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ROBOTNIK AUTOMATION SLL



FUNDACIÓN TECNALIA
RESEARCH & INNOVATION



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PROJECT INFO



RUBICON is a three-year project, funded by the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement No.269914 ("RUBICON"). The project commenced in April 2011.

For further information, please contact

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rubicon

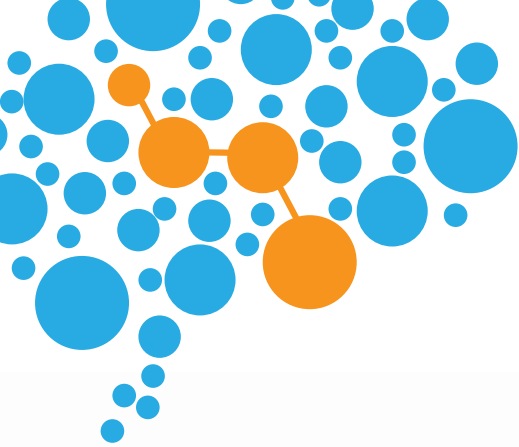
RUBICON will create a self-learning robotic ecology, or a

Robotic UBIquitous COgnitive Network

consisting of a collaborating network of sensors, effectors and mobile robot devices.

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WHAT IS RUBICON?

RUBICON is a new EU-funded project to merge robotic devices and sensor networks in a pervasive artificial brain.

RUBICON will combine the skills of several international robotics and cognitive sciences centres of excellence to develop a new type of computer system – a robot ecology of robotic devices, wireless sensors, and effectors embedded in everyday environments, that cooperate in the performance of complex tasks such as supporting an older person to live independently. Enabling robots and sensors to seamlessly cooperate in such ecologies is an important challenge for robotics R&D, with applications in a wide range of areas, including ambient assisted living, environmental monitoring and security. Healthcare is a particular area of emphasis for the project, but RUBICON's researchers believe that their work will see even more practical applications in the home, services and commercial sectors.

WHAT'S INNOVATIVE?

In many robotics projects, the expense involved outweighs the practical benefits of the technology. RUBICON's researchers believe that connecting sensors and cheap robotic devices together in an ecology will enhance the individual values of the devices involved, by enabling new services that cannot be performed by any one device alone. Consider for instance the case of an automatic vacuum cleaner postponing cleaning when any of the inhabitants are home after receiving information from the home alarm system.

One of the major obstacles to the realization of robotic systems is that they need to be pre-programmed with a huge amount of expert human knowledge so that they can react effectively in new contexts. These systems can soon become unmanageably complex and expensive. RUBICON will tackle this by building robotic ecologies in which each participant device will learn from the others and will assist each other's learning. This reduces the need for pre-programming, and so will be much cheaper to deploy in a variety of applications.

HOW?

To achieve its aims, the consortium will use a unique combination of expertise in cognitive robotics and wireless sensor networks and will leverage recent breakthroughs in Artificial Intelligence. The systems will be made up of components that encourage and teach one another as they carry out their tasks. The systems will be "goal-oriented" and will learn by themselves to achieve their goals more efficiently, and also adapt to changing requirements and user's needs - all with minimum human supervision.

Devices will be connected through synapses mimicking those found in biological nervous systems. When a new device joins the ecosystem for the first time, it will start to benefit from shared collective knowledge and memory, to share experiences and learn how to operate in its new environment, as soon as it comes into radio range of the nearest ecosystem element.

