

ENABLING INNOVATIVE RADIO TECHNOLOGIES FOR 5G NETWORKS.

Written by Administrator

Monday, 07 September 2015 11:20 - Last Updated Monday, 07 September 2015 11:30

The Spanish Ministry of Economy and Competitiveness has decided to fund the project ENABLING INNOVATIVE RADIO TECHNOLOGIES FOR 5G NETWORKS that will be conducted by the Radio Systems Research Group, and two other research groups from the Politechnic University of Madrid.

The project will last for three years.

The project ENABLING-5G is proposed from the results obtained in the project SICOMORO (TEC-2011-28789) as an applied oriented research project to evaluate radio technologies in real scenarios to give a solution to the challenges of the future fifth generation communications systems (5G). The project is based on the following hypothesis:

1. The new 5G systems will use frequency bands not exploited for consumer communications.
2. The new 5G systems will extend to new environments, particularly communications for the intelligent transport, vehicles as air flights or railways, isolated areas or emergency situations.
3. Radio technologies have to experience a consolidation process to cover the new needs of the society.

To guarantee feasible results, the project will offer solutions to the following case studies:

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1. Intelligent transport networks (ITS) applied to vehicle-infrastructure in smart cities.
2. Multimedia distribution in 60GHz band, with the objective of the analysis of radio technologies and new propagation models for wide band and millimeter wave frequencies.

The results will be valid for the transmission of Gbps in indoor, vehicles and urban scenarios (picocells or femtocells).

3. The role of the satellite in 5G networks, studying in Q, V or W bands, techniques for satellite links in isolated areas, vehicles or emergency situations, and new antenna technologies.

In this context, ENABLING-5G, has the general objective of “Innovation in radio technologies for the use of 5G in intelligent transport networks, multimedia distribution and backhaul through satellite technologies”.

The specific objectives are:

1. Development of innovations in radio technologies to improve the 5G performance on three case studies: intelligent transport networks, short range multimedia distribution and Access network through satellite links at millimeter wave frequencies. The actual technological developments will be:

- a. Planning and simulation of radio communication systems in millimeter bands (WP3).

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b. Modelling and measurement of radio channels, including the study of wide band channels in millimeter frequency bands and effect of advanced MIMO systems (WP4).

c. Signal processing algorithms in advanced MIMO systems, beamforming techniques and interference mitigation techniques (WP5).

d. Novel RF technologies and architectures for transmitters and receivers (WP6).

e. Novel antenna technologies in millimeter frequency bands, both active and passive with scanning capabilities. The technologies will be reflectors and array antennas (WP7).

2. Transfer of innovations to the Spanish business sector, in particular to the companies supporting the proposal (WP8).

3. Final evaluation of the results and analysis of their potential use to future applications covering the challenges for the Society of the Spanish Estrategy (WP2).

The expected result of the ENABLING-5G will pursue a significant impact in both a technological and a business level. The development of the 5G networks will be worldwide phenomena and multiple new services and applications will appear, linked to some of the technologies investigated in this project.

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The participants in ENABLING-5G are consolidated research groups with high experience in the selected topics. The research trajectory of the participants, with a high number of publications, projects, PhD thesis..., guarantees the success of the project.