Editorial

Academic networking in the Adriatic region

Development of communication and information systems within the academic community has played an indispensable role in the introduction of new technologies in education and research. New forms of distance and collaborative work have been introduced, including research workgroups, tele-education and tele-training. At the start of the third millennium, with the advent of new technologies, academic networking is gaining new impetus and becoming even more attractive as a subject of research and development.

Bearing in mind the importance of this subject, the program committee of the Eighth IEEE Conference on Software, Telecommunications and Computer Networks (SoftCOM’2000), held aboard the cruise ship Marko Polo on route from Split (Croatia), via Rijeka (Croatia), Trieste (Italy) and to Venice (Italy) on October 10, 2000, organized an invited session dedicated to the Academic Networking in Alps-Adriatic Countries. This session attracted authors and participants from government institutions dealing with academic networking as service/infrastructure providers, and teachers from universities and researchers from institutes as users.

Papers were presented by authors from Italy, Germany, Slovenia, Switzerland and Croatia. Interesting topics in academic networking covered included national strategies and network architectures, the role of academic networks in education and collaboration with industry, technological aspects, particularly applications of broadband and satellite systems, and user aspects, including services for impaired people. A selection of 10 papers representing topics covered has been chosen for publication in this special issue of Computer Communications. They are grouped in three thematic parts: building academic networks, including strategies, infrastructures and case studies; educational issues; and examples of research projects related to academic networking.

The strategic aspects of academic networking have been considered in ‘The Role and Strategy of an ARNet in a Developing Country’ by Bekic et al. As stated, an Academic and Research Network (ARNet) should provide not only a communication and information infrastructure for an academic community, but it should also be a research testbed and even a pilot for other nationwide networks, thus taking a role of organizer and motivator of the community. To accomplish this, ARNet’s strategy should be to ensure connectivity and to provide content through reference information, referral information, common databases, centralized databases and information services.

The international collaboration aspects of academic networking have been considered in ‘Academic and Research Network of Slovenia’ by Jauk et al. The Academic and Research Network of Slovenia (ARNES) is described as a part of the TEN-155 EU project for high-speed, pan-European interconnection between national research networks. ARNES participates in a number of international projects dealing with advanced networking. It is a Full National member of the Trans-European Research and Educational Networking Association (TERENA).

Collaboration between academia and industry in the area of information and communication technology results not only in qualified scientific results which companies can exploit, but also in an improvement in undergraduate and graduate studies. An example of very fruitful collaboration has been presented in ‘Collaboration between Academia and Industry: Telecommunications and Informatics at the University of Zagreb’ by Lovrek et al. The principal industrial partner is Ericsson Nikola Tesla from Zagreb, with the participation of Croatian Telecom, the Croatian Power Utility and several small enterprises. University and industry recognise the importance of the research environment for collaboration, problem solving, competence development and the educational process.

Another example of the development of a communication/information infrastructure in an academic institution is presented in ‘Development of the Communication/Information infrastructure at an Academic Institution’ by Begusic et al. Support from the Ministry of Science and Technology and CARNet has been the main driving force in developing the basic communication/information infrastructure. However, intensive collaboration with well known ICT companies on joint R&D projects in the area of ICT technology and services has generated new potential for development of the communication/information infrastructure at FESB.

The development of an academic networking infrastructure has been considered in two papers. ‘The Italian Academic Network GARR: evolution in the Gigabit Era’ by Allocchio et al. present the Italian academic network Gruppo Armonizzazione Reti di
Ricerca (GARR), discussing its evolution through the GARR-B and GARR-G phases. GARR-B deals with increasing access bandwidth, introducing new services like a Computational GRID, a large dedicated mesh of VPNs for a user group, and increasing connectivity in the south and Mediterranean regions. The idea of expanding the GEANT service to Italy, and possibly beyond towards the Mediterranean area through GARR-G phase, is also presented.

The second paper, ‘The Implementation of Broadband Network Technologies in CARNet’ by Bartolinicic et al., describes new developments at the Croatian Academic and Research Network CARNet, with emphasis on implementing broadband technologies and the incorporation of multimedia into the network. In the field of networking technologies, research has been undertaken considering spread spectrum, lasers, xDSL technologies and Ethernet over dark fiber, IP and ATM solutions for videoconferencing, and broadcast and MoD technologies.

Part two of this special issue deals with educational issues. Distance learning has recently aroused great interest due to the convergence of several factors, including the growth of education as a key driver of socio-economic development, the remarkable steps forward of telecommunication technology, and the number of people involved in the education process itself. ‘Advanced Solutions for Distance Learning via ‘Satellite’ by de Blasi and des Dorides proposes SkyplexNet, an advanced satellite telecommunication platform, as a viable solution. The authors present the main functions of the system, and discuss its operational characteristics, including the application layer which enables the creation of a new pedagogical education model.

Educational activities within CARNet are considered in ‘CARNet: Educated Users for Effective Utilization of IT’ by Milinovic et al. A large number of users who are not familiar with the Internet have to be trained, and CARNet has been developing an efficient training strategy. Past experience, future challenges and plans for establishing an education center for advanced application of IT are described.

The third part of the issue considers examples of research projects associated with academic networking. ‘Trends in Networked Collaborative Virtual Environments’ by Pandzic et al. presents an overview of developments in the field of a Networked Collaborative Virtual Environment (NCVE) in the past decade, and a case study of a new generation NCVE system called VPARK, developed within the framework of the ACTS programme. A wider use of this kind of technology in academic networking and networked collaboration is expected in future as the technology becomes more accessible.

The final paper of this special issue, ‘Homer II—Man–machine Interface to Internet for Blind and Visually Impaired People’, by Pavesic et al., presents a system called HOMER II, which is primarily designed as a voice-driven text-to-speech system for blind or visually impaired people for reading text in Slovenian. A new version of the HOMER system with even more advanced dialogue modules represents an important tool in the distance learning and teaching process for impaired people using academic networks.