



Mobile and Wireless Communications Enablers for the 2020 Information Society

METIS

Mobile and Wireless Communications Enablers for the Twenty-twenty (2020) Information Society



Project Coordinator

Afif Osseiran

Ericsson AB

Tel: +46 10 71 32 670

Fax: +46 10 714 65 25

Email: afif.osseiran@ericsson.com

Project website: www.metis2020.com

Partners: Ericsson (DE, SE), Aalborg University (DK), Aalto University (FI), Alcatel-Lucent (DE), BMW Group Research and Technology (DE), Chalmers University of Technology (SE), Deutsche Telekom (DE), DOCOMO (DE, JP), Elektrobit (FI), France Telecom-Orange (FR), Fraunhofer-Gesellschaft (DE), Huawei Technologies GmbH (DE), KTH-Royal Institute of Technology (SE), National and Kapodistrian University of Athens (GR), Nokia Corporation (FI), Nokia Siemens Networks (DE, FI, PL), University of Oulu (FI), Poznan University of Technology (PL), RWTH Aachen (FI), Institut Mines-Télécom (FR), Telecom Italia (IT), Telefónica (ES), University of Bremen (DE), University of Kaiserslautern (DE), and Universitat Politècnica de València (ES).

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The project objective is to respond to societal challenges for the year 2020 and beyond by laying the foundation for the next generation of the mobile and wireless communications system. METIS is a consortium of 29 partners spanning telecommunications manufacturers, network operators, the automotive industry and academia

Main Objectives

Societal development will lead to changes in the way mobile and wireless communication systems are used. The advent of the Internet of Things and other innovative applications will see tens of billions of connected devices and an unprecedented diversity of requirements and use cases associated with wireless connectivity.

METIS will respond to the increase in traffic volume by increasing capacity and by improving efficiency in energy, cost and spectrum utilization. It will develop a system concept that delivers the necessary efficiency, versatility and scalability. The project will investigate key technology components supporting the system, and will also evaluate and demonstrate key functionalities.

METIS will lay the foundation for the future "5G" mobile and wireless communications system

METIS intends to enable European lead on the development of the future mobile and wireless communications system, and ensure an early global consensus on these systems.

METIS will help the mobile and wireless communications industry to expand markets and to create new business opportunities for the mobile communications industry, and to lever opportunities in other industries that can benefit from a vastly-increased mobile connectivity. European industry will benefit from METIS on the economic front by gaining prime-mover status due to the innovation generated by the project.

METIS will offer new wireless technology concepts and novel topics that will support services and application areas and open new business opportunities.

Key Issues

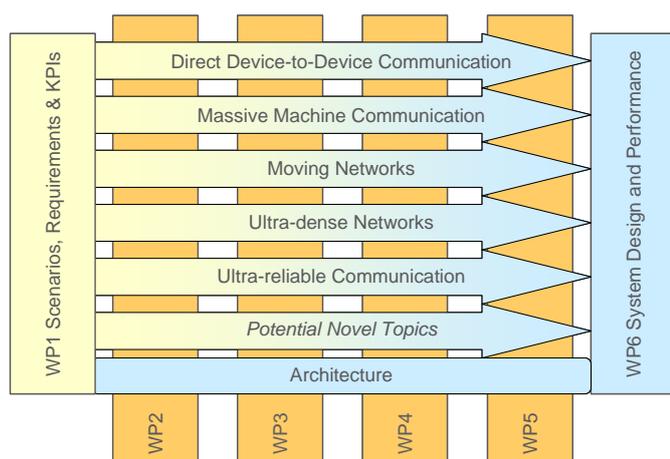
The societal development will lead to a rapid growth of mobile and wireless traffic volume, predicted to increase a thousand-fold over the next decade.

Further, it is generally predicted that today's dominating scenarios of human-centric communication will, in the future, be complemented by a tremendous increase in the numbers of communicating machines. There are forecasts of 50 billion connected devices by 2020.

The coexistence of human-centric and machine-type applications will lead to a large diversity of communication characteristics imposing different requirements on mobile and wireless communication systems, e.g. in terms of cost, complexity, energy dissipation, and service requirements.

Technical Approach

To meet the objectives, METIS pursues a two-fold approach leading to a matrix organisation of the project, as shown below.



This combines system-level design and evaluation through Horizontal Topics (HTs) with the comprehensive technical research in Work Packages (WPs). The Horizontal Topics ensure that the global challenges and system aspects are addressed appropriately and also ensure interaction and coordination across WPs for system-level functionality. Work Packages perform research in relevant areas and develop the technology components. This two-dimensional structure will ensure that the project responds to the expected future needs and has ability to adapt to unforeseen market, societal, technical and economical aspects of the studies.

The METIS work plan is structured into eight WPs, six of technical nature, one for

dissemination of project results, and one for project management. The work in the six technical Work Packages is selected to highlight the flow from user needs (WP1), to research on specific topics (WPs 2–5), to system-level synthesis and evaluation (WP6). **WP1 Scenarios, Requirements and Key Performance Indicators** will provide the scenarios, requirements and Key Performance Indicators (KPIs) to WPs 2–5. WP1 also includes the propagation and test-bed activities. **WP2 Radio Link Concepts**, will develop and investigate new radio-link concepts, tailored to meet the demands of future applications. **WP3 Multi-node/Multi-antenna Transmissions** will design Multi-node/multi-antenna technologies to achieve the performance and capability targets for future wireless systems. **WP4 Multilayer/ Multi-RAT Networks** will investigate network-level aspects related to the efficient deployment, operation and optimization of the future system. **WP5 Spectrum** will investigate ways to enable and secure sufficient access to spectrum by developing innovative spectrum-sharing concepts. **WP6 System Design and Performance** will use the Horizontal Topics to integrate the most promising technology components developed in WPs 2–5 and develop an overall system concept. **WP7 Dissemination, Standardisation and Regulation** will coordinate the dissemination of project results, and inputs to standardisation and regulation bodies. **WP8 Project Management** will interact with all WPs for the technical and strategic implementation of the work-plan.

Expected Impact

The METIS expected impact through dissemination of studies, standardisation and regulatory engagement can be summarised as:

- Participate in and contribute to the Road-Map overview for 2020 and beyond, in at least two major conferences;
- Organise at least one technical workshop at a major event/conference; and participate in at least two global workshops with non-EU fora, and regulatory regional bodies;
- Disseminate METIS scientific results related to technology components, by publishing at least 40 papers;
- Contribute at the European level to CEPT, and towards the WRC-15. The aim is to get METIS contributions agreed on a CEPT level and to contribute to European harmonisation;
- Bring METIS results and opinions into global regulations, by participating in and directly contributing to the ITU preparatory process towards the WRC-15.