

WEARIT@WORK: uWEAR - Wearable Computing for You



Introduction

While other pilots of wearIT@work take a more industry oriented approach to wearable computing and its advantages, uWEAR aims to address users on a more personal level and investigate how this new technology could enrich their everyday life. By adapting and extending existing wearIT@work wearable components, uWEAR brings navigational services to visually impaired users. The specially designed interfaces allow the user to efficiently get the needed information whenever necessary, while minimizing interference with current actions. uWEAR is not meant to replace current tools, such as white canes, but rather augment them in order to empower the user and give him more independence. For example it will be possible to get route guidance to a place that was never visited before, or always find out the current position - two not so trivial tasks for the blind. Also, the system is envisioned to be enhanced and customised for other target groups, for example cyclists, who require the same level unobtrusiveness when it comes to navigation.

The problem

Knowing how to get to a desired location, or simply the ability to amble and explore is one of people's basic needs, and unfortunately, until now, it has not been completely satisfied for blind users. Usually these users rely only on guidance dogs and white canes for help, and therefore the uncertainty of the information provided by these methods make simple navigational tasks very difficult. Getting lost becomes easy, because it is impossible to know with certainty exact positions, unless external help from passers-by is provided. Hence, independent living is not possible. Also due to the loss of confidence, parks or, in general, places with low population density are avoided.

Moreover, there has recently emerged a strong "want" to be able to get around unknown parts of a city without having to use cumbersome maps, or to be able to get navigational directions when one cannot focus his complete attention on this task (car drivers, cyclists).

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 world-wide in wearable computing.

<http://www.wearitatwork.com>



GNSS based navigational devices for pedestrians are starting to become available. However, these solutions are not wearable and the user interaction is not smooth. This is an important issue especially for blind users who are in a cognitive load and also need to pay continuous attention to the environment.



The solution

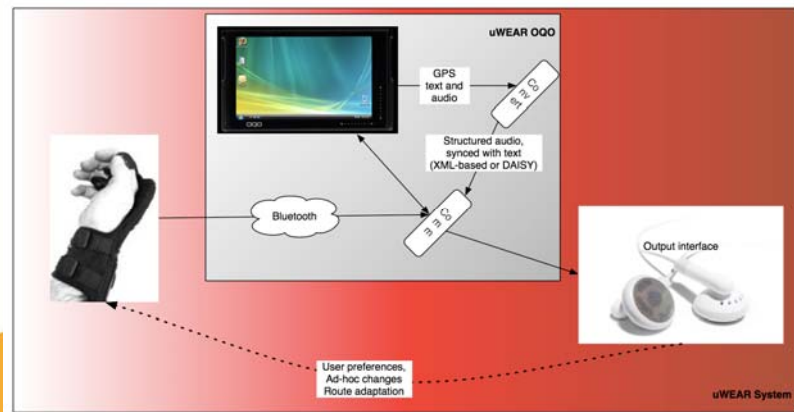
The solution proposed by uWEAR combines state-of-the-art user interfaces with off-the-shelf components. On the hardware side, it makes use of the processing power of the OQO lightweight computer, which can be easily carried in a pocket. The interaction with the OQO will be done through specialized speech recognition software and also by means of a data-glove that the user will wear. A standard GPS receiver will be used to get localization information outdoors, while a much more advanced WLAN based localization scheme will be employed for the indoor scenario. The user will receive suitable instructions through a special headset. Additionally, it will be possible to customise the system to the user's special needs, thus including it into his/her personal space. Of course, all components will make extensive use of Bluetooth in order to keep the wiring to a minimum. Also, by using a modular approach, the accuracy of localization and the services provided can be later improved as new technology becomes available.



The benefits

The benefits received by the visually impaired users are:

- ability to reliably travel to both known and unknown locations
- increased confidence and independence by always knowing the current position



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