eMobility

eMobility – A shared European Vision

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Rationale for investment

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- Mobile & wireless products and services have an economic impact greater than the INTERNET
- Public investments in other regions is growing rapidly (Asia, N. America)
- Job creation from 4 Million jobs now to 10 Million in 2010
- Europe should ride the next wave of wireless innovation
 - Growth in the wireless/mobile sector
 - Growth in the applications sectors
- Mobile services account for about 3% European GDP at present



Membership - open

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Total number of members 261

Industry 86 Research 108 SME 67

Steering Board of 23 members (elected) Expert Group Mirror Group Executive Group

Israel: 6



"Improving the individual's quality of life, achieved through the availability of an environment for the instant provision of and access to meaningful, multisensory information and content" Simplicity, Efficiency & Trust









- 1. Vision of Future Mobile & Wireless Communications
- 2. Seamless User Experience
- 3. Business Infrastructures
- 4. Security and trust architectures
- 5. Ubiquitous Services
- 6. Ubiquitous Connectivity
- 7. Basic & Multidisciplinary Research
- 8. Accompanying Measures
 - Non-Technical Barriers

Grand challenges as seen by the ((())) *e*Mobility stakeholders in Europe

Build on Europe's strength in connectivity

- >50% of research funding in FP 7 for the mobile area should be devoted to connectivity and services research, with innovation coming through addressing simplicity, efficiency and trust
- Focus on the user experience and business perspectives in future research to ensure exploitation

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1. Seamless User Experience	11
2. Business Infrastructure	6
3. Security and Privacy, Trust Architectures	13
4. Ubiquitous Services	22.5
5. Ubiquitous Connectivity	35
6. Frontier and Multi-disciplinary Research	8
7. Accompanying Measures	1,5
8. Unplanned Res. Topics (future flexibility)	3

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Research Challenges

- Simplicity

- Ubiquitous connectivity and session continuity through auto-connectivity between legacy and new types of networks: WSN, PAN, LAN, Home Network, Moving Networks, Wide Area Networks and techniques which facilitate self-(configuration, organisation, healing) and management of heterogeneous and dynamic networks and services.
- A network agnostic service execution platform that interacts with networks and terminals and also facilitates the deployment, adaptation and management of services on the various (including mobile) devices.
- Innovative services based on a user's ambient intelligent and streamlined context classifications methodology
- Enabling techniques for user-created content facilitating peer-to-peer communication
- Smart user interfaces and interactions with learning capabilities
- New mobile device form factors, included embedded wireless chip connectivity
- Radically simplified mechanisms and technologies for context capturing, processing, distribution and integration into intelligent services.
- New and efficient search engines with automatic zero-configuration and complexity management (including the management of privacy and trust).
- Intelligent customer care and provision of smart support in real-time in case of technical difficulties.

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Research Challenges

- Efficiency-1

- Joint optimization of coverage, capacity and quality techniques through cooperation and adaptation techniques
- Efficient mechanisms for joint exploitation and operation of available diversities in time/space/frequency/code/power domains
- Investigation of alternative deployment concepts and system architectures
 beyond the classical cellular approach
- Efficient cross-layer operation and optimization
- Intelligent resource (frequency, battery, power, hardware, software) discovery and management techniques
- End-to-end content and media adaptation techniques such as time-shifting, intelligent catching, opportunistic transport/transmission, rate/quality adaptation.
- Centralised and de-centralised self-organising network topologies for both operator-based and operator-less radio access network concepts for special application areas (e.g., disaster relief and campus networks)

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- Efficiency-2

- Seamless convergence between fixed and mobile at both service and network levels, exploiting broadband optical technologies.
- Innovative transceiver architectures and jointly optimized RF and baseband hardware designs, matching the nano-electronics roadmaps and exhibiting new degrees of scalability, flexibility, security, energy-aware performance, cost efficiency and design productivity.
- Evaluation of Network Information theoretical limits of cooperative and selforganising networks and research into advance coding design and signal processing schemes to achieve these limits.
- Investigation of the impact of new frequency bands for future systems on the radio propagation and specification of appropriate output power levels to ensure compliance with relevant guidelines and regulations related to human exposure to radio frequency electromagnetic fields.
- New methods of frequency usage, coexistence, cooperation and sharing techniques for/between exiting and newly identified frequency spectrum and radio access technologies, based on cognitive and spectrum-agile radios to select the most appropriate radio access technology for a given environment.

Research Challenges



- Secure data management, and synchronization and private exchange of user profile and context information
- Efficient encryption and cryptographic mechanisms and algorithms suitable for different types of devices and networks
- Identity management & privacy
- Secure and dependable end-to-end network protocols and applications enabling a simple-touse trusted transaction environment
- Unified Digital Rights Management
- Transparent and flexible Service Level Agreements
- Combined multi-layered mobility support and authentication/authorization across diverse networks and support of simultaneous use of multiple access technologies.
- Secure software and execution environment including O/S
- Device and network protection against (virus, trojan, DoS attacks) and intrusion detection
- Safe and secure software download enabling networks and device re-configurability

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SRA Workshop

- SRA workshop on May 11th 06 Brussels
- Published on the web and the on-line registration
- http://www.emobility.eu.org/



Thank you for listening!