



<http://www.ict-ijoin.eu/>

@ict\_ijoin

## Interworking and JOINT Design of an Open Access and Backhaul Network Architecture for Small Cells based on Cloud Networks

### Relevant problems addressed

Mobile networks will have to provide an exceptionally greater traffic volume in the near future. The use of very dense, low-power, small-cell networks with a very high spatial reuse is a promising option to handle these demands, but this approach faces several challenges: Small-cell deployments will require a high degree of coordination due to strong inter-cell interference. Heterogeneous backhaul solutions will be used to connect small-cells and core network, but so far, access and backhaul are individually designed and therefore not optimised jointly.

### Distinguishing feature of iJOIN

iJOIN introduces the concept RAN-as-a-Service (RANaaS), where RAN functionality is centralised through an open IT platform based on a cloud 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 centralised processing.

### Opportunities

The introduction of the RANaaS concept has the potential to open the RAN/backhaul market for new players, like vendors and providers of cloud infrastructure platforms. RANaaS also provides the technological foundation for shorter and more efficient product development cycles due to the shift from dedicated equipment to software-based functions operated on cloud infrastructures. Finally, iJOIN technology will allow for a significant reduction of costs for operators, because part of the RAN computation complexity is moved to the cloud infrastructure.

### Key performance indicators

1. Significant Increase in the system throughput without increasing the spectral resources.
2. Increase the energy-per-bit efficiency by using very dense deployments and RANaaS.
3. Reduce the cost of deploying and operating small-cell networks.
4. Increase the utilisation efficiency to exploit more efficiently the existing resources.



Universitat Bremen



TECHNISCHE  
UNIVERSITAT  
DRESDEN



Universidad  
Carlos III de Madrid  
www.uc3m.es

