European Research on Future Internet in Framework Programme 7

The European Union is presently funding collaborative research and development activities in the *6th Framework Programme* (FP 6) that has covered the period of 2002-2006. Activities in the communications field have made significant progress towards advanced communication technologies, systems and services enabling low cost broadband end-to-end connectivity and seamless mobile and wireless access solutions across a range of heterogeneous network infrastructures. Currently the European Commission is starting to implement the *7th Framework Programme* (FP 7) that will cover the period of 2007-2013. The area of communication technologies is characterised by the main technical objective of "ubiquitous and unlimited capacity communication networks". Activities are expected to aim at ubiquitous access over heterogeneous networks - fixed, mobile, wireless and broadcasting networks - spanning from the personal area to the regional and global area allowing the seamless delivery of ever higher volumes of data and services.

One of the target outcomes of FP7 are "technologies and systems architectures for the future Internet". The Internet is now a critical part of our economy's infrastructure and is expected to be an integral part of future industry, and society as a whole, similar to any other utility, e.g., electricity and water. In addition, it is expected that the future Internet will help to shape modern society, especially in the areas of health, education, and government.

However, its limitations due to the design made in the nineteen-seventies start hampering its potential. Evolutionary improvements to the current network will help sustaining the growth of the Internet up to a certain point, but are not seen as being enough to face the deep rooted weaknesses of Internet as regards support of Quality-of-Service (QoS) including security, efficient mobility support, scalability and wireless generalisation. The Future Internet should be able to sustain by one or many orders of magnitude higher the number of people, devices and objects connected, billions—perhaps even hundreds of billions of users, sensors, tags, processes, micro controllers, etc. It should ensure efficiency, security and trust in transaction for new services, incorporate mobility and universal connectivity in its conception, include the technical features for easy operations and management including guarantees for privacy, multiparty governance and delivery of new services.

Concepts should be developed that lead the way how to evolve from today's telecommunication networks and the Internet of today. There should be room for new concepts and paradigms, such as autonomic network management, protocols beyond TCP/IP, new architectures and new routing, identification and addressing schemes that are free from the constraints the Internet has imposed.

The presentation will first introduce the political context of research on *Information and Communication Technologies* (ICT) in general and more specifically of research on future communication networks. After the presentation of the current research portfolio in FP 6 covering ongoing activities and achievements, the rationale and content of the FP7 Work Programme and the first calls for proposals in this area will be presented. This will cover the research challenges, the identified research topics and the expected impact of these activities.