


Template for Summary of Project

Project acronym :	NEWCOM
Project name :	Network of Excellence in Wireless COMmunications
Logo	
Project URL :	http:// newcom.ismb.it
Project reference :	IST-2004-507325
Contract type :	NoE
Start date :	1/03/2004
End date :	1/9/2006
Project duration	30 months
Total budget :	10.402.500 € (including own contribution)
Action lines :	Mobile and wireless system beyond 3G
Clusters :	
Project Co-ordinator :	Prof. Sergio Benedetto Istituto Superiore Mario Boella Via Piercarlo Boggio 61 10100, Torino Italy Tel: +390115644031 Fax: +390115644099 Email: benedetto@polito.it
Number of partners :	60
Main objectives :	<p>NEWCOM (Network of Excellence in Wireless COMmunications) aims at creating a European network that links in a cooperative way a large number of leading research groups addressing the Strategic Objective "Mobile and wireless systems beyond 3G", a frontier research area of the Priority Thematic Area of IST.</p> <p>The main objectives of the NEWCOM vision are:</p> <ul style="list-style-type: none"> • Strengthening, development and integration of research in the field • Empowerment of groups and individuals via dissemination activities • Effective use of produced knowledge via exploitation-commercialisation-standardization strategies.

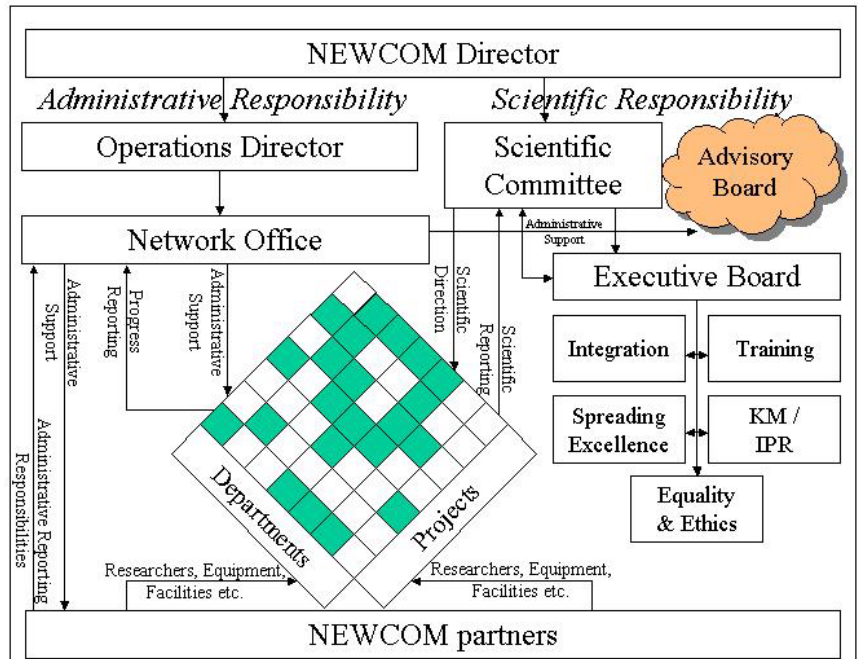
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Technical approach :

To achieve these dimensions, NEWCOM will implement an elaborate plan of initiatives which revolve around the key notion and strategic choice of a Virtual Knowledge Centre: *NEWCOM will effectively act as a distributed (decentralised) university, organised in a matrix fashion.* The columns will represent the seven NEWCOM (Disciplinary) Departments, characterised by basic research on well-established topics and grouping leading European researchers active in those topics. The rows will represent NEWCOM Projects, identified by important, "hot" problems whose solution requires multidisciplinary skills drawn from NEWCOM Departments and aggregated in a meaningful way to promote the problem solution.

The Joint Programme of Activities involves researcher exchanges, organisation of workshops and conferences, the preparation of graduate courses coordinated with the PhD programs of the academic partners to be diffused via NEWCOM high-speed network, the broad dissemination of scientific results, the promotion of entrepreneurship among its researchers, by setting up a policy of IPR encouragement and their exploitation through the creation of start-ups inside its distributed campus.

The "glue" connecting everything together is a set of tools for Integration, the unifying thread making all objectives and goals a feasible vision, and for Management, which maintains a clear separation between "administrative" and "scientific" tasks.



Key issues :

To be scientifically relevant, one has to be scientifically excellent. The list of members of NEWCOM demonstrates that the network has paid due attention to merging and balancing research excellence and critical mass in several areas of vital importance in wireless communications. As a few, non-exhaustive examples, we can cite some fields of excellence of the groups involved in NEWCOM:

- Analysis and Design of Algorithms for Signal Processing at Large in Wireless Systems
- MIMO Radio Channel Modelling for Design Optimisation and Performance Assessment of Next Generation Communication Systems
- Design, Modeling and Experimental Characterisation of RF and Microwave Devices and Subsystems
- Analysis, Design and Implementation of Digital Architectures and Circuits
- Source Coding and Reliable Delivery of Multimedia Contents

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	<ul style="list-style-type: none"> • Protocols and Architectures, and Traffic Modeling for (Reconfigurable/ Adaptive) Wireless Networks • QoS Provision in Wireless Networks: Mobility, Security and Radio Resource Management • Ad Hoc and Sensor Networks • Ultra-wide Band Communication Systems • Functional Design Aspects of Future Generation Wireless Systems • Reconfigurable Radio for Interoperable Transceivers • Cross Layer Optimisation <p>NEWCOM covers most of today's "hot" scientific topics in this broad research area and, in addition it approaches its scientific goals with the imperatives of coherence, harmonisation, and research integration in mind.</p>
Expected impact :	<p>Impact on Europe's Cohesion and Coordination</p> <ul style="list-style-type: none"> • Coordination of research goals avoiding major duplications • Timely diffusion of generated knowledge to avoid delays and time consumption • Sharing of common SW/HW tools permitting meaningful comparison of innovative algorithmic solutions • Prompt translation of methodologies into academic and continuing education programs offered by the best teachers using the NEWCOM network • IPR exploitation in a trans-institutional/trans-national way, through incentives and education to the entrepreneurial mentality. <p>Contributions to Standards</p> <p>The research of NEWCOM is reasonably expected to evolve further and instantiate itself in further successful contributions to the standards process. Specifically, the next step will be to feed the research results to the industrial partners of NEWCOM, results produced not only from the NEWCOM collaboration but also from other IST projects.</p> <p>The main areas of contribution are:</p> <ul style="list-style-type: none"> • providing wireline-like service qualities by mobile networks. • attaining substantially improved effective throughput and increased spectral efficiency, especially in the light of the prices and expenditures mentioned above. • achieving the seamless interconnection of existing networks into a web of networks. • combining the wireless network with the location features, i.e., the upcoming European Galileo System.