

### Editorial

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The aim of this newsletter is to inform scientists, industry as well as older people in general about the achievements reached within the HERMES project. The newsletter appears approximately two times per year.

In this newsletter:

- First Review Meeting in Brussels
- First Prototype and HERMES Scenarios
- Results of the Networking Session at ICT 2008 in Lyon
- HERMES Technical Specifications
- HERMES Multi-touch Technology

Please do forward this newsletter to people that might be interested in the project! For more information on the project, take a look at the project website at <http://www.fp7-hermes.eu>.

Kind regards and enjoy reading!

Arjan Geven

*HERMES Project Administrator*

### First Review Meeting in Brussels

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On the 16th of December 2008 the first review meeting for the HERMES project by the European Commission took place in Brussels. At the review meeting leaders of the different work packages presented the achievements of the first year of the project. The main achievements in the first year of the HERMES project can be summarized as follows:

- Requirement analysis has been carried out to identify needs in remembering things (i.e. typical occurrences of forgetfulness, its effects and coping strategies), aiming at the right balance between training for independence on the one hand and cognitive support on the other hand. This task was one of the first steps within HERMES and has been carried out in Spain, Greece and Austria.

- A corpus of audio and video data has been collected with Austrian and Spanish users to train and develop algorithms for an advanced interaction between HERMES and the end user. Subsequently the audio data was transcribed in order to train and test the system's performance.
- The interface is being tailored to meet the needs of the user group, i.e. be customizable to take into account the heterogeneity of the HERMES user group. A first prototype has already been tested with older adults in Spain
- Research on cognitive games has been carried out and first cognitive training games that utilize personal information have been developed. These are currently being implemented to function on the touch table used for interaction.

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## First HERMES prototype and HERMES scenarios

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The HERMES consortium is expecting to finalize a first working prototype of HERMES in summer 2009 and subsequently evaluate its functionality with end-users in the two trial labs defined. This initial evaluation focuses strongly on the user interface and the user's general acceptance of the underlying technologies. Based on the evaluation with users the consortium aims to analyze the scope of the second prototype to match closely to the iteratively articulated user acceptance, usability and user experience challenges addressed together with end-users.

Functionalities and technologies that will receive most attention in this evaluation are the following components integrated in the prototype:

- Episodic memory support: Mobile conversations taking place being recorded and offline processed and added to the HERMES system
- Context-based reminder support based on the initial contexts of time and place.
- Cognitive training games that utilize personal information for training purposes

in order to facilitate independence and autonomy.

These functionalities will be tested with older adults and at a later stage in the project be refined with more robustly developed components.

Seven scenarios have been composed to address all the objectives within HERMES, these are:

- Facilitation of episodic memory
- Cognitive training
- Advanced activity reminding
- Conversation support
- Mobility support
- Facilitation of lexical access to people's names
- Searching for Common-Use objects

The scenarios will be evaluated with users in Austria to assess their meaningfulness for the user group. Accordingly, technological components for the first prototype are built and refined.

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## Results of the Networking Session at ICT 2008 in Lyon

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HERMES hosted a networking session at the ICT Event 2008 in Lyon with the title "Effectuating User Needs in ICT-Development to Support Ageing and Independent Living".

### Keynotes

Three keynote presentations started the session, with contributions from:

- (1) **Manfred Tscheligi** (CURE, Austria) and **John Soldatos** (AIT, Greece)
- (2) **Tom Zimmerman** (IBM Almaden Research Center, USA) and
- (3) **Javier Yanguas** (INGEMA, Spain)

### Panel Discussion

After these keynotes, the presenters joined the panel discussion with Anne-Sophie Parent (AGE-Platform, France) to discuss topics of effective user needs analysis.

To start up the panel discussed whether user know what they want and how to cope with such implications on qualitative research methods and how to design technology for elderly people. "Elderly people would rather deny that they need help. The problem is that people don't consider them to be part of "chronically ill person", but they want to be considered and treated like "normal"". So the real question for designers is: "how can technology be designed

in order to meet the real user needs and to avoid services that do not really improve the people's situation?"

The panel highlighted that designers should have a dynamic point of view when designing for elderly as health need and support need is changing over time, so that a more dynamic technology design is needed (at a particular point in time). In general, elderly users are interested in technology and what it can do for them. Here, elderly organizations could be an enabler trying to convince that technology could help. In such organizations elderly are able to get in touch with technologies step-by-step getting help and advice from other people. A field study in Norway was reported indicating fruitful outcomes of elderly teaching other elderly people.

Further, the importance of relatives and third parties in qualitative research approaches was emphasised (e.g. caregivers).

### HERMES Technical Specifications

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The consortium has completed the definition of the integrated infrastructure, merging all the contributions coming from the technical partners and refining the specification in the light of the envisaged prototype architecture. It includes the broad lines of the integrated platform across which all communication between the components takes place in order to ensure the correct operation of the various modules and sub-modules, as well as the correct internal and external exchange of data.

A system verification plan has further been defined to specify the unit and system level

An important question was raised addressing the economic accessibility of state of the art (research) technology for elderly users. The panel agreed that focused solutions could leverage consumer devices in order to modify existing products to the user needs accordingly.

The panel concluded that "design for all" needs to include diversity and universality at the same time. The user's different cognitive levels, diverse social roles, and various cultural backgrounds have to be considered, which is very difficult but at the same time irrevocable for technology acceptance. In any case, products need to be adjustable for various usage scenarios, which is currently still a problem as in the field a huge variety of individual's needs may not be covered.

tests and plans for integration of the prototype and final system.

This enables the systems integration work to proceed in a planned and measurable way. Passing the tests in the verification plan will allow the system to be signed off. The approach has been outlined adapting the guidelines defined for the IEEE 829 standard. The final plan includes clear description of the testing environment as well as the testing plan for individual subsystems and the integrated prototype.

### Introducing the HERMES Multi-touch Technology

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The HERMES system is presented to the user through novel ergonomic interfaces, which provide to aged users comfort, flexibility and natural interaction. In particular the HERMES end-user interface is implemented on multi-touch surface interfaces. Multi-touch screens

and related interfaces are acknowledged to be motivating environments for executing cognitive training games. Such interfaces fall within the wider wave of surface computing, which is gradually more and more associated

with ergonomic interfaces and natural human-computer interaction.

In the scope of the HERMES project, we have built a gaming environment over a multi-touch surface screen. This development has been based on in-house developed libraries for finger tracking, as well as specialized middleware mapping low-level events from the tracker to high-level application events suitable for authoring and development. In this way we have maximum control and flexibility over the platform development, comparing to the option of using state-of-the-art general purpose proprietary multi-touch systems (e.g., Microsoft surface). Furthermore, this option allowed us to capitalize on AIT's leading edge finger tracking technology.

Within the HERMES project a special multi-touch surface interface is developed that operates based on finger-tips movements,

which are very familiar to humans. This surface enhances interaction simplicity and makes memory support applications and cognitive training games more appealing to the elderly.

A surface with multi-touch potential also allows developers to implement interfaces with complex requirements. The surface is designed to be able to be embedded on a typical table. This enhances the quality of the user's interaction with the device and the cognitive support applications. At the same time it is preferable over interfaces that require users to familiarize themselves with several devices (e.g. the combination of a keyboard, mouse and computer monitor), which usually results to confusion and features a demanding learning curve. The implemented interactive surface can integrate such a design on the same physical device.

## About the HERMES Project

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“HERMES – Cognitive Care and Active Aging” is an international collaboration between six organizations in six countries, aimed at providing cognitive care to combat general cognitive decline induced by aging. The project is supported by the EU under Framework Programme 7 (Ref: 216709).

The project is conducted by the following six organizations:

1. CURE – Center for Usability Research and Engineering, Austria (Coordinator)
2. INGEMA Foundation, Spain
3. IBM Haifa Research Lab, Israel
4. University of Bradford, UK
5. Athens Information Technology, Greece
6. TXT e-Solutions, Italy

For more information about the HERMES project, contact the project administrator:

Arjan Geven  
*CURE – Center for Usability Research and Engineering*  
E-mail: [geven@cure.at](mailto:geven@cure.at)  
Tel: +43 1 743 54 51 14