



PROJECT DESCRIPTION

Reconfigurable Cooperative Communication Networks Enabled by Agile Spectrum Use

The project ROCKET (www.ict-rocket.eu) is financed by the European Commission in its 7th Framework Program, and seeks to define wireless solutions capable of delivering bit rates higher than 100 Mbps with peak throughputs higher than 1 Gbps, based on reconfigurable OFDMA cooperative networks enabled by agile spectrum usage. While increasing peak rates is a natural must-do for new standards, providing homogeneous high rate coverage is equally important as it guarantees a constant user experience over the whole served area and is the key enabler to a higher average spectral efficiency of the system. Those goals are inline with the IMT-Advanced requirements and match the requirements of the IEEE 802.16 Task Group m for Advanced Air Interface. In order to guarantee a strong focus and efficiency ROCKET spans the scope research to two questions which will be at the centre of future IMT-advanced system design:

- How can the bandwidth be enlarged and make the whole system benefit of it?
- How can the system spectral efficiency be increased and provide ubiquitous high bitrate coverage?

Those questions are addressed by devising methods for improved spectrum management, advanced multi-user cooperative transmission, collaborative inter-cell operation and ultra-efficient MAC design. Moving from theory to implementation, a highly efficient prototyping platform (empowered by state-of-the-art multi-core processors) accommodating PHY, MAC and Networking functionality, will be used to prove the computational feasibility of key MAC and cooperation concepts.

The activities of the project will be timely scheduled according to the activities of the working groups in the standards, namely in 802.16m and 3G-LTE. Results are to be spread into a wider audience for maximum impact, but also the protection of knowledge is considered as a crucial aspect.

The ROCKET consortium (formed by 9 European companies, universities and research centers) expects to generate techniques and results well beyond the state-of-the art in cutting edge technologies and aims at producing valuable intellectual property rights to boost world wide competitiveness of the partners.

RESPONSIBLE UPC RESEARCHER

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TYPE OF RESEARCH COOPERATION ENVISIONED

We offer doctoral and post-doctoral openings for good candidates.

FUNDING AND FACILITIES OFFERES

Salaries are competitive and commensurate with the value of the candidate. The position allows working in an international atmosphere with possibilities of travelling to meetings and conferences, and being in contact with world-classe companies and research groups.