

PRESS RELEASE

Madrid, 19 November 2012

Towards a cloud-based mobile networks architecture

In recent decades, we have witnessed an exponential growth in the volume of traffic carried through mobile networks, for which forecasts anticipate a thousand-fold increase by 2020. For the purpose of finding viable solutions to cope with this challenge, Institute IMDEA Networks is coordinating the iJOIN European project.*

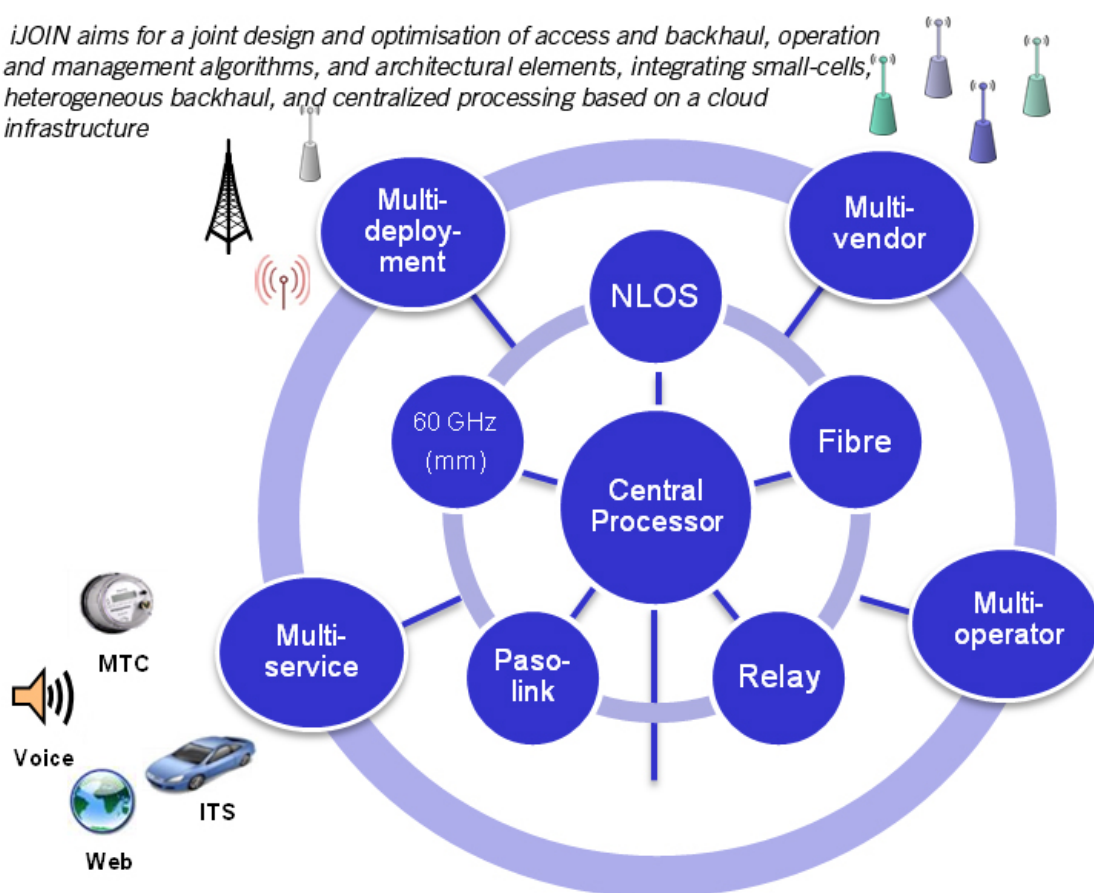


In consortium with leading academic and industrial partners, IMDEA Networks will conduct research on the design and development of cellular networks suitable to cope with the traffic demand (video and social media, for instance) of the future wireless Internet, while aiming at making those networks more energy-efficient (what is known in the industry as “green networking”) and lowering their deployment costs. The main pillar of these improvements focuses on shifting functionality to the cloud, according to the model known as *cloud networking*, which enables to cut down capital expenditures (CAPEX) and make the infrastructure easier to manage (OPEX), paving the way to the arrival of new entrants to the sector and thus promoting competition and economic growth.

iJOIN focuses on the “small cells” technology, key to achieving efficient usage of a limited and strategic resource: the radio spectrum. Due to the high levels of interference between cells, this technology requires a strong technological coordination, comparable to that provided by the solutions based on the centralized processing approach. iJOIN proposes a

novel approach, known as “RAN-as-a-Service”, through which the Radio Access Network (RAN) functionality is flexibly centralized in a cloud-based platform. In the existing systems, the backhaul and access network parts are designed separately, therefore they are not optimized. In order to support the centralized processing scheme while using heterogeneous backhaul networks, access and backhaul must be addressed simultaneously. In this context, the aim of the iJOIN project is the joint design and optimization of the access and backhaul networks, the management and operation algorithms, as well as the elements of the architecture, by integrating *small cells*, heterogeneous backhaul solutions, and centralized processing techniques supported by a cloud-based infrastructure.

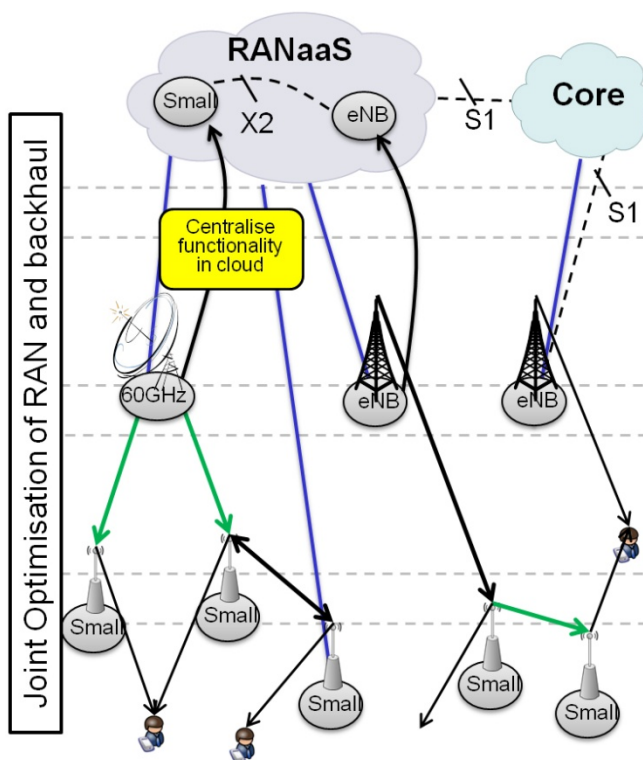
iJOIN aims for a joint design and optimisation of access and backhaul, operation and management algorithms, and architectural elements, integrating small-cells, heterogeneous backhaul, and centralized processing based on a cloud infrastructure



The iJOIN project exemplifies the firm commitment of IMDEA Networks to wealth-creating and value-adding research. The scientific and technological advancements resulting from

this project will be assessed according to quantitative objectives, with a view to fostering the success of the scientific cycle that goes from the solution of challenges through research and development to the standardization born out of the agreement between the industry and the parties involved, and the transfer of those results to the market and the society at large under the shape of new business opportunities arising, in this case, from new concepts for the implementation of mobile networks.

From the applied research perspective, iJOIN has the potential of delivering technological benefits such as a substantial increase in system performance without having to use more spectral resources, improved energy efficiency in terms of power usage per bit thanks to the use of high-density implementations, lower implementation and operation costs for small cells networks, and a more efficient usage and utilization of the existing resources. One of the potential outcomes of the “iJOIN” technologies is the possibility that the improved cellular connectivity would open the *RAN/backhaul* market to new entrants, such as vendors and providers of cloud infrastructure platforms. This would also lead to the development of a technological foundation enabling shorter and more efficient product development cycles, as a result of the shift from the use of dedicated equipment to cloud-hosted, software-based functionalities. Last, iJOIN will lead to a substantial reduction of the costs for carriers, since part of the complexity of the RAN processing will be moved to the cloud.

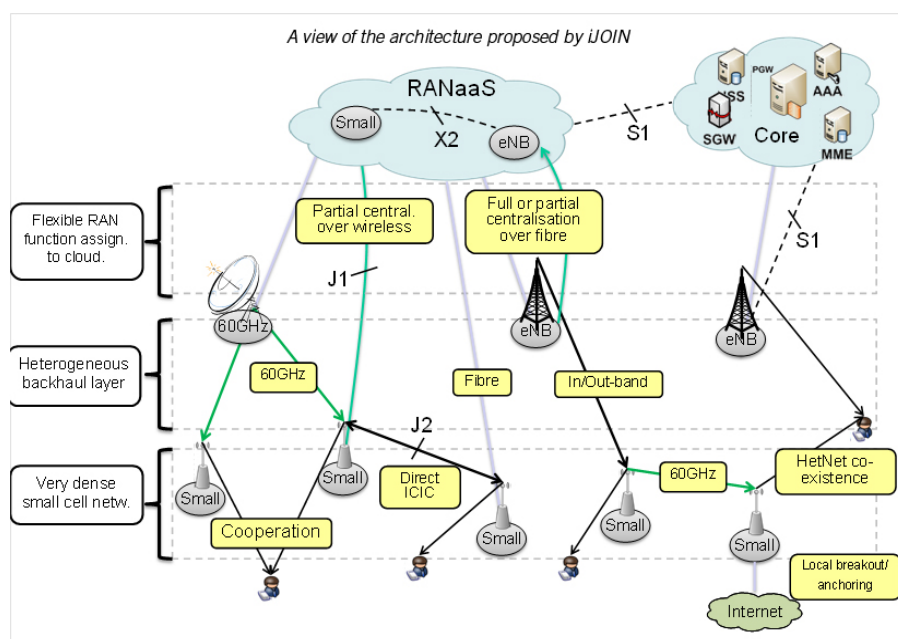


Albert Banchs, Deputy Director of the Institute, will work as the project coordinator, in charge of the research activities and the coordination with the partners of a consortium made up of the following organizations: Institute IMDEA Networks, NEC Europe Ltd, Telecom Italia S.p.A., Sagemcom Broadband SAS, Telefónica I+D, Intel Mobile Communications France, Hewlett Packard Italiana SRL, Commissariat à l’Energie Atomique et aux Energies Alternatives, Universität Bremen, University of Surrey, Technische Universität Dresden, Universidad Carlos III de Madrid

**IJOIN: Interworking and JOINT Design of an Open Access and Backhaul Network Architecture for Small Cells based on Cloud Networks, is a collaborative research project in the ICT area, included in the 7th Framework Programme of the European Commission, running from November 2012 to April 2015.*

More information:

[IMDEA Networks Research projects: iJOIN](#)



ABOUT INSTITUTE IMDEA NETWORKS

Institute IMDEA Networks is an international research institute supported by the Regional Government of Madrid and the European Union. The Institute brings together distinguished and young scientific researchers from all over the world to develop cutting-edge science and technology in the field of networking. In order to ensure a truly international perspective, the Institute's working language is English. Promoting interdisciplinary collaboration, the Madrid-based Institute works in partnership with leading businesses and scientists from around the globe. By generating new knowledge and understanding through its activities, the Institute supports the continued development of Madrid and Spain as a centre for international scientific and technological research.

www.networks.imdea.org

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