

1 Publishable executive summary

1.1 Summary description of project objectives

The aim of ATRACO project is to contribute to the realization of trusted ambient ecologies. Interactive appliances, collaborative devices, and context aware artefacts, as well as models, services, software components are parts of ambient ecologies. A context-aware artefact, appliance or device uses sensors to perceive its context of operation and applies an ontology to interpret this context. It also uses internal trust models and fuzzy decision making mechanisms to adapt its operation to changing context. Finally, it employs adaptive dialogue models to communicate its state and interact with people.

1.2 Consortium

	Ulm University (UULM)	http://www.uni-ulm.de/
	University of Essex (UESSEX)	http://www.essex.ac.uk/
	Research Academic Computer Technology Institute (RACTI)	http://www.cti.gr/
	Centre National de la Recherche Scientifique – Computer Sciences Laboratory for Mechanics and Engineering Sciences (CNRS)	http://www.limsi.fr/
	inAccess Networks (IAN)	http://www.inaccessnetworks.com/

1.3 Project Contact Details

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Project Logo



Fig. 1: Official project logo

Project Website <http://www.atraco.org/>
The website is described in the ATRACO deliverable D2 “Website and Groupware description”

1.4 Work Performed

1.4.1 WP2

The main task of WP2 during the first year was to complete the system specification and design and to validate concepts. For that reason a state of the art survey has been done, ATRACO service specifications has been modelled and the architecture and system specification has been defined.

1.4.2 WP3

After an extensive survey of ontology engineering tools and methodologies, an ontology engineering methodology tailored to the project domain requirements and properties has been designed and the tools to be used for ontology engineering have been selected. Then, the first versions of several ontologies have been engineered, including ATRACO upper level ontology (encoding the ATRACO perspective in the design of adaptive ambient ecologies), device ontologies (to represent the devices and services available in the project testbed), and user profile ontologies. At the same time, the engineering of privacy policy ontology and agent ontologies has started.

1.4.3 WP4

The main task of WP4 is to analyse the technical requirements and implement a set of basic components which complement the core research targeted components. An overall technical requirements analysis has been done and several basic components were derived. The implementation of those basic components supported the formation of the first year prototype which is the initial platform for the main prototype that will be developed in the next two years.

1.4.4 WP5

For the first project year the main task of WP5 consisted of collecting research results on adaptation and evolution of adaptive and trusted ambient ecologies. Exploring the suitability of existing evolving mechanisms for the adaptation of the ambient ecology, reporting on the research results, provision of specifications and driving the development of the corresponding components for the next project years were also lying within the focus.

1.4.5 WP6

Research on multimodal user interaction design and specification has been done in the first year. For that purpose a reusable Wizard of Oz platform has been developed and an evaluation with real users has been done.

1.4.6 WP7

Definition of several visionary scenarios and their mapping to the five dimensions of adaptation has been done. A basic scenario that guides the development of the first year prototype combined with detailed task descriptions form the second part of WP7 during the first year.

1.4.7 WP8

This WP incorporates the development and execution of the project dissemination plan and the production of the project's promotion material. During the first year, the objective was to successfully position the ATRACO project in the European & International RTD arena.

1.5 Main Results

Five dimensions of adaptation have been identified to be necessary to form an ATRACO system: Artefact Adaptation (AA), User Behaviour Model Adaptation (UBA), User Interaction Adaptation (UIA), Sphere Adaptation (SA) and Network Adaptation (NA). The research done so far to comply with those dimensions is described in detail in D13 "Research Results on adaptation & evolution". The outcome of this research represents a significant result of the first year.

Another main result of the first year was the development of the basic concept and the fundamental system design of a working 1st Year Prototype, which uses the iSpace at the University of Essex as deployment platform. The identification and collection of both technical and user requirements was essential to guide the development process. The definition and engineering of ontologies and the first network adaptation component together with user interaction adaptation studies perfect the outcome of ATRACO.

1.6 Expected Results

The potential impact of the ATRACO project is very considerable in the following key areas:

- ATRACO will provide an integrated approach to resolve the adaptation requirements of intelligent environments in terms of artefact operation, user behaviour, sphere composition, network selection and man-machine interaction with respect to user context and behaviour
- ATRACO will implement privacy management components which enable consistent privacy assurance in intelligent environments by introducing “content-sensitive” and “process-sensitive” privacy policies, which can be used to integrate different platform components in a trustable manner.
- ATRACO will integrate a combined adaptation strategy, with a sophisticated user interaction and privacy enforcement policy and measures the technology capability as well as the user acceptance through a number of prototypes that will be tested and evaluated in iSpace testbed.

This project will form a very important step towards the realisation of full ambient intelligent pervasive environments which are occupied by multiple users. The project will address many of the social, theoretical and practical research issues that will enable the creation of adaptable environments that can evolve in a life long learning mode to satisfy the user objectives. A wide range of application domains may benefit from research in this project including Health, Managed Public Environments, and Practice Skills Training.