dealing with computer systems integrated in clothing.

The project has 42 partners with a project volume of about 23.7 million € and a funding of about 14.6 million €

It is the largest project worldwide in wearable computing.

<http://www.wearitatwork.com>



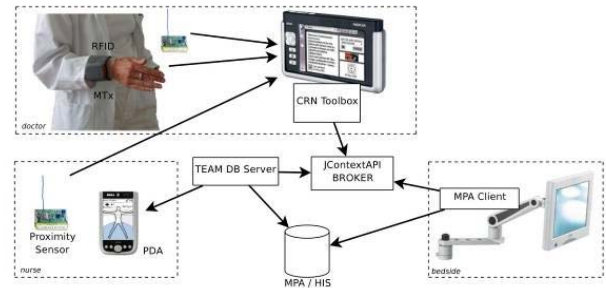
Equipping medical staff with mobile computers has proved to be useful in some cases. However, using a laptop often needs too much attention to be used by the doctor himself. So, often an assistant or nurse will be needed to perform this task. In most cases another nurse will handle paper based information and capture requests issued by the doctor for Later entry into the IT system.

## The solution

Physicians and nurses equipped with wearable devices and adequate software systems will have access to all available patient information at any time and any place in the hospital. This would:

- Take into account the mobility of medical staff;
- Provide usable, ubiquitous access to information through connections to the clinical server and audio and visual functions;
- Speed up data retrieval, improve the quality of the information and prevent patient mix-up through context awareness.

The wearable computer will be furnished with suitable and non-obtrusive input devices (e.g. gesture recognition, RFID scanners and proximity sensors) and will communicate with fixed infrastructure (e.g. bedside displays) and devices used by colleagues (tablet PC's, PDA's etc.).



## The benefits

The expected main benefits of using wearable input and output devices:

- Reduced time searching for patient information in different stationary information systems,
- Better patient treatment through online up-to-date information,
- Increased Patient satisfaction through information sharing,
- Improving the capacity of physician by increasing personal efficiency and collaboration capability,
- Reduction of errors through automatic patient identification, data capturing documentation.

## The future

Wearable technology will play a key role the Health Domain in the future. Ubiquitous healthcare will have to become wearable and un-obtrusive to get accepted. Because long-term eHealth requirements go far beyond ward round and other hospital processes.

Future societies will have to deal with increasing number of healthcare cases, due to higher life expectancy, civilization diseases and increased health awareness. The capacities needed for this demand cannot be provided by a traditional system based on hospitals and stationary monitoring.

Convalescent and aged people want and need to be accompanied by medical support while leading their daily lives as "normal" as possible. Wearable computing and the accompanying smart infrastructure will be needed to cope with such requirements.



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