



SMARCOS

SMART COmposite human-computer interfaceS



EXECUTIVE *summary*

Smarcos helps users of interconnected embedded systems by ensuring their interusability and allows devices and services to communicate in UI level terms and symbols, exchange context information, user actions, and semantic data. The project results will be applicable to all embedded systems that interact with their users, which is a substantial fraction of today's market. The results will also help web services that are integral parts of such systems.

CONTRIBUTION *to SRA*

- > **Seamless connectivity and middleware:** Smarcos targets interconnected embedded systems in three complementary domains: **Attentive Personal Systems, Interusable Devices** and **Complex Systems Control**. The project seeks cross domain connectivity at the user interface level, viewing devices through composite services that adapt to changing situations. Several devices may share their resources dynamically, which leads to more optimal usage of resources.
- > **Design methods and tools:** Smarcos builds models of human-device interaction to predict and analyse usability issues, its methods give

better early warnings on usability problems and point out differences between users' expected and observed behaviour. Smarcos can enhance design tools for design-time validation through a combination of system models, task models and measurements during simulations and run-time, which contributes to safety.

MARKET INNOVATION *& impact*

Smarcos results will be applicable to all embedded systems that interact with their users, which is a substantial fraction of today's market. The results will also help the **cloud services** that are part of such systems.

The project will look at **usability-enhancing** principles in several complementary domains (healthcare, personal devices, control systems), identify commonalities in their technical solutions (e.g. context-aware features) and transfer lessons learned and solution patterns between these domains. Smarcos results will enhance the products and R&D processes of our partners and their allies. The project concepts will lead to novel products, both as new, better devices and novel services in the cloud.

RELEVANCE & CONTRIBUTIONS to Call 2009 Objectives

Smarcos targets ASP8, human-centric design of embedded systems and takes a human-centric approach to managing the complexity of interconnected embedded devices raising the interconnections towards user level. Smarcos strongly contributes to the following aspects of the Call 2009:

Smarcos devotes WP2 to the development of models of users, tasks and systems. These models are implemented in tools and runtime systems in WP3, and applied in various domains in WP4, WP5 and WP6.

The project also covers multiple HCI application domains, from critical control systems (WP6: aircraft, vehicles) to personal awareness (WP4: health), and from smart communicating machines (WP3/5: collaborative context aware devices) to smart interfaces (WP5: Do Nothing UIs).

Smarcos builds technology for the **interusability of embedded interactive systems**. Through collaborative context awareness, these systems share interpretations of user contexts, adapt their interaction content and modalities accordingly, and learn user behaviour and preferences.

R&D INNOVATION and technical excellence

Smarcos focuses on key R&D challenges on designing, developing, implementing and executing user interfaces of interoperable applications and services.

The project provides solutions for enabling true seamless interoperability of distributed UI elements in selected application domains. Such potential application domains form by overlapping our industrial partners' technological competences: smartphones – home appliances – health and wellness – professional displays and beamers – multimedia – control & automation – interoperability SW. The project offers multi-domain solutions for enabling the easy development of interoperable user interfaces and joint development in the spirit of open innovation. Simplicity refers to both solutions and issues.

The project seeks technical excellence through:

- > Extending usability research and UI solutions to look beyond individual devices/services.
- > Reducing "artificial stupidity" by making devices better aware of what users/systems do.
- > Finding useful tools for modelling the combination of devices, services and users.
- > Improving the state of embedded HCI, creating new user studies and novel concept methods to be widely demonstrated.

PROJECT partners

Honeywell

tecnalia Inspiring Business

PHILIPS
sense and simplicity

evalan

NOKIA **FJORD™**

intecs
the Brainware company

sirris



BARGO
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indra

Human Interface Group
GIVING TECHNOLOGY A HUMAN FACE

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VTT



www.artemis.eu



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WEBSITE

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START

January 2010

DURATION

36 months

TOTAL INVESTMENT

€13.5 M

PARTICIPATING ORGANISATIONS

17

NUMBER OF COUNTRIES

7