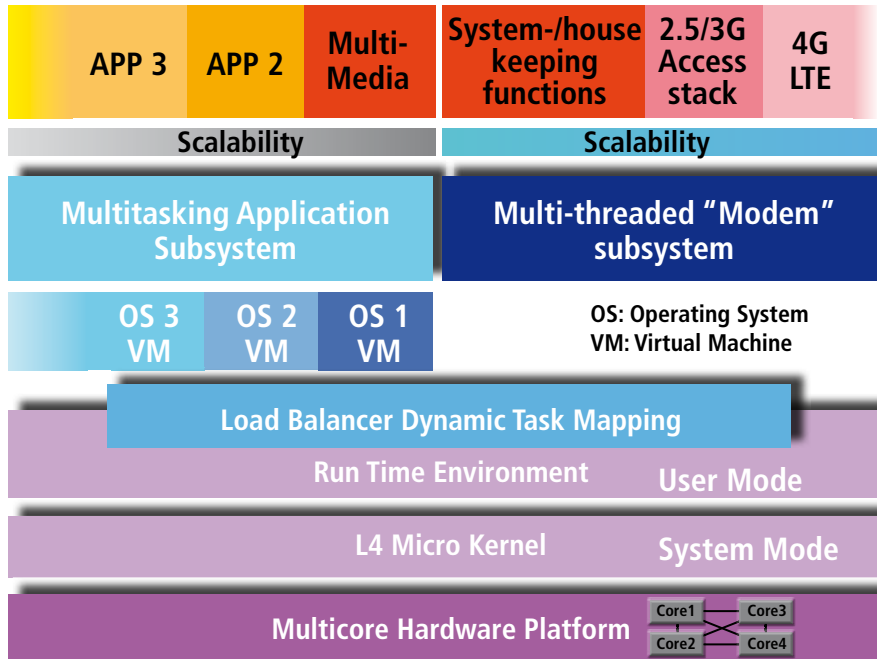# EC FP7 STREP eMuCo Project: Embedded Multi-Core Processing for Mobile Communication Systems

ICT-eMuCo project addresses the system platform of future mobile devices based on multi-core architecture

Flexible System Architecture for Future Mobile Devices

- Flexible system platform by a modular architecture.
- Seamless system platform allowing the coexistence of difference radio access technologies and software environments on the same platform.
- Improvement of computational processing capacity of applications
- Reduction of power consumption
- Scalability
- Real time handling of the system control signals and real time applications.

It is expected that eMuCo will have an impact on the future of mobile devices due to the revolutionary approaches in the system architecture. Two major European companies are active in this market: ARM as the world's leading supplier of cores for mobile devices and Infineon as the world market leader for communication RF integrated circuits. Both will participate in this project and will ensure the technology transfer. Many other suppliers in Europe depend on this market either directly or as a supplier for the major market players.

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ICT-eMuCo (www.emuco.eu) is a European project with a total cost of 4.6m€ which is supported by the European Union under the Seventh Framework Programme (FP7) for research and technological development with 2.9m€. This project is coordinated by Ruhr-Universität Bochum, which is known as one of the biggest universities in Germany. There are also many strong academic, as well as industrial, partners participating, such as Technische Universität Dresden (Germany), University of York (United Kingdom), "Politechnica" University of Timisoara (Romania), Infineon (Germany), Telelogic (Sweden), ARM (United Kingdom) and GWT-TUD (Germany).

Mobile communication has become the dominant branch in the telecommunication's sector over the last decade and is still rapidly growing in the market. Mobile devices for standards like the Universal Mobile Telecommunication System (UMTS) and the future Long Term Evolution (LTE) incorporate multiple radio access technologies to enable the best quality of service in the current environment of the user. In addition, on one hand, it is expected that there will be exponential growth in the usage of multimedia applications, such as video streaming, video conferencing, complex graphics etc., thereby increasing the demand for computational power, which can not be pursued further by accelerating the processor clock. On the other hand, the coexistence of multiple software environments will be necessary for delivering all demanded services to the user.

Today's mobile communication systems usually contain multiple processing units, but individual units are typically dedicated to specific tasks rather than being general purpose, e.g. specifically for protocol stack handling. Other design approaches allocate special tasks to dedicated systems resulting in unnecessary hardware for situations other than high load.

The aim of eMuCo is to address the platform for future mobile convergent devices based on multi-core architecture offering:

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