



## SHARING

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 Commissariat à l'Énergie Atomique et aux énergies alternatives, France  
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 IDATE Consulting and Research, France  
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 NEC Technologies, France  
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### Project Website

<https://www.celticplus.eu/project-sharing/>

## Self-organized Heterogeneous Advanced Radio Networks Generation

The main goal of SHARING is to propose cost and power efficient high capacity broadband solutions by:

1. Enabling a flexible interference management concept in order to trigger spectral efficiency increase in future heterogeneous networks;
2. Introducing smart and innovative offloading strategies, as well as joint RRM (Radio Resource Management) solutions across Radio Access Technologies (RATs);
3. Proposing a novel integrated architecture incorporating: seamless Inter-RAT service continuity, machine type communications, device-to-device transmissions and efficient licensed / unlicensed spectrum usage.

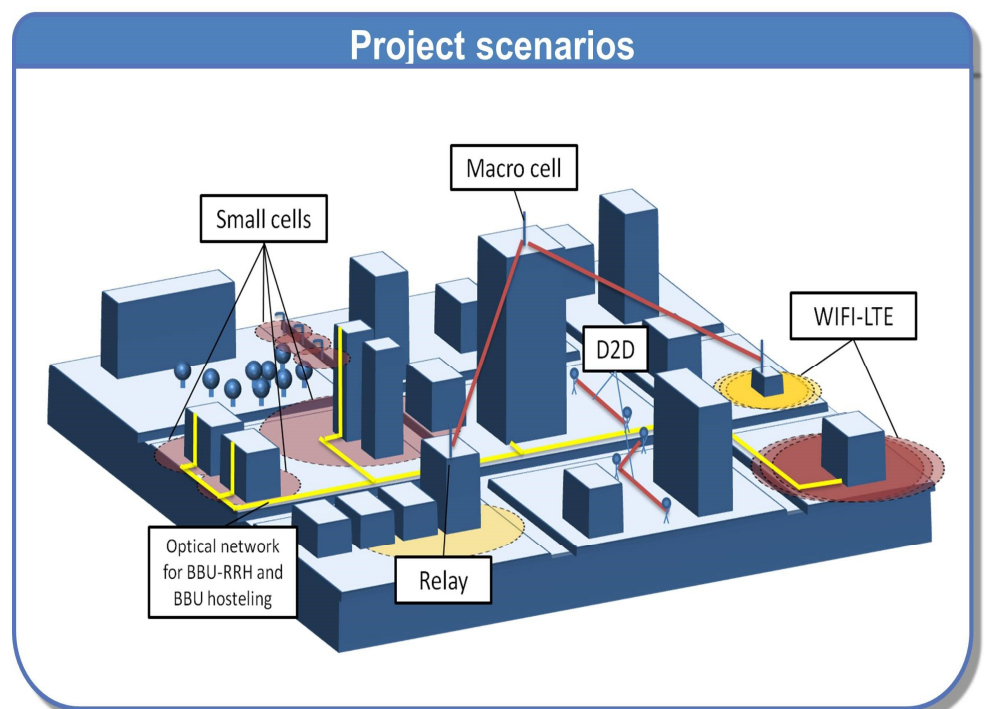
### Main focus

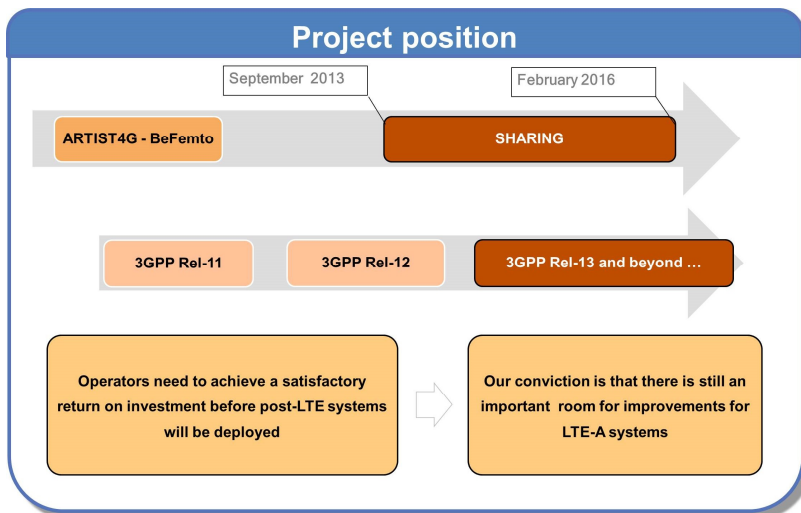
SHARING will take-up the following challenges:

1. Quality everywhere for heterogeneous services;
2. Capacity enhancement in the context of mobile data traffic explosion; and
3. Cost and energy efficient network operation.

SHARING will improve user experience of LTE-A by enhancing:

1. Fairness and flexibility in Het-Nets (Heterogeneous Networks);
2. Friendly co-existence of multi-layer multi-RAT HetNets; and
3. Spectral efficiency for the benefit of the less favored users.





## Approach

SHARING will address new concepts with a special focus on:

1. Advanced transceivers concepts including flexible interference management;
2. Deployment of cost/power efficient small cells and LTE-WiFi convergence;
3. Next generation HetNet SON architecture;
4. Meshed relay assisted networks; and
5. Network coordinated device to device communications.

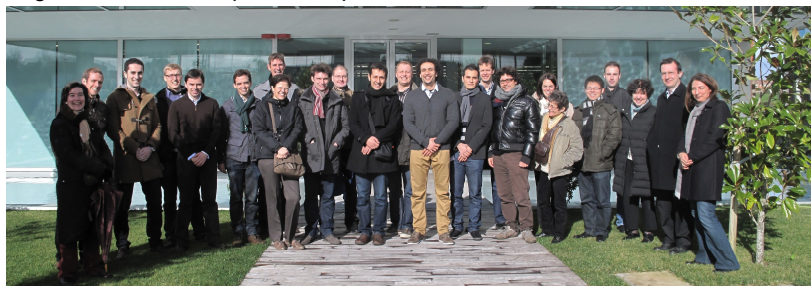
## Main results

The essential target of SHARING is to find solutions for a major capacity increase in future Heterogeneous Networks. This target is expected to provide results and achievements in two main areas:

1. Standardization: Based on pre-standardization consensus building, SHARING will provide inputs

to the relevant standardization bodies, especially in the timeline of upcoming releases of LTE-Advanced, particularly in relation to the scope of Release 14. This will ensure that technical concepts and solutions coming out of SHARING that are mature enough are exposed to the industrial forums for further development; promoting in this way standardized, interoperable and cost-efficient solutions.

2. Demonstration and prototyping: SHARING will provide software/hardware prototyping on demonstration platforms for a selected representative set of functionalities. Concepts such as advanced relaying, cooperative multi-point and inter-system (e.g. LTE-WiFi) radio access offloading are among the technical innovations that are foreseen for demonstration and prototyping. These proofs of concept will contribute to the transition from applied research stage to the work item phase in 3GPP, providing the link to the abovementioned standardization area.



## About Celtic-Plus

Celtic-Plus is an industry-driven European research initiative to define, perform and finance through public and private funding common research projects in the area of telecommunications, new media, future Internet, and applications & services focusing on a new „Smart Connected World“ paradigm. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental EUREKA network. Celtic-Plus is open to any type of company covering the Celtic-Plus research areas, large industry as well as small companies

or universities and research organizations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

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## Impact

SHARING is a joint effort of complementary actors to orient cellular standards according to mobile user throughput / QoS needs and European telecommunication community interests. We target:

1. Pre-standardization consensus building;
2. Key technology demonstrations;
3. Promotion and dissemination of project results in relevant fora (3GPP, NGMN, IEEE, WiFi Alliance, Small Cell Forum), workshops, international conferences, journals, and the project web site.