

## e-SENSE has 24 Partners in 11 EU Countries Companies

ALMA Consulting Group (ALMA CG),  
IBM Research GmbH (IBM),  
Fujitsu Laboratories of Europe (FLE),  
Mitsubishi Electric ITCE (ITE),  
Siemens S.p.A. (SCI),  
Thales Research & Technology (UK) (TRT),  
Telefónica Investigación y Desarrollo Sociedad  
Anónima Unipersonal (TID),  
EADS Defence and Security Systems SA (EADS)

## Universities

University of Surrey (UniS),  
Aalborg University (AAU),  
University of the Aegean (Aegean),  
Consorzio Ferrara Ricerche (CFR),  
Delft University of Technology (DUT),  
Eidgenössische Technische Hochschule Zürich  
(ETHZ),  
King's College London (KCL),  
University of Oulu (UO),  
University of Twente (UT),  
Universite Pierre Mendes France, (UPMF)

## Research Institutes

Commissariat a L'Energie Atomique (CEA),  
Fraunhofer Gesellschaft zur Förderung der  
angewandten Forschung (FOKUS),  
Interuniversitair Micro-Electronica Centrum (IMEC),  
CSEM Centre Suisse d'Electronique et de  
Microtechnique SA (CSEM)

## SMEs

Ambient Systems B.V. (Ambient Systems),  
HFC Human-Factors-Consult GmbH (HFC)



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Acronym	e-SENSE
Title of Project	Capturing Ambient Intelligence for Mobile Communications through Wireless Sensor Networks
Project Type	Integrated Project (IP)
Call	FP6, 4 <sup>th</sup> Call
Proposal Number	IST-4-027227
Contract Number	027227
Start Date	01/01/2006
End Date	31/12/2007
Duration	24 months
EC Contribution	6.300.000 €
Total Manpower	950 person months
Project Officer	Paulo DE SOUSA
Logo	
Project Website	<a href="http://www.ist-e-sense.org">www.ist-e-sense.org</a>
Project Coordinator	Laurent HERAULT, CEA-LETI
Technical Manager	Derek BABB, UniS
Quality Manager	Giuseppe CANDELA, ALMA CG
Partner Countries	



Capturing Ambient  
Intelligence for Mobile  
Communications through  
Wireless Sensor Networks

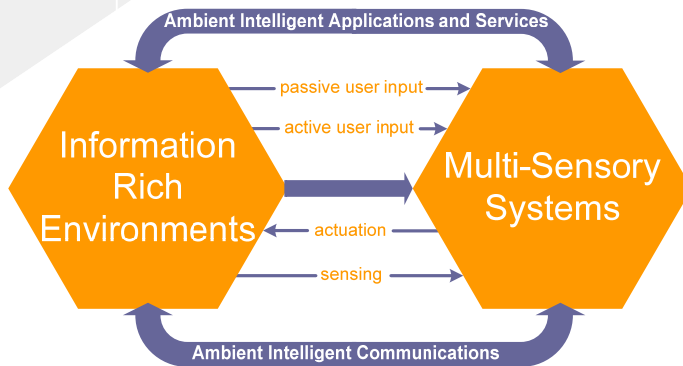
**Project Website:**  
[www.ist-e-sense.org](http://www.ist-e-sense.org)

**Project Coordinator:**  
DCIS Department, CEA-LETI,  
Laurent HERAULT, PhD,  
Head of Telecommunications Program,  
Centre de Grenoble, 17 rue des Martyrs,  
38054 Grenoble, Cedex 9, France.  
Email: [laurent.herault@cea.fr](mailto:laurent.herault@cea.fr)  
Tel: +33 (0)4 38 78 95 15  
Fax: +33 (0)4 38 78 51 82

# Project Summary

**VISION** – *e-SENSE enables capturing of Ambient Intelligence for Beyond 3G Mobile Communication Systems through Wireless Sensor Networks*

Ambient Intelligence is a key component for future beyond 3G mobile and wireless communication systems. However, the enabling technology that provides systems with information to allow for Ambient Intelligence has been neglected and currently consists of many independent modes of input, mainly relying on active user interactions or specialised sensor systems gathering information.



e-SENSE proposes a context capturing framework that enables the convergence of many input modalities, mainly focussing on energy efficient wireless sensor networks that are multi-sensory in their composition, heterogeneous in their networking, either mobile or integrated in the environment e.g. from single sensors to thousands or millions of sensors collecting information about the environment, a person or an object. This framework will be able to supply ambient intelligent systems with information in a transparent way hiding underlying technologies thus enabling simple integration.

# Project Work Packages

e-SENSE is implemented in 6 technical work packages and one project management work package WP7.

**WP1 Scenarios, Requirements and Socio-Economic Impact** - the aim of WP1 is to achieve a common vision of sensorised environments throughout the project and to identify potential future developments that take into account user centric aspects, technology road-mapping as well as business case perspectives.

**WP2 System Architecture and Concept** - the objective of WP2 is to develop an overall system concept and architecture for e-SENSE, which translates user expectations as well as application and functional system requirements into a technical requirement specification.

**WP3 Efficient and Light Weight Wireless Sensor Communications** - the objective of WP3 is to design a toolbox of algorithms spanning from the physical to the transport layer, aimed at increasing the system efficiency in terms of energy savings and application performance.

**WP4 Distributed Middleware Processing** - WP4 develops algorithms that are suitable for processing and combining data that is being collected by heterogeneous sensor networks; using an open architecture for communities, context-aware systems, defining interchange and advertisement of context information.

**WP5 Implementation, Evaluation and Validation** - the goal of WP5 is to provide platforms to evaluate the e-SENSE concept, consequently validate the approach and present show cases of key concepts.

**WP6 Dissemination and Exploitation** - this WP includes standardisation, dissemination and exploitation studies, and is particularly concerned with the electromagnetic coexistence problematic foreseen to arise with the large scale deployment of wireless sensor networks.

# Key Points

## Key Issues

The main contribution of this project is the key enabling technology for Ambient Intelligent Systems, namely Capturing Ambient Intelligence for Mobile Communications through very low power, highly efficient Wireless Sensor Networks. In order for Europe to be a leader in both the supply and exploitation of Ambient Intelligent systems, it must be able to provide the entire context aware end-to-end system. To date there has not been a concerted effort to produce a sensorised environment to interface to a mobile wireless network environment, tackling additional challenges raised by the mobility of the user.

## Expected Impact

The outcomes of e-SENSE are expected to have impact in the following areas:

- Personal Application Space
- Community and Professional Applications Space
- Industrial Application Space

e-SENSE also targets contributions to EU and International wireless standards as well as improvement of the EU competitiveness in this fast growing area.

