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Editorial

Networks of Excellence

Networks of Excellence (NoEs) are an effective and efficient instrument for conducting joint research in the technical and scientific environments. NoEs are characterized by aiming at long term research goals, and achieving them by coordinating the research activities of its members through joint workshops, short-term visits and exchanges, training and development of PhD students, and exploitation and integration of the research results coming from the individual member labs.

One such NoE is E-NEXT (Emerging Networking eXperiments and Technologies) that aims at integrating the European research on Networked Audio-visual technologies, being at the same time open to collaboration with leading researchers from outside Europe. The concept driving the E-NEXT NoE is a stronger coordination of independent research initiatives within each member state into European-scale initiatives, to work in a more coherent way towards international scientific collaboration. This collaboration is being applied to the particular research field of networked audio-visual technologies, with the objective of achieving the integration of *computers* and *networks* into the everyday environment, in such a way that allows access for every ordinary citizen, enabling the use of a multitude of services and applications through self-configured and easy-to-use interfaces. We emphasise that the terms 'computers' and 'networks' should not be simply interpreted as the different varieties of PCs and the current ways of accessing the Internet, but rather should be understood in their widest possible interpretation as 'any electronic device' and 'any type of personal, local or wide area network, either wired or wireless'.

E-NEXT is structuring itself as a distributed research centre, composed of research groups belonging to leading universities and industry Labs in Europe. E-NEXT counts forty-four member institutions, and enrols over two hundred researchers and PhD students. This large community vertebrates its research efforts around four Technical Working Groups, each of which develops complementary technical advances in the Networked Audio-visual area. The four technical working groups of E-NEXT are:

- Mobile and Ambient networking
- Content Networking
- Self-Aware & Scalable Networking
- Service Aware Networking

E-NEXT was formally started on January 1st, 2004. Along the year 2004, the process of aligning the research results of the many different institutions in E-NEXT, and the process of integrating their efforts, have begun to show some promising results. Some of these results are presented in this special issue of Computer Communications, as an exponent of the work being produced within the Technical Working Groups of E-NEXT.

The first paper, 'Real-time service provisioning for mobile and wireless networks', provides an overview of the fundamental technical challenges that need to be solved in order to easily support real-time applications in wireless and mobile environments. Next comes the work 'From Content distribution networks to content networks: Issues and Challenges', that presents the technical evolution experienced in the field of content-aware networking, with the main research challenges to be addressed. The third paper, 'Research Challenges in QoS Routing', describes the key problems targeted in the field of QoS routing, outlining the approaches currently pursued for their solution. The paper, 'An Incremental Approach to IPv6 Multihoming', presents promising results for a satisfactory solution of the IP Multihoming problem, that has been actively researched in the recent years. Finally, the paper 'An Open source traffic engineering toolbox' introduces a joint E-NEXT effort and visible achievement to provide to the scientific community a set of open source software tools to support traffic engineering research.

More E-NEXT results will be presented in the CoNEXT 2005 conference, that has been launched as the integration of formerly existing workshops MIPS, NGC, QofIS, and ICQT. CoNEXT 2005 (www.co-next.net) will be hosted by LAAS in Toulouse (France), and is being organized by E-NEXT in cooperation with ACM Sigcomm.

For the interested reader, you may follow the complete E-NEXT activities in detail through its web site: www.ist-e-next.net.

S. Fdida
A. Azcorra*
Avda. de la Universidad, 30, 28911 Leganes
Madrid, Spain
E-mail address: azcorra@it.uc3m.es

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* Corresponding author. Tel.: +34 916248778; fax: +34 916248749.