Project Information

Multilink Architecture for Multiplay Services

MARCH will develop and pilot new convergent network architectures and multimedia services for increased capacity and coverage. The project aims at improving user experiences by allowing each user to take advantage of available broadband, mobile, and broadcast networks simultaneously. Both fixed and mobile scenarios will be covered in urban and rural areas.

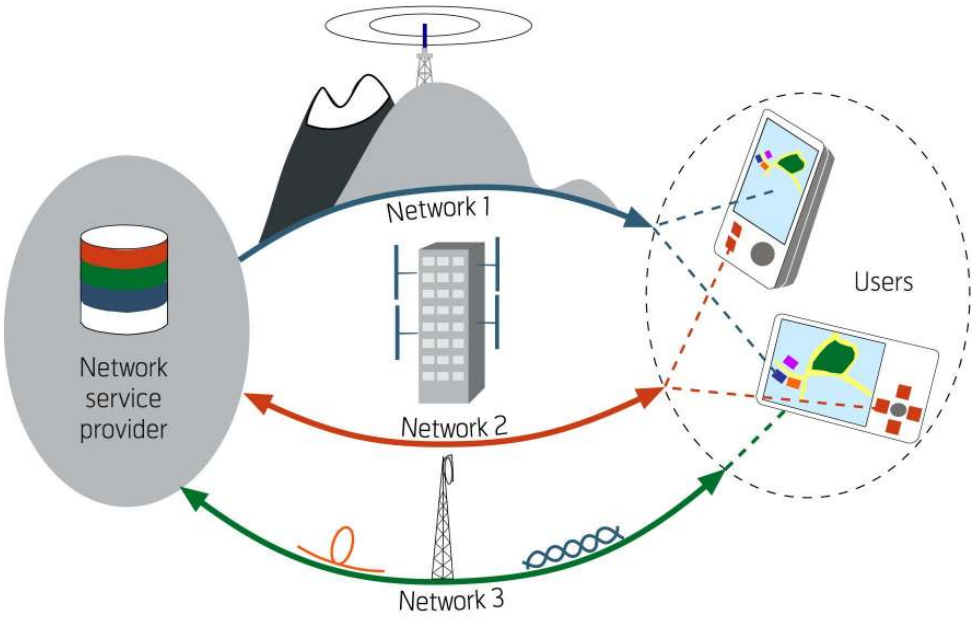
Main focus

MARCH addresses converged broadband service delivery over scalable multilink network architectures as indicated in the illustration.

In this basic architecture model each different link connects the terminals to a gateway or proxy, allowing multilink connection management. This model will be analysed, enhanced, and modified in order to provide details relevant for the implementation. The architecture work itself will address the network selection and connection, scalability, quality of service, and roaming. In particular, MARCH will analyse in depth the possibility to use a pool of access network interfaces (that may evolve dynamically) in order to transmit data uplink and downlink in an Internet context. The project will concentrate on multimedia streaming over wireless access networks and IP-based technologies. From a validation and demonstration point of view, both simulations and prototyping will be used.

Approach

The performance of the proposed solutions will be evaluated through traffic simulations. Furthermore, a multimedia service provisioning demonstrator will be piloted. The demonstrator will be a video streaming application dynamically exploiting mobile, broadband, and broadcast networks, possibly including WiMAX, WiFi, and DVB-H. The main goal is to show that multilink networks will provide new features that can be used for new and exciting end-user services. The demonstration will show that the modular architecture proposed by the project is capable of providing service continuity under varying



MARCH

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Bitnet CCSS, Romania

Budapest University Technology & Economics, Hungary

Gravity R&D Kft, Hungary

INDRA Sistemas S.A, Spain

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conditions, e.g., when the user moves. A video streaming demonstrator is particularly useful for this purpose, as it has stringent requirements with regard to service continuity and provides an excellent visualization of the concept of service continuity itself as well as quality of experience. The video streaming demonstrator will show, how an application in collaboration with network level services can adapt to varying availability of multiple links and varying quality of each link while taking individual user preferences regarding video QoS into account (personalization of service QoS).

A combined approach on network layers 1-3 is in itself innovative, as it addresses the issue more globally than one forum alone (e.g., IETF) can do. The MARCH project goes even further by addressing the interworking of all layers, including the application layer. In particular, the division of responsibility for traffic distribution between the application layer and lower layers will be analyzed in detail.

Complex architectures like multilink networks have a number of internal and external interfaces. The standardisation of these interfaces is important to ensure interworking and inter-accounting between different operators and providers. To this end, the project will contribute to the standardisation of a modular scalable network, e.g., ITU, ETSI TISPAN, and 3GPP.

Main results

- A multilink network allowing applications to simultaneously utilise several available network access links.
- A modular scalable network architecture that much better supports growth with business and lowers operational costs.
- A public network and application demonstration. This comprises two or three different access networks and a video-streaming application to demonstrate and validate the functionality, interworking, synchronisation, session continuity, and access discovery enabled by the network architecture.
- Business models for the possible actors in the multilink network architecture for other types of new network structures (e.g., software-defined and cognitive radios) for various user scenarios.

Impact

MARCH allows operators to increase their customer base since multilink increases the coverage, offering enhanced services, and facilitating use of these services by assuring always best connectivity in a transparent, simplified manner for the end-user. New sources of revenue include mobile broadband (e.g., mobile office) and IP/mobile-TV, for which MARCH will provide a more efficient platform than those that can be put in place only in the next couple of years. The number of mobile customers is steadily increasing in other countries where the market is not saturated yet, but these users, too, will ask for communication solutions beyond voice, provided the price increase is moderate. This can efficiently be achieved by using combined networks. It will also allow for an efficient utilisation of several owned networks, or better defined cooperation with other actors, particularly content providers. MARCH allows partners to advance the state of the art, gain valuable expertise, and to become a leading provider of solutions within the domain of highly adaptive multilink streaming.

About Celtic

Celtic is a European research and development programme, designed to strengthen Europe's competitiveness in telecommunications through short and medium term collaborative R&D projects. Celtic is currently the only European R&D programme fully dedicated to end-to-end telecommunication solutions.

Timeframe: 8 years, from 2004 to 2011

Clusterbudget: in the range of 1 billion euro, shared between governments and private participants

Participants: small, medium and large companies from telecommunications industry, universities, research institutes, and local authorities from all 35 Eureka countries.

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