P29: POLIMI (Italy)

Description of expertise & activities

Being one of the major technical universities in Italy, Politecnico di Milano has achieved significant expertise on optical circuit and packet switching architectures, on performance evaluation of protection and restoration techniques in optical networks, on architectures and protocols for metropolitan and backbone optical networks, on multi-service switching-node architectures, on advanced control-plane techniques in the transport network (ASON, GMPLS), on optical processing and switching system design. In particular, relevant research topics are optimisation techniques for designing and dimensioning optical transport infrastructures for IP networks, simulation techniques for ASON/GMPLS routing and control-plane, resource assignment in next-generation IP networks with QoS and restoration capabilities, switching architectures definition for all-optical IP networks, optical backbone architectures. PoliMI has been carrying out research activities on optical networking in European research projects (FP6 IST project MUPBED) as well as Italian national projects such as MIMOSA and OSATE.

Tasks within BONE

WP01	Dissemination of project results by various means (paper presentation, workshop/conference organization, journal paper publication, training event organization)
WP02	Participation in Master course preparation, presentation at summer/winter schools
WP11	Study of resilience techniques in metro/core optical networks, network interoperability issues
WP13	Evaluation and implementation of optical technologies in FTTH and PON networks
WP14	Study and evaluation of new solutions for optical switching nodes capable of supporting multigranular and multiprotocol traffic flows and GLMPS control plane issues
WP24	Study of physical aspects of OBS and OPS transport modes
WP25	Leading workpackage, joint research on optical interconnect technologies and architectures

Key personnel

Stefano Bregni was born in Milano, Italy, in 1965. He received his Dr. Ing. degree in Telecommunications Engineering from Politecnico di Milano. In 1991 he joined SIRTI S.p.A., where he was involved in SDH transmission systems testing and in network synchronization issues. From 1994 to 1999, he was with CEFRIEL (consortium of private companies with Politecnico di Milano) as head of the Transmission Systems Dept. He is Associate Professor at Politecnico di Milano (tenured Asst. Prof. since 1999), Dept. of Electronics and Information, where he teaches telecommunications networks and transmission networks. He has been Senior Member of IEEE since 1999. He is Distinguished Lecturer of the IEEE Communications Society, having been Expert Lecturer from 1999 to 2003. He is co-chair or vice-chair of a few symposia in IEEE conferences (viz. ICC2004, GLOBECOM2005, ICC2006). He served on ETSI and ITU-T committees on digital network synchronization. He is author of the book "Synchronization of Digital Telecommunications Networks", John Wiley & Sons, Inc. He is author or co-author of about twenty papers in this field, mostly published on IEEE Conferences and Journals.

Guido Maier received his Laurea degree in Electronic Engineering at Politecnico di Milano (Italy) in 1995 and his Ph.D. degree in Telecommunication Engineering at the same university in 2000. Until February 2006 he has been researcher at CoreCom (research consortium supported by Pirelli in Milan, Italy), where he achieved the position of Head of the Optical Networking Laboratory. On March 2006 he joined the Politecnico di Milano as Assistant Professor. His main areas of interest are: optical network modeling, design and optimization; ASON/GMPLS control-plane architectures; WDM and optical switching systems. He is co-author of more than 30 papers in the area of Optical Networks published in international journals and conference proceedings. He is currently involved in industrial and European research projects.

Achille Pattavina received the degree in Electronic Engineering (Dr. Eng. degree) from University "La Sapienza" of Rome (Italy) in 1977. He was with the same University until 1991 when he moved to "Politecnico di Milano", Milan (Italy), where he is now Full Professor. He has been author of more than 100 papers in the area of Communications Networks published in international journals and conference proceedings. He has been author of the book Switching Theory, Architectures and Performance in Broadband ATM Networks (John Wiley & Sons). He has been Editor for Switching Architecture Performance of the IEEE Transactions on Communications since 1994 and Editor-in-Chief of the European Transactions on Telecommunications since 2001. He is a Senior Member of the IEEE Communications Society.