

## Project Profile

# Enhanced approaches to human-system interactivity

## Merging interfaces, context awareness and multi-modal architecture to simplify use

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Putting interactivity in context will simplify systems use

***The continuous commercial introduction of new, ever more sophisticated and powerful devices with innovative functionalities unfortunately increases their complexity of use. The application opportunities offered by these new devices are often neglected or overlooked due to the difficulties in exploiting them. The EASY Interactions project intends to overcome this problem by assessing and proposing enhanced and innovative approaches to human-system and human-environment interactions in different application domains.***

We are facing a major revolution in the interactive approach to systems use as we move from a human-computer interaction paradigm to more pervasive human-system and human-environment interactions. Classic human-system interactivity is based on traditional devices such as the mouse, the keyboard, the joystick or the screen. Their use is already becoming difficult and time consuming in several specific domains as they are no longer able to cope with the growing complexity of today's information and communications technology (ICT) devices.

### PERSONALISED HUMAN-SYSTEM INTERACTIONS

EASY Interactions intends to develop and introduce enhanced and personalised human-system interactivity in application domains such as: the home environment; the medical environment; mobile applications; help for the elderly and the disabled; transportation; industrial and building sectors; and public-safety applications. In this way, the project aims to contribute to the achievement of the European Union's 2010 goal to bring ICT to everyone, everywhere.

The project will focus particularly on:

- Eye/head tracking;
- Gesture analysis;
- Speech recognition and synthesis;
- Natural language processing and understanding;
- The talking head;
- Spoken dialogue;
- Three-dimensional (3D) video systems; and
- 3D and multi-display devices.

By integrating cutting edge natural language processing techniques and machine learning with domain ontology, EASY Interactions will make it possible to carry out content and information mining at the semantic – or meaning – level. Existing user modelling methods will be extended by specific methodologies for the semantic analysis of content. The innovation foreseen in this project consists in improving techniques to provide an intelligent and semantic access to information and services.

### DEVELOPING CONTEXT AWARENESS ENGINE

As the technologies discussed above are intrinsically passive, they not aware of the context in terms of environment and user behaviour, nor are they able to adapt the interpretation of user command – proactive computing.

## EASY INTERACTIONS

(ITEA 2 ~ 06009)

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#### ■ Partners

3D Solutions  
 AIDICO  
 Alcatel Lucent Research & Innovation  
 CEA LIST  
 CREATE-NET  
 EADS Secure Networks  
 FIMI Philips  
 IDEAN Research  
 Martec  
 Moviquity  
 Philips I-Lab  
 Robotiker Tecnalia  
 SISTEPLANT  
 SR LABS  
 Telefónica I+D  
 Università' Degli Studi Di Bariuniba  
 - LACAM  
 University of Jyväskylä  
 - Cognitive Science  
 VECSYS

#### ■ Countries involved

Italy  
 Finland  
 France  
 The Netherlands  
 Spain

#### ■ Project start

October 2007

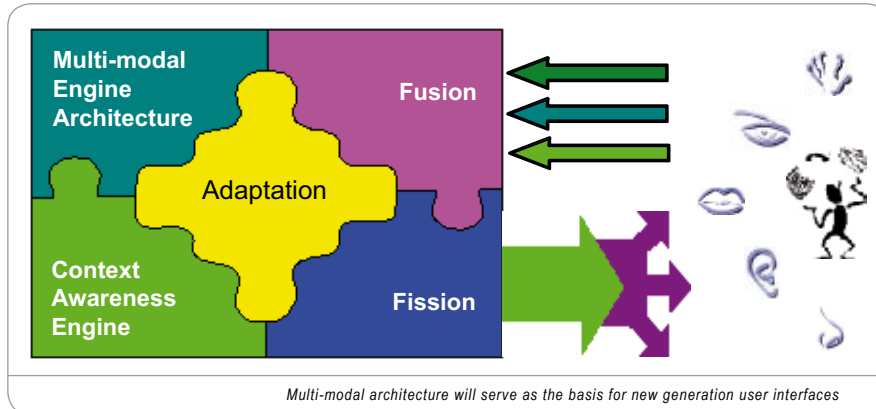
#### ■ Project end

March 2010

#### ■ Contact

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## Project Profile



The EASY Interactions project will therefore develop a context-awareness engine to:

- Take into account of all sources of context as soon as a sensor exists; and
- Learn user behaviour and adapt services and user interfaces.

Moreover, an enhanced human-system interface cannot be addressed by the juxtaposition of different interfaces but through a combination of them. The implementation issues, the interoperability and the upgradeability will also be addressed through the definition of an open multi-modal architecture.

### TAKING APPLICATION-DRIVEN APPROACH

EASY Interactions proposes an application-driven approach to introduce innovative solutions from research into market. The major results expected are:

- **Analysis of interaction data** for the definition of a user-behaviour profile, using a proactive approach, and interaction with the environment and human factors such as ergonomics, psychology, neuroscience and design;
- **Enhancement of the user interface** with its environment – context awareness – and also with the information system through multi-modal human-system interaction by developing new algorithms and techniques;
- **Development of key concepts and components to take advantage of context awareness** to adapt applications and human-system interactions to serve user needs better. EASY Interactions will make it possible to adapt to the user optimally and

dynamically by gathering user-context information and processing it to produce higher-level context information before providing it to applications;

- **Definition and implementation of a multi-modal engine architecture:** EASY Interactions will define and design multi-modal enablers – for example to enable the fusion of separate input streams or the splitting of application output to different devices; and
- **Demonstrates the approach in several real-world applications** based on practical scenarios that exploit the benefits of the new user interfaces.

### NEW GENERATION USER INTERFACES

An important goal is to accelerate the introduction and widespread use of new generation user interfaces. The involvement of small and medium-sized enterprises (SMEs) and large industries during all the phases of the project will guarantee the penetration of knowledge into industry and the spread of the EASY Interactions technology throughout Europe.

University and research centre partners intend to exploit the project results mainly in developing new types of user psychological approaches for investigating human-technology relations such as usability, a human factor.

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- ITEA 2 – Information Technology for European Advancement – is Europe's premier co-operative R&D programme driving pre-competitive research on embedded and distributed software-intensive systems and services. As a EUREKA strategic Cluster, we support co-ordinated national funding submissions and provide the link between those who provide finance, technology and software engineering. Our aim is to mobilise a total of 20,000 person-years over the full eight-year period of our programme from 2006 to 2013.

- ITEA 2-labelled projects are industry-driven initiatives building vital middleware and preparing standards to lay the foundations for the next generation of products, systems, appliances and services. Our programme results in real product innovation that boosts European competitiveness in a wide range of industries. Specifically, we play a key role in crucial application domains where software dominates, such as aerospace, automotive, consumer electronics, healthcare/medical systems and telecommunications.

- ITEA 2 projects involve complementary R&D from at least two companies in two countries. We issue annual Calls for Projects, evaluate projects and help bring research partners together. Our projects are open to partners from large industrial companies and small and medium-sized enterprises (SMEs) as well as public research institutes and universities.



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