

## IST/FP6 Call 1 – 2002: MAESTRO Integrated Project Presentation

Contract number: 507023

Project acronym : MAESTRO

Project name : Mobile Applications & sErVICES based on Satellite & Terrestrial  
inteRwOrking

Priority/Priority Component (e.g. Strategic Objective, etc.) : IST Mobile and  
Wireless Systems beyond 3G

Project logo:



List of participants (organisation name, country)

Alcatel Space	F
Motorola Semiconductor SAS	F
LogicaCMG UK Limited	UK
AGILENT TECHNOLOGIES BELGIUM S.A.	B
Ascom Systec AG	CH
University College London	UK
UNIVERSITY OF BOLOGNA	I
The University of Surrey	UK
Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V.	D
Udcast	F
SPACE HELLAS S.A.	EL
ERCOM ENGINEERING RESEAUX COMMUNICATIONS	F
AWE COMMUNICATIONS GMBH	D
GFI CONSULTING	F
SES GLOBAL	L
BRITISH TELECOMMUNICATIONS PLC	UK
E-TF1	F

BOUYGUES TELECOM	F
Alcatel CIT	F
Alcatel SEL AG	D

Total cost (€) : 10 150 538

Commission funding (€) : 5 200 000

#### Project objective(s)

The MAESTRO project consortium is proceeding with great thrust towards the development of the innovative Satellite Digital Multimedia Broadcast (SDMB) concept, which will pave the way for an effective Satellite and Terrestrial network convergence. Using the UMTS standard, the SDMB system will complement mobile networks with broadcast & multicast capabilities for spectrum-efficient delivery of multimedia services on mobile devices over umbrella cells in both outdoor and indoor environments, without introducing constraints on the user terminal or the consumer itself.

The MAESTRO project approach is to take advantage of the natural assets of satellite systems and ensure that the SDMB system achieves the highest possible degree of interoperability with terrestrial 2G and 3G mobile infrastructures in order to encourage multimedia usage adoption in Europe and contribute to the successful deployment of 3G.

The project objectives include:

- Consolidate Satellite Digital Multimedia Broadcast service, mission & commercial requirements
- Define the architecture supporting SDMB key functions and performances
- Validate key SDMB functions and performances with a test bed
- Investigate potential evolutions, novel methods and techniques which may benefit to the innovative satellite/terrestrial infrastructure
- Carry out standardisation and regulatory activities required for an effective SDMB system deployment
- Promote the system with dissemination and training

#### Key issues

- Achieve lowest impact on 3G handset with respect to cost, autonomy, form factor, aesthetics to maximise market penetration
- Maximise service coverage to meet the largest audience: Outdoor and Indoor
- Maximise efficiency for optimal exploitation of spectrum resources
- Achieve smooth inter-working with mobile networks:
  - Transparency to mobile network operations (e.g. paging, location updates, calls)

- Transparency to mobile & wireless network application enabling technology allowing portability of mobile & wireless application in SDMB environment
- Transparency to mobile network architecture (no impacts on interfaces, smooth co-siting of equipment) for ease of Deployment, Operation and Maintenance
- Enhance service offer to end-users: Select satellite service only when relevant wrt mobile networks taking into account service cost and continuity criteria: satellite has the edge over mobile network for:
  - broadcast addressing wide or scattered audience
  - coverage complement for point to point services.

#### Technical approach

The consolidation of the business & mission requirements associated to SDMB will be achieved by defining:

- The service offer taking into account the user feedback as early as possible and starting from previous study carried out within IST/FP5 MoDiS & MoDry projects (see [www.ist-modis.org](http://www.ist-modis.org) & [www.ist-satin.org](http://www.ist-satin.org)) and based on a service assessment campaign.
- The business model with all partners acting in the SDMB business chain.
- The business plan of the system taking into account evolutions of the 3G mobile market.

To define the architecture:

- The system requirements will be defined taking as inputs the service definition and the business model
- The required functions will be identified and detailed at the different layers of the system including radio & physical layer, access, network and transport.
- Some simulation tools will be developed to assess specific performances at the different layers which have a major contribution in key system performances. These simulation tools correspond to upgrades of tools developed in earlier projects such as ARTES3 SDMB (radio planning, transmission tool), ARTES5 SDMB (RF & baseband studies, Power consumption evaluation tool, Access layer simulation tool), CNES R&T & IST/FP5 MoDiS (Preliminary reliable Transport simulation tool), Internal FHG/IIS studies (Coverage measurement tool).
- The system architecture will be defined by distributing with all the industrial partners the required functions & performances between the different sub-systems which will be specified.
- Future evolutions of the system, including currently defined 3GPP features as well as point to point service capability relying on direct satellite radio link, will be designed and analysed.

A MAESTRO test bed will be developed based on the sub-system specification and trial specifications. It will enable to carry out laboratory tests as well as field trials to validate the SDMB system key functions and performances.

In order to be able to develop the test bed and carry out validation tests within the 2 years of the project, the project plans:

- To re-use major parts of the IST/FP5 MoDiS project's experimental platform.
- To define successive functional releases corresponding to a set of features for implementation in the MAESTRO test bed sub-system.

3 releases will be defined during the course of the project. However, only the first two functional releases which will be implemented on the test bed.

The implementation in the MAESTRO test bed of the 3<sup>rd</sup> release is foreseen within a subsequent FP6 project.

The promotion of the system will make use of the business and system analysis outcomes as well as test bed results to ensure the acceptance of SDMB by the relevant standardisation and regulatory bodies. These results will serve also all activities targeting the buying of the concept by the mobile and media industry.

#### Expected achievements/impact

- Mobile broadcast satellite system service assessment
- A business model for mobile broadcast satellite system that ensures an equitable share of revenues between partners acting in the mobile broadcast value chain.
- A system architecture with agreed technical specifications describing the mobile satellite broadcast system and its integration into the 3G mobile architecture.
- Consolidated system performance to support the business model.
- Standardisation of the functions implemented in 3G equipment ensuring inter-working of SDMB with 3GPP architecture
- A test bed to carry out validation of the key performance and functional requirements of the system.
- Innovations to the state-of-the-art in communication techniques for broadcasting & multicasting to be transferred to relevant standardisation bodies and scientific community
- Co-operation with other FP6 projects, to foster smooth inter-working of SDMB with other mobile and wireless technologies.

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