

# Mobile Cloud Computing: Networks, Services and Architecture (MONICA)

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## Final Report

### Publishable Summary:

The overall objective of the MONICA project is to accelerate the transfer and deployment of research knowledge between European countries and China in order to obtain better understanding of mobile cloud computing in terms of its networks, services and architecture. In particular, the project focuses on a new vision of mobile cloud computing paradigm. This new vision advocates the seamless integration of both arms of a mobile cloud computing platform, each locating at the different layers, namely, cloud computing at the application layer and mobile wireless networks at the network and transmission layer. This integration calls for cross-layer information exchange of the two layers to create a mobile cloud computing system where mobile network operators, service providers and end users all benefit.

Mobile devices are typically resource-constrained, i.e., possessing relatively limited processing power, bandwidth and exhaustive battery supply in comparison with their desktop/laptop siblings. This feature makes it more attractive for mobile devices to outsource resources from remote clouds. However, wireless networks have varying channel quality and thus varying data rate and thus varying data transmission delay. They may also suffer from network disconnection. These features impose new challenges to the current XaaS technologies, such as how the live migration of virtual machines (VMs) tolerates network disconnection, etc. To address these new challenges, both of the two fundamental components of an MCC system need to be considered, i.e., mobile networks and cloud computing systems, as depicted in Figure 1.

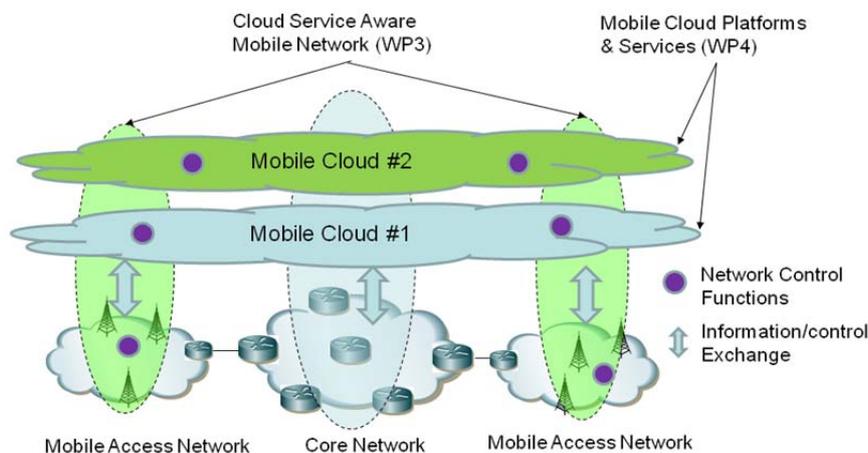


Figure 1. Two Domains of Concern: Mobile Networks and Cloud Computing

A cloud-driven network architecture and some cloud-driven mobile network algorithms are proposed. Two novel cloud computing frameworks are proposed, which are mIaaS sub-system and SaaS sub-system. The overall evaluation of the MONICA project in terms of both experimental work and theoretical work has been carried out and the results were promising.

This staff exchange programme also helped to develop new research links and deepen and strengthen the current research links amongst the partners and help build up long-term, world-class research in this exciting new research field of mobile cloud computing.