

# Cooperative Radio Communications for Green Smart Environments

Smart Environments (SEs), like energy efficient buildings, vehicular or urban environments, are populated by many devices connected by wireless networks.

The radio channel is central to SEs, as it impacts the design of transmission techniques and communication protocols. Radio communications in SEs need to be green and based on cooperative paradigms in order to mitigate the effect of interference and improve efficiency – hence the definition of Green Smart Environments (GSEs).



GSEs will be one of the key components of the exploding market of the Internet of Things – which is of extreme interest to many large and small companies in Europe. The Internet of Things essentially refers to **a tagging of all uniquely identifiable objects, or things, so they can be identified and tracked in their daily life**. RFID (Radio-frequency identification) is generally seen as a prerequisite for SEs.

**Knowing the location of all things at any time, which products have been consumed and which are required, would greatly reduce stock wastage and increase knowledge of consumer trends, thus making the consumption of resources far more efficient.**

Action IC1004 'Cooperative Radio Communication for Green Smart Environments' addresses **research issues in the field of cooperative radio communications to make our society cleaner, safer, and more energy efficient.**

The main goal of the Action is to increase knowledge of cooperative communications applied to Green SEs (GSEs), by exploring and developing new methods, models, techniques, strategies and tools, in a context enriched by deep industry-academia links. The training of young researchers is also one of its main objectives to be pursued e.g. via annual training schools.

Europe is a leader in the area of mobile and wireless communications – it is essential that we foster research which will ensure Europe's continuous competitiveness.

This COST Action is still in its early stages, having just started at the beginning of 2011. This research group aims to facilitate efficient cooperation among industries and academia.

With a total of 28 COST countries participating, along with varied industrial collaborations, the Action promises to foster strong links and attain specific economic results of benefit to European industry. Specifically, the Action will play a supporting role to European industry, by ensuring all Working Groups are focused toward aspects of definite interest to industry.

Within the Action, four Topical Working Groups were set up to address specific types of Green Smart Environments (GSEs):

- Body Environment
- Vehicular Environment
- Indoor Environment
- Urban Environment

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There are also three Disciplinary Working Groups, which provide the scientific support to the Topical Working Groups:

- Radio Channel
- Radio Signalling
- Radio Networks

COST is Europe's longest-running intergovernmental framework in science and technology cooperation, providing funding for research networking projects called 'Actions'. Supported by the EU's 7th Framework Programme, COST mobilises and connects extraordinary scientific potential, within Europe and beyond.

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