E-NEXT: Network of Excellence – Emerging Network Technologies

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Abstract

E-NEXT is an EU FP6 Network of Excellence that focuses on Internet protocols and services. This short paper presents an overview of the network’s goals, organization and achievements.

1. Introduction

E-NEXT [1] is an EU FP6 Network of Excellence that focuses on protocols and services. It builds upon two EU COST Actions – COST263 on the Quality of Future Internet Services, and COST264 on Networked Group Communication. E-NEXT started its activities in January 2004.

The general goal of E-NEXT is to reinforce European scientific and technological excellence in the networking area through a progressive and lasting integration of research capacities existing in the European Research Area (ERA). Currently, the Network has 47 partner institutions, representing academic and industrial interests across a large number of countries in the ERA. Activities within E-NEXT are organized in four overall themes:

1. Mobile and Ambient Networking
2. Content Networking
3. Self-Aware and Scalable Networking
4. Service-Aware Networking

The first group studies the integration of a large set of heterogeneous mobile devices in a network that can scale up and down, stressing important functions such as routing, congestion and flow control, signaling, scalability, etc. On the other hand, new networking infrastructures are emerging with different objectives and constraints. Namely, ad hoc networks, sensor networks, ambient networks. They share in common self-organizing capabilities that require the design of mechanisms such as power control, discovery mechanisms, and auto-configuration.

The interest in the emerging networking technologies is explained by applications rich in content, like interactive multimedia or large-scale audio-visual content distribution and broadcast applications that need effective supporting services. The set of services that make multimedia applications cost-effective are studied by the second group.

When a component of a network, for example node or software object, has control on itself and monitors the state of other entities it is said to be self-aware. This property can be used to analyze new models of applications and systems, to measure the end-to-end performance, to balance the load and to implement scalability. The third group does research on self-awareness and scalable networking.

Finally, aspects of reconfiguration, discovery and use of services, pervasive systems and active networks are the goals of the forth group.

Every individual from a member organization could join and be active in two groups. Obviously, there was no formal limitation of membership to research groups, but reality showed that very few could contribute to more than two themes.

2. Work organization

A large consortium like E-NEXT needs time and means for its members to get acquainted, to learn about each other’s research interests and start joint work. In this respect, plenary sessions had a major role in making connections. However, it was obvious that there are cultural differences and people don’t give the same meaning to the same concept… all the time.

Recognizing this aspect was important and it was the first small step forward.

For each theme a working group was organized. Every individual could adhere to two working groups, this limitation being reasonable considering that it is difficult to be really active in more than two groups. However, this was a soft constraint that did not forbid any person to attend or share activities in other groups. Within each working group, interest groups were formed. For example, there were two interest groups associated with Mobile and Ambient Networking, the Wireless Sensor Networking and Ad Hoc Networking. These interest groups organized workshops that proved to offer the opportunities for collaboration.
During these meetings, beside presentations and discussions of research, new initiatives were launched like joint research papers and grant applications. Another two important contributions of E-NEXT are the Co-NEXT conference and the doctoral school SATIN. The first edition of Co-NEXT will take place in Toulouse, France, on 24-27 October 2005 [2]. Examples of relevant topics are: autonomic communications, context awareness, crosslayer integration, dependable networks, experimental networking, identity management, internet economics, large test-bed, mobile communication, monitoring network, security, overlay networks, scalability, sensor networks, service engineering, traffic engineering, user perceived QoS.

The main goal of the doctoral school SATIN is to promote excellence in PhD research by supporting joint supervision. It offers financial support for the last year of PhD studies, on a competitive basis. The total budget for the first year was of EURO 240,000 that allowed the offer of 8 PhD grants. Moreover, SATIN is actively involved in summer schools like EUNICE [3]. On the other hand, E-NEXT supported a lot of PhD students in attending high profile international conferences or summer schools, by awarding, again on a competitive basis, travel grants. In this respect, we consider that E-NEXT is to be praised for the consortium’s PhD support programmes. As an example, 27 grants were awarded for attending the summer school EUNICE 2005.

3. Conclusions
Personally, I consider the Network of Excellence programmes a very good framework for joint research work. However, due to the large number of members, from 20 different countries in E-NEXT, and the dynamic nature of the consortium, it is probably necessary a longer period of time for the setup of the network. 4 years would be a more realistic target for expecting good results on a large scale. As I already pointed out, the PhD schemes within E-NEXT were very good and with a high impact on the activity of young researchers. The idea of an European Doctoral School is worth pursuing.

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4. References