



Toulouse, Feb. 17, 2004

Press Release

*The European Commission launches the IST-FET project **COGNIRON** : 'The Cognitive Robot Companion'.*

On January 20, 2004 the kick-off meeting of the **COGNIRON** project took place. The project was officially launched by the European Commission on January 1, 2004 under contract no. FP6-IST-002020 within the Sixth Framework Programme, Priority IST-2002-2.3.4.2. **COGNIRON** is one out of three so-called 'Integrated Projects' within the IST-FET (Future and Emerging Technologies) Proactive initiative "Beyond Robotics".

The overall objectives of this project are to study the perceptual, representational, reasoning and learning capabilities of embodied robots in human centered environments. The project will develop methods and technologies for the construction of such cognitive robots able to evolve and expand their capacities in close interaction with humans in an open-ended fashion. Expected results are basic methods, algorithms and architectures, and their integration, long-term experimentation and scientific evaluation on embodied robotic systems in different settings and situations.

In the focus of this research endeavour is the development of a robot whose ultimate task is to serve humans as a companion in their daily life. The robot is not only considered as a ready-made device but as an artificial creature, which improves its capabilities in a continuous process of acquiring new knowledge and skills. Besides the necessary functions for sensing, moving and acting, such a robot will exhibit the cognitive capacities enabling it to focus its attention, to understand the spatial and dynamic structure of its environment, to interact with it, to exhibit a social behaviour, and to communicate with other agents and with humans at the appropriate level of abstraction according to context.

The design of the cognitive functions of this artificial creature and the study and development of the continuous learning, training and education process in the course of which it will mature to a true companion, are the central research themes of the proposed project.

The proposed research and technological development efforts in **COGNIRON** have a strong focus on basic research. In order to understand and implement the fundamental processes enabling cognition in artificial embodied artefacts, and to achieve the objective of developing a cognitive robot companion, the project will address the issues of representations, understanding, reasoning, and learning mechanisms and interaction with humans and other agents. It will be organized along seven long-term research and technological development activities (RA) that enable to tackle these issues.

- RA1 *Multi-modal dialogues*
- RA2 *Detection and understanding of human activity*
- RA3 *Social Behaviour and Embodied Interaction*
- RA4 *Skill and Task Learning*
- RA5 *Spatial cognition and multimodal situation awareness*
- RA6 *Intentionality and initiative*
- RA7 *Systems level integration and evaluation*

Interaction with humans being both in the centre of a robot companion daily operation, and also a necessary mean for it to learn about its environment and to improve its behaviour, three research activities will respectively address multi-modal dialogue (**RA1**), understanding of human activities (**RA2**) and physical interaction with humans (**RA3**). As the capacities of learning and adaptation are at the core of the cognitive robot development, a research activity will specifically address learning mechanisms (**RA4**). It is however clear that learning is also present in all the other areas. One other activity (**RA5**) will investigate on the interaction of the robot with the physical world by studying the means enabling it to represent and understand the spatio-temporal properties of its environment through its own perception and actions.



The **COGNIRON** project aims at the development of a robot able to serve humans as companions in their daily lives



Another research activity (**RA6**) will explore the decision-making capacities of a cognitive robot by studying the means for focussing attention, developing motivations and taking initiatives in interaction with humans. The question of the organisation of the robot system and the interaction of all its functions within a coherent architecture will be also addressed in this activity. Finally, it is the partners' strong belief that the project developments must be evaluated by clear and measurable means. Hence a specific activity (**RA7**) will concentrate on the integration of several robot functions and their experimentation and evaluation in the context of well-defined scenarios that enable to exhibit the cognitive capacities and to assess progress.

The **COGNIRON** consortium at present consists of 10 partners:

- Laboratoire d'Analyse et d'Architecture des Systèmes (LAAS-CNRS), Toulouse, France
- Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland
- Fraunhofer Institute for Manufacturing Engineering and Automation (IPA), Stuttgart, Germany
- Royal Institute of Technology (KTH), Stockholm, Sweden
- University of Amsterdam (UVA), Amsterdam, The Netherlands
- University of Bielefeld (UniBi), Bielefeld, Germany
- University of Hertfordshire (UH), United Kingdom
- University of Karlsruhe (UniKarl), Karlsruhe, Germany
- Vrije Universiteit Brussel (VUB), Brussel, Belgium
- Gesellschaft für Produktionssysteme (GPS), Stuttgart, Germany

COGNIRON is co-ordinated by Dr. Raja Chatila (LAAS-CNRS).

The project is planned for a duration of four years (01/ 2004 – 12/2007), divided in four project phases. The project has a total budget of EUR 8,030,862.20 and has received a grant of EUR 1,879,570.48 from the European Commission for its implementation in the first 18 months.

Contact

Project co-ordinator : Dr. Raja CHATILA, LAAS-CNRS, France
Contact for project information : info@cogniron.org

Project website

<http://www.cogniron.org>

