



UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

PROJECT DESCRIPTION

Title: Management of Internet Next Generation Services

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The evolution of wireless communications is a reality; we have seen that even mobile subscribers have outnumbered the users of traditional fixed lines in Europe and in some parts of Asia. One of the factors which are undoubtedly behind this tendency is that both networks and supported services have evolved to a human centric paradigm. End-users access, on a ubiquitous and transparent way, to a plethora of services, without paying attention to the technology which is providing the QoS profile according to their requirements.

This proposal merges the vast experience and know-how of the two research Groups which support it, and it aims at proposing an integrated architecture, able to tackle some of the most interesting challenges brought about by the next generation networks. In order to achieve this, the work will be streamlined according to the two main involved planes: connectivity (communication, access and networking technologies) and next generation service management.

Within the connectivity plane, the following aspects will be addressed:

* Cognitive techniques. We will benefit from the knowledge on the particular usage of the resources, so as to optimize its assignment according to the particular requirements of the end-users and the network status. The influence of considering different cooperation schemes between the involved operators will be studied

* Access selection within heterogeneous environments. Considering the great proliferation of wireless technologies it is sensible considering that in the near future an appropriate architecture to perform access selection within heterogeneous network environments will be required. This has to consider end-user preferences, the particular situation of the network, and should make the ABC (Always Best Connected) paradigm a reality.

* Multihop extensions and cooperative relaying. This is another concept which has gathered much attention recently. Mesh networks are an interesting alternative to extend the coverage of traditional network deployments and to increase communication performance, by means of cooperative relaying techniques

In what concerns the plane for next generation service management, we start from the assumption that we are dealing with next generation services, in the sense that they are characterized, amongst other attributes, by their capacity of personalization and ubiquity. Anyway, given the increasing complexity of next generation services and their management, this is only feasible by means of autonomous systems. In this field, we will study service self-healing problems, based on techno-economical criteria; behavior optimization (quality of service) based on self-learning techniques and the orchestration of distributed autonomous systems, so as to guarantee their stability and convergence.

It goes without saying that the synergy between the two previously mentioned planes is what confers the project a high relevance. The knowledge that the connectivity plane is able to acquire (even at the spectrum level) will be used by the service management system to optimize its operation. Besides, context information which will be used by the management plane will be also relevant when, e.g. determining the optimum access alternative.

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OTHER INFORMATION

Funding: average 1000 €/month
Duration: 4 years
Facilities : PhD execution in the scope of the above described project