

## **Title**

Ubiquitous Networking Robotics in Urban Settings (URUS)  
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## **Main researcher**

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## **Summary**

European ancient cities are becoming difficult places to live due to noise, pollution, lack of quality facilities and security. Moreover, the average age of people living in large European cities is growing and in a short period of time there will be an important community of elderly people. City Halls are becoming conscious of this problem and are studying solutions, for example by reducing the areas of free circulation of cars. Free car areas imply a revolution in the planning of urban settings, for example, by imposing new means for transportation of goods to the stores, security issues, new ways of human assistance, etc. In this project we want to analyse and test the idea of incorporating a network of robots (which include robots, intelligent sensors, intelligent devices and communications) in order to improve life quality in such urban areas.

Given the broad spectrum of an initiative like this, the URUS project will be focussed in designing and developing a network of robots that in a cooperative way interact with human beings and the environment for tasks of guidance and assistance, transportation of goods, and surveillance in urban areas. Specifically, our objective is to design and develop a cognitive network robot architecture that integrates cooperating urban robots, intelligent sensors (video cameras, acoustic sensors, etc.), intelligent devices (PDA, mobile telephones, etc.) and communications. Among the specific technologies that will be developed in the project, there will be: navigation and motion coordination among robots; cooperative environment perception; cooperative map building and updating; task negotiation within cooperative systems; human robot interaction; and wireless communication strategies between users (mobile phones, PDAs), the environment (cameras, acoustic sensors, etc.), and the robots. Moreover, in order to facilitate the tasks in the urban environment and the human robot interaction, commercial platforms that have been specifically designed to navigate and assist humans in such urban settings will be given autonomous mobility capabilities, as well as a simple but friendly robot head.

Proof-of concept tests of the hardware and the software systems developed will take place in a car free area of a city quarter of Barcelona.

The initiative of this project comes from the European Group inside of the Research Atelier on Network Robot Systems (a European EURON NoE-507728, RA project) which is producing a Roadmap of Network Robots in Europe, one important company on communications and sensors, one SME company to augment the urban robot sensory capabilities to produce a versatile robot, and one company related to organizational studies for the city of Barcelona in conjunction with the Barcelona City Hall and the Catalonia Government.