

# PROJECT / New RAN TEchniques for 5G Ultra- dense Mobile networks

## TeamUp5G

### Main Objective:

In TeamUp5G we believe that motivation from involvement and engagement is key to learning. We want to place creative young researchers in front of the real world, enabling them to work on real-life technical issues, working across multiple European countries and organizations, presenting at workshops in front of industrial users/stakeholders, and becoming involved in standardization activities. We also want to provide them with communications skills, the ability to work in groups and an understanding of integrity and ethics in research. The project focus is ultra-dense small cell systems as an important component in future heterogeneous 5G networks (commercial deployment in 2020) and beyond. TeamUp5G considers aspects such as enhanced multi-antenna techniques, efficient backhaul/fronthaul, massive MIMO, communications in the millimetre-wave bands and visible light communications, as well as spectrum sharing and aggregation to enhance system capacity, decrease delay and energy consumption, and improve overall service quality. The research team of 15 young researches supervised by committed experts from the industry and academia will advance the state of the art with the design of novel physical/link/medium access control algorithms and protocols to enhance capacity and user satisfaction, new dynamic spectrum management, opportunistic optimisation of radio resources and cognitive radio techniques, together with self-organization capabilities, with different levels of collaboration, and techniques and methodologies to save energy. Both mobile broadband and internet of things applications and traffic will be harmonised. The new developed techniques will be analysed by simulation and prototyping and some show-cases (immersive video, drones) will be developed to illustrate the novelty and applicability of our ideas. The consortium will train the young researchers on how to contribute and will actively participate in the activities of standardization bodies.

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Reference: MSCA-ITN-ETN 813391, Funding: EU/H2020, Start Date: 01-01-2019

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Groups: [Radio Systems – Lx](#), [Mobile Networks – Av](#), [Network Architectures and Protocols – Av](#)

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Partners: Aarhus University, Alexander Technological of Thessaloniki, Eclexys SAGL, ISCTE - Lisbon University Institute, LiPhi Technologies, Nokia Spain SA, Oficina Española de Patentes y Marcas, Projecto Desenvolvimento Manutenção Formação e Consultadoria, Slawomir Pietrzyk (IS-Wireless), Telefónica Investigación y Desarrollo SA, TELENOR, UNIAUDAX, Universidad Carlos III de Madrid, Universidade da Beira Interior, Universidade de Aveiro, Universidade Nova de Lisboa, University of Western Macedonia

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