Global
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National Hosts: Unique Opportunity for Broadband R&D Applications

By Pirani Giancarlo, Italy

It is well known that the European Union (EU) contributes funding to research and development through the Framework Programs, which consist of a collection of specific programs in different disciplines. In particular, the specific program ACTS (Advanced Communications Technologies and Services) inside the Fourth Framework Program has put great emphasis on the performance of field experiments to test advanced technologies and services.

Facilities have been established in industrialized countries throughout the world to support operational trials of advanced services with real users as part of ACTS, the European broadband research and development program. The facilities consist of a number of national platforms known as "national hosts" (NHs), which provide a range of research and development services such as space in test labs, expertise, and support in broadband communications, as well as secretarial and logistical services which can be used, for example, to help organize meetings, provide paperwork, and set up teleconferencing facilities. These national resources for the support of research projects are offered in conjunction with access to international experimental and research networks such as the "Joint ATM Experiment on European Services" (JAMES) supported by most of Europe's public network operators (PNOs).

The range of services is not identical for all NHs, but each is equipped with state-of-the-art information technology facilities, connected to a variety of different networks, including the Internet, together with a set of software and telecommunications tools which have been standardized throughout the family of NHs.

The NH initiative provides a unique opportunity to link together advanced communications research organizations on a pan-European basis. However, the success of this initiative depends on its level of utilization. In the absence of exploitation of the facilities, and in particular the financial contribution that these activities will bring, the infrastructure will quickly be subsumed into a fully priced commercial offering. However, if the facilities are developed and nurtured, they could live on beyond the Fourth Framework Program, thus providing an ongoing asset to Europe's research community. This unique opportunity exists to be exploited.

The National Hosts

National host facilities have been established by Austria, Germany, Norway, Belgium, Greece, Portugal, Canada, Iceland, Spain, Denmark, Ireland, Sweden, ESA (European Space Agency), Italy, Switzerland, EU host (European Commission DG XIII), Israel, the United Kingdom, Finland, Japan, the United States, France, and the Netherlands.

Although each host acts as single point of presence, in reality many of the hosts comprise a number of geographically dispersed sites which may be interconnected by a network of high-bandwidth communication links. Many of these are ATM links with speeds of up to 155 Mb/s. Interconnection of the sites at a national level is arranged locally by the individual hosts, usually in conjunction with PNOs. Interconnection of sites at an international level relies predominantly, although not exclusively, on the pan-European ATM network provided by the PNOs as part of the JAMES project.

Further information can be retrieved from the ACTS support pages on the World Wide Web at:
http://www.infowin.org/ACTS/ANALYSYS/nathosts.htm

Communications Society Approves Technical Co-Sponsorship to MELECON '98

By Jacob Baal-Schem, Israel

The Communications Society has recently approved the IEEE 1998 Mediterranean Electrotechnical Conference for Technical Co-Sponsorship. IEEE MELECON is the major international meeting of researchers and practitioners from Mediterranean countries, and MELECON '98 will be the ninth conference since its initiation in 1981. It will be held in Tel Aviv, Israel, on 18–20 May, 1998 at the Dan Panorama Conference Hotel. The General Chair is Jacob Baal-Schem, who initiated the MELECON series of conferences.

In response to the Call for Papers distributed worldwide, the Technical Program Committee, chaired by Anthony Weiss, received 430 abstracts from 27 countries, including 73 from Turkey, 52 from Yugoslavia, 28 from Slovenia, 28 from Croatia, six from the United States, and two each from India, Brazil, Japan, and Mexico.

The main theme of IEEE MELECON '98 is Regional Cooperation in Technology, and it will include five to seven parallel sessions dealing with the main topics agreed on by the sponsors of the conference: IEEE Region 8, IEEE Israel Section, and the Israel National Association of Engineers (AEAI). Among the abstracts received, 60 deal with power engineering; 50 with communications, computer communications, and vehicular technology; and 15 each with electron devices, industrial electronics, signal processing, and lasers. All abstracts have been sent to reviewers, and during October the Technical Program Committee had the difficult task of choosing the papers to be included in the Technical Program of the conference and printed in the Conference Proceedings.

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Associazione Elettrotecnica ed Elettronica Italiana (AEI) Organization and Activities

Daniela Fioramonti, Italy

The Associazione Elettrotecnica ed Electtronica Italiana (AEI) is one of the most active technical professional societies in ltaly. It was founded in 1896 after the International Conference on Electricity was held in Geneva, Switzerland, and began in 1897 as "Associazione Elettrotecnica Italiana." World-renowned scientists like Galileo Ferraris, Guglielmo Marconi, and Antonio Pacinotti recognized AEI as an effective source of reliable information and advice on issues related to technology.

As scientific and technological advances were made in the electronic, telecommunications, automation, and computer science disciplines, its name was changed in 1964 to AEI: Associazione Elettrotecnica ed Elettronica Italiana.

Today's association comprises about 10,000 members. As a nonprofit organization since 1910, AEI is supported by the Consiglio Nazionale delle Ricerche (CNR) and stands under the tutelage of the Italian Ministry of Culture.

In 1907 it adhered to the International Electrotechnical Commission, and two years later set up the Comitato Elettrotecnico Italiano (CEI), appointed to issue standards in the electronic and electrotechnical fields. It has also been a promoter of the Istituto Italiano del Marchio di Qualita (IMQ), which certifies that electrical devices and materials comply with the highest known engineering standards.

AEI assists in providing adequate communication to the membership through 18 geographical areas called Sections (national) and a Foreign Section which is linked to the Central Office, located in Milan. In order to ensure a homogeneous presence of the association in every relevant area, Specialist Groups (now 16) have been established to promote the dissemination of cultural activities. These groups jointly operate with the territorial Sections on a national level.

The main objectives of the AEI focus on advancing the theory and practice of electrical, electronics, and computer engineering in ltaly. For this purpose AEI, which is regulated by its own Constitution, sponsors technical conferences, symposia, and local meetings; publishes technical reviews, conference proceedings, monographs; works for favorable legislative action; awards prizes and scholarships; and provides training programs to keep its members' knowledge and expertise state of the art. It interacts with academia, public bodies, and other societies for the benefit of the engineering professions.

Its achievements are implemented through the publication of the following technical journals:

AEI: Automazione, Energia, Informazione — the official organ of the Association, highlighting articles on the latest scientific and technical improvements in electrical and electronics techniques. A survey of scientific and commercial news and the CEI bulletin are also published.

L'Energia Elettrica (bimonthly) — a topical news journal, it contains the experts' opinions, news, abstracts from congresses and meetings, and technical and scientific contributions regarding the production, distribution, and use of electrical power.

ETEP: European Transactions on Electrical Power (bimonthly, in English) — presents original and technical contributions specifically concerning production, transmission, and distribution of electrical power. ETEP is published by the VDE with the collaboration of other scientific associations (AEI among them).

Alta Frequenza Rivista di Elettronica (bimonthly) — contains survey articles addressed to a vast public of professionals. Each issue focuses on a particular topical subject. The journal also reports news and experts' opinions together with a few original short articles in English.

ETT: European Transactions on Telecommunications (bimonthly) — a telecommunications journal in English with original technical and scientific contributions. It is published by AEI with the collaboration of other scientific associations which are part of EUREL and is supported by the European Commission.

In order to encourage the exchange and dissemination of technical information, AEI works in close cooperation with the IEEE, and promotes technical exchanges through international collaborations with the Conference Internationale des Grands Reseaux Electriques (CIGRE) and the Congres International des Reseaux Electriques de Distribution (CIRED).

AEI is a member of the Convention of National Societies of Electrical Engineers of Europe (EUREL), which nowadays comprises 10 national societies in 14 European countries.

PCS Service Provisioning in Korea

Dongmyun Lee, Korea

After the successful commercialization of CDMA-based digital cellular service in April 1996, network service providers in Korea are now ready to provide personal communications services (PCS) based on upband CDMA (IS-95) technology.

Three major service providers have announced plans to provide PCS in October 1997 and are currently providing trial services to customers which began in August 1997. This is several months earlier than the expected date of early 1998. The service employs a 13 kb/s vocoder and operates in 1750–1780 MHz downstream and 1840–1870 MHz upstream, providing high-quality information service to customers. Also, the network is managed by a TMN-based management system, making integrated network and service management possible.

Currently three PCS service providers — Korea Telecom Freetel, LG Telecom, and Hansol PCS — are competing in the wireless communication market. This competition has made service providers offer various supplementary services such as short message service and voice mail. Also, interworking with existing telecommunication networks has made it possible to provide advanced services such as 080 service (similar to 1-800 service in the United States) and e-mail service. Especially, PCS service providers intend to combine all previously available supplementary services into a "basic service set" for being competitive against existing cellular communication service providers.

PCS service based on CDMA technology is expected to evolve to the next-stage wireless communication service, IMT-2000. PCS supplementary services are expected to include one-number service, international roaming, and personal number services. Also, current research on interworking/integration with intelligent networks and wired broadband networks will provide a firm basis for evolution to next-stage ubiquitous communication services. For this purpose, a two-stage plan for developing IMT-2000 technology has been set in Korea. The consortium-based development activity will make use of existing research results by separate research institutes and telecommunications operators. The IMT-2000 service is planned to begin early in the next decade.

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ComSoc Distinguished Lecturers Program

By Carole Swaim, Senior Administrator, Volunteer Services and Administration

Distinguished Lecture Tours are a service provided by the Communications Society to local Chapters and their members. Lecture tours can be arranged in response to a request from one or more Chapter Chairs, or by the Vice President Member Affairs. Distinguished Lecture Tours will be funded in accordance with the following guidelines. They can be organized as a service to existing members and Chapters or as a means of generating new members or promoting new Chapter formation.

Distinguished Lecturer

- Funding is provided to enable a Distinguished Lecturer to address multiple groups during a lecture tour. Individual lectures are not funded.
- The lecture commitment should be for a series of at least three lectures, addressing at least three distinct groups in three or more locations which have reasonable geographical proximity to each other.
- The local organizers may be a local Chapter, a local Section, organizers of a local conference, or a local group of members who might potentially form a new Chapter. The Lecture can be used to generate membership and encourage new chapter formation.
- The lecturer will be selected by the Director of Education in conjunction with VP Member Affairs and/or VP Technical Activities.
- All arrangements must be made in advance with local sponsoring groups. At least two months lead time is recommended to allow local groups time to advertise.
- Funding is provided, if required, to cover lecturer travel expenses, lodging, and meals. The travel, lodging, and meals must be booked at an economic rate acceptable for reasonable business travel. Funding can cover night before and/or after each lecture as required by the schedule to accommodate the needs of local organizers.
- All receipts must be provided in accordance with IEEE and Communication Society rules. Expenses shall be submitted to VP Member Activities for approval on the IEEE Expense form.
- In any given year, no two tours should be arranged in the same region.
- The Distinguished Lecturer must not profit financially from the lecture tour.

Distinguished Lecturers

M. R. Aaron (Bob) — History of communications, especially digital communications.

H. Ahmadi (Hamid) — Cellular and mobile communication systems, for example, GSM, TDMA, broadband and narrowband CDMA, cellular digital packet data (CDPD), and cordless telephone. How do these work? What are the problems (interoperability, handoff, etc.)? How do they tie into the nonmobile infrastructure?

S. Aidarous (Salah) — Communication network and service management, for example, network management software and protocols (e.g., CMIP and SNMP), communication system operations, and service restoration. How is it done? What are the issues?

L. Bernstein (Larry) — Enterprise networking, for example, reengineering business processes around an enterprise-wide computer-communications-based information utility, including the role of public, private, and hybrid networking; networking applications, such as videoconferencing and multimedia databases, for the enterprise; and enterprise-wide design and management issues.

V. K. Bhargava (Vijay) — Coding, modulation, and signal processing for telecommunications, for example, source coding for communication networking, digital video coding, receiver based coding, trellis code and other modulation techniques, and block and convolutional coding.

D. D. Falconer (David) — Local distribution technologies, for example, hybrid fiber/coax (HFC), fiber to the curb (FTTC), passive optical network (PON), asymmetric digital subscriber line (ADSL), wireless cable TV. How do these work? What problems do they solve? How do they fit in with the existing telecommunications infrastructure?

R. J. Frank (Rudy) — Enterprise networking, for example, reengineering business processes around an enterprise-wide computer-communications-based information utility, including role of public, private, and hybrid networking; networking applications, such as videoconferencing and multimedia databases, for the enterprise; and enterprise-wide design and management issues.

D. J. Goodman (Dave) — Wireless communication networks.

J. Hagenauer (Joachim) — Fifty years of information theory. What are the benefits for the communications engineer? The Turbo Principle: A means to approach Shannon's limit in digital transmission. Joint source and channel coding for text, speech, audio, images and video channel coding in mobile communications.

R. W. Horn (Ron) — Intelligent networking, for example, architectures for intelligent networks (e.g., AIN and INA), goals and objectives of intelligent networking, services enabled by intelligent networks, and design issues.

R. Jain (Raj) — High-performance networking, for example, ATM, LANS and MANS, PLANet, gigabit testbed networks, and ATOMIC; and user access and services.

A. A. Lazar (Aurel) — Multimedia networking technologies supporting the implementation of network services: binding models and architectures for service creation, quality of service models and architectures, distributed object-oriented platforms (such as CORBA), scripting languages for applications portability.

M. Malek (Manu) — Network Management: Market Drivers, Standards, Platforms, and Implementations. Multimedia: Concepts, Technical Challenges, and Implementations. Internet and World Wide Web: History, Protocols, and Applications.

L. B. Milstein (Larry) — Satellite-based communication systems, for example, LEOS-based networks (Iridium, Globalstar), two-way paging systems, INTELSAT, and so on.

J. W. Modestino (James) — Coding, modulation, and signal processing for telecommunications, for example, source coding for communication networking, digital video coding, receiver based coding, trellis code and other modulation techniques, block and convolutional coding.

R. L. Pickholtz (Ray) — Satellite-based communication systems, for example, LEOS-based networks (Iridium, Globalstar), two-way paging systems, INTELSAT, and so on.

K. K. Ramakrishnam — Communication networking protocols and issues, for example, TCP/IP, Streams, RSVP, SO/OSI protocols, multi-access protocols, etc. How do these work? How do admission, flow, and congestion control? What makes this area interesting? Standardize?

T. S. Rappaport (Ted) — Wireless in-building networking technology, for example, WaveLAN, Motorola Altair, Windata Freeport, O'Neill LAWN, and so on. How the technologies work, issues, interoperability, goals, objectives, and performance.

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SynchroLan at British Telecom

By Julian Lucek, UK

Researchers at BT Laboratories have built, and successfully demonstrated, a research-prototype LAN called SynchroLan whose backbone operates at serial speeds of 40 Gb/s — the fastest ever reported.

SynchroLan connects high-end computers in a bus topology, each computer being allocated a “timeslot” during which it can send data. Because each data bit is carried by an optical pulse only 4 ps in duration, the data bits from the different computers can be crammed very close together and still be distinguishable using the latest optoelectronic technology developed at BT Laboratories. As a result, the backbone can support aggregate rates of 40 Gb/s. In order to receive data from another computer over the LAN, a computer simply “tunes in” to the appropriate timeslot using a microwave phase-shifter. This tuning can be accomplished in 100 ns, so connections between pairs of computers can be made and unmade very rapidly. SynchroLan is presently being used to interconnect high-end workstations using the blown fiber infrastructure on the BT Laboratories campus.

With further advances in technology the concept could be extended to speeds approaching 1 Tb/s (one trillion bits per second).

The Second IEEE Symposium on Computers and Communications

By M. Adeeb R. Ghonaimy, Egypt

The Second IEEE Symposium on Computers and Communications was held in Alexandria, Egypt, during 1–3 July, 1997. One hundred ten papers were accepted from a total of 160 submitted. At least 150 persons attended. Six invited talks, two panel discussions, two plenary sessions, and 23 sessions were included. Four tutorials were given before the symposium. In the following a brief outline is given for each of these activities.

The six invited talks covered the following topics:

- Wireless networking
- ATM and the Internet
- Optical networking and the MONET project
- The storage and retrieval of multimedia data
- Hybrid communication networks for video and broadband data services
- Telecommunication developments in Egypt

It was also announced that the third IEEE Symposium on Computers and Communications,ISCC ’98, will be held in Athens, Greece 30 June–2 July, 1998. For information about that conference it is possible to visit the Web site at:

http://www.cs.bu.edu/ftp/amass/ISCC

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www.comsoc.org/pubs/gcn

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Tetsuya Miki
Chapters Corner

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Distinguished Lecturers/*(Continued from page 3)*

I. Rubin (Izhak) — Issues in designing large communication internetworks, for example, addressing, routing, resource allocation, quality of service guarantees, performance metrics, support for real-time multimedia services. What are the problems in this area? Why are the problems hard? How will the ongoing efforts solve the problems?

D. L. Schilling (Don) — CDMA, cellular digital packet data (CDPD), cordless telephone. How do these work? What are the problems (for example, interoperability, hand-off, etc.)? How do they tie into the nonmobile infrastructure?

K. Sohraby (Kazem) — Emerging transmission technologies; for example, SONET, ATM technology, frame relay, wave-division multiplexing systems. How do these work? What problems do they solve? How do they fit in with the existing telecommunications infrastructure?

R. Steele (Ray) — Microcells for PCS.

S. Weinstein (Steve) — Broadband access. B-SIDN services for residential subscribers was a dream of the 1980’s. That vision gave way to more diverse and less expensive wideband and broadbandaccess systems. This talk defines and describes data call bypass of telephone switches, basic-rate ISDN with inverse multiplexing, xDSL (digital subscriber line), HFC, FTTC, FTTH, and microcellular wireless ATM.

PCS in Korea/*(Continued from page 2)*

It is expected that the number of PCS customers will reach 0.9 million. Estimated figures have shown that wireless telecommunication services in Korea will have a 41 percent share of the telecommunications market and accommodate around 13 million customers by the year 2001. Among these, the number of PCS customers is expected to reach 4.6 million. Whether this estimation is optimistic or not, it seems clear that expansion of wireless communication market and services will continue until the next decade.

MELECON ’98/*(Continued from page 1)*

IEEE MELECON ’98 will be held while Israel celebrates its 50th anniversary, and the conference has been approved as an official anniversary event. May is an excellent season for touring the country, and Tel Aviv is the center of Israel’s high-tech industry and home of Tel Aviv University, a main center of technological research and education. Therefore, both technical and tourism opportunities will be available to participants and their travel partners.

Inquiries for additional information and Advanced Program are welcome to MELECON ’98 Secretariat AEAI, P.O. Box 3082, Tel Aviv 61030, Israel; or by fax: +972-3-5244618. The Conference Home Page is at:

http://www.eng.tau.ac.il/~ajw/melecon.html