

NFC aid for the visually and hearing impaired

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As the proportion of senior citizens grows, their special needs are gaining momentum. Human eyesight, for example, weakens with age. VTT Technical Research Centre of Finland has been developing new NFC-based applications that make life easier for the visually impaired. A group of affected persons recently tested an innovative, speech-based item identification system and new "talking" packaging for medicine and food. Solutions that link products and digital product info are becoming ever more common. They offer a range of possibilities for both the normal-sighted and the visually impaired. Food packaging, for example, can include links to information relevant to the individual customer, from the origins of the product to ecological aspects and possible allergy risks.

The HearMeFeelMe project, a collaborative effort by VTT, TopTunniste (Finland) Tecnalia (Spain) and Demokritos (Greece), introduced five different applications for acquiring [medical information](#), all of them based on NFC technology (Near Field Communication). By touching the info code on the packaging with his or her mobile phone, the user downloads product and dosage information which can be heard on a phone or computer. End users participating in the project represented the Finnish Federation of the [Visually Impaired](#) (FFVI), the Caritas Foundation, Joutsen Pharmacy 6 in Oulu and SSI, a Spanish provider of geriatric services.

Speech tagging application finds most favour

The testers' favourite was Top Tunniste's Touch 'n' Tag demo, a mobile [phone application](#) that enables visually impaired users to identify everyday items, including food, with the help of voice memos. The phone must be equipped with an NFC reader. To record a memo tag, the user touches the NFC label on the packaging and dictates the information into the phone. The recording can then be listened to by touching the label again with the phone. The test run indicated that the application was most commonly used to mark [food packaging](#). According to the majority of users, it was useful in recognising items and recalling product information. Additional benefit was seen in the possibility of recording the desired information in the user's own words.

Another demo application was developed during the HearMeFeelMe project, completed at the end of 2011. This was the so-called speaking medicine packaging. When touched, this provides spoken dosage instructions and other important information. The data was stored on the NFC chip by pharmacy staff and could be listened to by the user at home. The demo version was only available for PC, but the application is designed to run on programmable smartphones equipped with an NFC reader and a code scanner.

Not yet tested by end users was an almanac demo designed to ensure properly-timed medication, using the elderly person's own social network. This enables e.g. nurses and family members to remind the patient of scheduled doses of medicine or meetings. The user receives the reminder as a message on his or her mobile phone and replies with an NFC acknowledgement, e.g. by touching the pill dispenser with the phone, to inform the nurse or family member that the medicine was taken.

In the future, visually impaired people may use NFC applications for a variety of purposes, including item recognition, spoken product information on food or medicine packaging, personal reminders,

calendars or spoken manuals for home appliances.

Latest NFC applications not yet supported by current phone models

According to VTT, transforming written [information](#) into speech is easy in technical terms and would be of great benefit to old people and visually impaired persons of all ages. However, most current mobile phones do not support advanced NFC applications. The new solutions are designed for platforms not yet on the market.

Mobile devices are usually unbeatable when it comes to everyday IT-based services, since they are always flexibly at hand and the threshold for using them is low across all age groups. Solutions designed for devices that are already part of everyday life, become popular fastest.

Provided by VTT Technical Research Centre of Finland

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