Template for Summary of Project

Project acronym :	WINNER
Project name :	Wireless World Initiative New Radio
Logo	In preparation
Project URL :	www.ist-winner.org
Project reference :	IST-2003-507581
Contract type :	IP
Start date :	1/01/2004
End date :	31/12/2005
Project duration	24 months
Total budget :	Around 21M €
Action lines :	IST-2002-2.3.1.4
Clusters :	tbd
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Number of partners :	38
Main objectives :	

The key objective of the WINNER project is to develop an innovative concept in radio access in order to address high flexibility and scalability with respect to data rates and radio environments. The future converged wireless world requires in the long-term perspective an ubiquitous radio system instead of disparate systems for different purposes (cellular, WLAN, short-range access etc.).

The vision of a ubiquitous radio system concept is providing wireless access for a wide range of services and applications across all environments, from short-range to wide-area, with one single adaptive system concept for all envisaged radio environments. It will efficiently adapt to multiple scenarios by using different modes of a common technology basis.

The concept will comprise the optimised combination of the best component technologies, based on an analysis of the most promising technologies and concepts available or proposed within the research community. The initial development of technologies and their combination in the system concept will be further advanced towards future system realisation.

Compared to current and evolving mobile and wireless systems, the WINNER system concept will provide significant improvements in peak data rate, latency, mobile speed, spectrum efficiency, coverage, cost per bit and supported environments taking into account specified Quality-of-Service requirements.

The concept will provide the wireless access underpinning the knowledge society and the eEurope initiative, enabling the "ambient intelligence" vision. To achieve this impact, the concept will be derived by a systematic approach. Advanced radio technologies will be investigated with respect to predicted user requirements and challenging scenarios.

The project will contribute to the global research, regulatory and standardisation process. Given the consortium pedigree, containing major players across the whole domain, such contributions will have a major impact on the future directions of the Wireless World.

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Key issues :	

The ubiquitous radio system concept, as envisioned in the WINNER project, is characterised by

- transmission speed, latency, capacity and range appropriate to the user and service requirements covering, e.g., low data rates up to peak data rates of approximately 1 Gbps. The detailed requirements will be defined in accordance with the user requirements;
- a toolbox of system elements, such as modulation and coding schemes, multiple access scheme, network topology, which can be used in the most appropriate combination to efficiently support any given situation;
- a minimum number of variants for the new radio interface system elements, with high commonality, to exploit synergy in research and ease implementation and reconfigurability;
- flexible and cost efficient RAN deployment concepts;
- high spectral efficiency supported by employing efficient spectrum sharing and flexible spectrum use methods;
- support for precise positioning with the new radio interface;
- efficient point-to-multipoint data distribution;
- low transmission power in order to minimise power consumption of mobile terminals, to reduce interference to other systems and to ensure compliance with EMC and EMF regulations;
- suitable complexity, evaluated with respect to signal processing and power consumption;
- scalable functionality, complexity, implementation effort and performance for innovative wireless services;
- jointly optimised protocol layer within the radio system taking into account core network architecture including Internet Protocols;
- support for mobility management and seamless interworking with various wireless access technologies;
- the capability to be integrated into an overall network and framework including interworking and coexistence with legacy systems.

Expected impact :	

The development of the WINNER concept will be based on known or predicted user scenarios and expectations, technical requirements from international bodies, market demands and an economic system deployment. It will sustain feasible new business models and will take into account the protection of legacy investments. The system concept will be open to further evolution to cater for evolving technology and market demands.

The capabilities of the new system architecture will impact role and business models and thereby the socio-economic environment, which will be identified, and possibly quantified, during the project.

The WINNER project will also estimate spectrum requirements for systems beyond 3G/IMT-2000 and will contribute to the relevant regulatory bodies, such that sufficient spectrum can be identified and made available in due time. Furthermore, the WINNER Project will contribute actively to the international regulation process to provide information about the foreseen system concept, future technologies and the corresponding new opportunities. The WINNER project will establish the platform for a harmonised solution within a European initiative to influence the international standardisation in order to achieve a worldwide standard. Results and concepts will be disseminated globally.

Last but not least, the WINNER project will perform training activities by means of workshops.

The manufacturers and operators in the WINNER project have strong relationships in the field of radio communications systems also with other industry players, external to the consortium. Such a relationship is, for instance, the Wireless World Research Forum (WWRF) extending beyond Europe and offering the WINNER project the opportunity to facilitate market growth and shape global markets to the benefit of European industry.

The end-to-end view on the system research taken in the Cross Issue work at WWI level will ensure, in cooperation with other WWI IPs, the global competitiveness of the European Industry by ensuring the consistency of the new B3G system at all levels of the architecture, and the smooth evolution path towards it from the existing or emerging systems.