



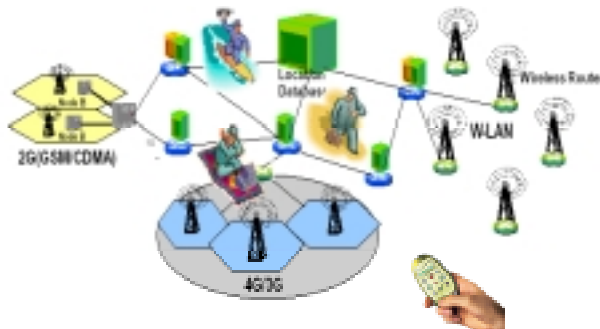
Multi-Mode Radio Architecture Platform for Enhanced 3G

General description: MuMoR IST-2001-34561

- The consortium consists of 8 partners from 5 European countries including 3 universities

(IMST (D), Nokia (D), Leti (F), STMicroelectronics (F), University of Aberdeen (UK), University of Surrey (UK), EPFL (CH), ISD (GR))

- Among the R&D companies and universities there are two industrial partners which are worldwide leaders in their discipline
- IMST is coordinating the project
- The project has been started at the beginning of April 2002 and has a duration of 30 months



Example of upcoming network infrastructure
which supports 2G/3G and WLAN

Objectives of the Project:

- The project is investigating the mobile terminal part of the network infrastructure
- Future extension of UMTS towards higher data rates (up to 10MBit/s) and the influence on the mobile terminal architecture and components are considered
- The radio frequency Front-End as well as the baseband are investigated in order to find a re-configurable architecture which is flexible to adapt to the different standards and is compatible to existing standards

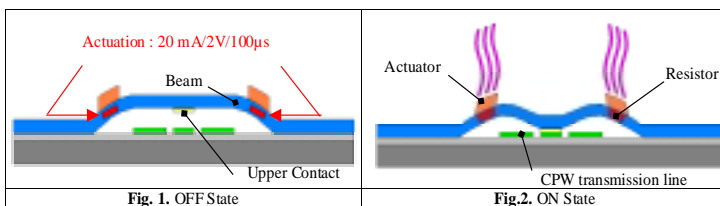




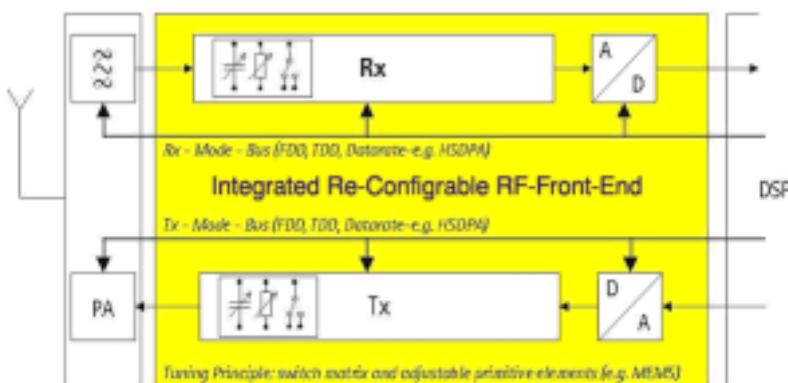
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Radio Front-End Activities

- From standardisation the system specification are worked out, where the different standards, e.g. UMTS FDD/TDD/HSDPA are considered and the target architectures like DCR for RX will be taking into account
- The overall Front-End architecture will be re-configurable in order to support different modes
- To evaluate the concept of a re-configurable radio Front-End, technologies like MEMS will be applied
- The new standards as well as the re-configurable concept has a strong effect on the performance of the RF component and subsystems. Therefore special emphasis will be on the specification and achievable performance of components like synthesizer, VCO or PA



Re-configuration by MEMS switching



Radio Front-End functional block diagram

- In order to demonstrate the re-configurable concept circuits and subsystem will be implemented on an advanced semiconductor process
- The results of the component validation are implemented into system simulation to demonstrate the concept
- At the end of the project a demonstrator based on simulations will show the functionality of the radio Front-End concept

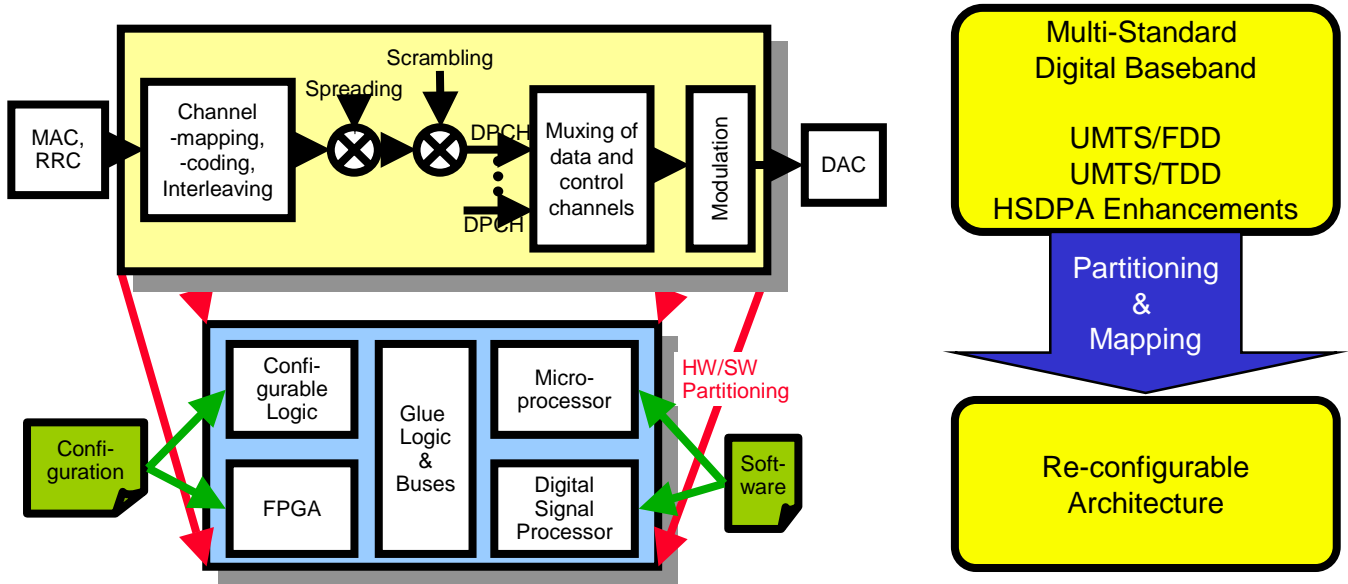


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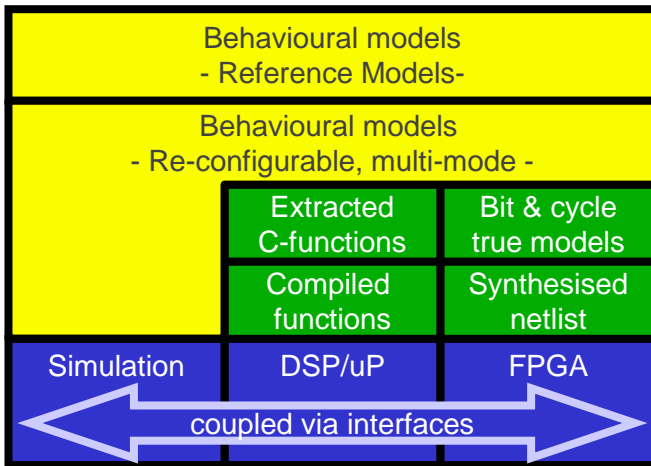
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Digital Baseband Activities



- Re-configuration capabilities as much as needed, but as few as possible
- Optimisation towards lowest power consumption

Digital Baseband Design Flow



Development Steps and Tasks

- Digital baseband architecture
- Methodology for soft-configuration
- HW/SW partitioning of BB functions
- Specification and modelling of BB functions
- Design of key components
- Pre-distortion techniques

Demonstration of key functionality on a HW/SW demonstrator

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