Global Communications Newsletter

June 2001

Enhanced Membership Programs of ComSoc

By Byeong Gi Lee, ComSoc Director of Membership Program Development

The IEEE Communications Society (ComSoc) has a diversified set of membership programs that has been significantly enhanced in recent years. However, some programs are not as well known and thus not utilized, while others are comparatively well received and widely utilized. Recently, I reviewed the status of applications for the Chapters support program and found that only 61 out of 143 ComSoc Chapters (42 percent) have made applications. Perhaps this indicates that ComSoc membership programs in general may not be properly understood by our members. Therefore, I would like to take this opportunity to briefly introduce our membership programs. Please visit the ComSoc Website at http://www.comsoc.org for details.

There are eight membership programs under the responsibility of the Director of Membership Programs Development (Table 1.).

Membership programs	Contact point
Student Travel Grants (STG)	Regional Directors
Professional Travel Grants (PTG)	Regional Directors
Chapter Achievement Award (CAA)	Director/Membership Programs
Distinguished Lecturer Program (DLP)	Regional Directors
ComSoc Experts Lecturer Program (CELP)	Regional Directors
Regional Chapter Chairs Congress (RCCC)	Regional Directors
Global Chapter Chairs Congress (GCCC)	Director/Membership Programs
Chapters Support	Director/Membership Programs

Table 1. *ComSoc membership programs.*

Student Travel Grants (STG) is a comparatively well-known program providing travel support to student paper presenters of major conferences (GLOBECOM, ICC, INFOCOM, NOMS/IM, WCNC). Normally, out-of-region students (those residing in regions where the particular conference is not being held) are eligible for the grant; however, a limited number of grants are provided to in-region applicants also. ComSoc membership is required at the time of application. The applicant must direct the application to the ComSoc Regional Director of his/her ComSoc Region. The STG includes a check for US$1000 in the case of an out-of-region STG, and a check for US$600 in the case of an in-region STG.

Professional Travel Grants (PTG) are grants for professionals, and the program is similar to STG. Applications go to Regional Directors; the grant includes a check of US$1200 and free full registration. However, the number of grants is rather limited.

The Chapter Achievement Award (CAA) (formerly Chapter-of-the-Year Award) is an award for Chapters that have distinguished themselves through activities benefiting their members and the Society. It consists of a check for US$1000 and travel and living support so the Chapter Chair can receive the award personally. The CAA is presented twice a year at the Award Luncheons during ICC and GLOBECOM. Applications are to be made to the Director of Membership Programs Development with copies sent to the Vice President-Membership Development, four ComSoc Regional Directors, and Senior Administrator Carole Swaim.

The Distinguished Lecturer Program (DLP) provides speaking tours to Chapters by ComSoc's most distinguished colleagues on the latest and most important topics in communications. ComSoc has an established list of Distinguished Lecturers. Applications should be made by Chapter Chairs to the ComSoc Regional Directors, designating the desired DL's name or the field of interest and the desired time schedule for lectures. The RD will then handle the necessary coordination to connect the lecturer and Chapters. ComSoc supports the travel portion of the incurred expenses. Five DLP tours are allocated to each ComSoc Region per year.

ComSoc's Experts Lecturer Program (CELP) is a new program similar to DLP except that the choice of lecturers is not limited to those on the ComSoc's DL list but is open to all "ComSoc experts" having ComSoc membership of senior or higher grades.

The Regional Chapter Chairs Congress (RCCC) is a new program developed in 2000 to facilitate communications among ComSoc Chapters in each particular ComSoc Region. The intent is to provide a forum for Chapter Chairs to learn about ComSoc, and exchange information among themselves and ComSoc officers in order to enhance chapter activities and foster development of Society activities. It is an annual Regional event coordinated by each ComSoc Regional Director at a regional event and is fully supported by ComSoc.

The Global Chapter Chairs Congress (GCCC) is a greatly expanded version of RCCC. GCCC is intended to foster interactions among Chapter Chairs on a global scale. GCCC will be collocated with a major conference to further increase the value of this experience for Chapter Chairs or representatives. The first GCCC will be held in November during GLOBECOM 2001 and will be chaired by Ron Horn, a past VP-MD.

Chapters Support is a program to financially support

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Internet Design for SLA Delivery From Service Level Agreement to Per-Hop Behavior: A Report on the IST TEQUILA Workshop

By Danny Goderis, Belgium

The European project TEQUILA organised a workshop on quality of service (QoS) and service level agreements (SLAs) in IP networks and the Internet. The main question is how voice over IP and, more generally, multimedia can be deployed over the Internet. The focus of the workshop was on QoS guarantees for value-added IP services and the modeling of service level specifications (SLS), the technical part of an SLA. The workshop was held in Amsterdam on 25–26 January 2001.

The TEQUILA Project and Premium IP Research in Europe

The acronym TEQUILA (IST-1999-11253) stands for Traffic Engineering for Quality of Service in the Internet, at Large Scale. TEQUILA's main objective is to study, specify, implement, and validate service definition and traffic engineering tools for the Internet. The TEQUILA system should provide both quantitative and qualitative service guarantees through planning, dimensioning, and dynamic control of traffic management techniques based on DiffServ. The project addresses the following technical areas: (a) specification of static and dynamic, intra- and interdomain SLSs; (b) protocols and mechanisms for negotiating, monitoring, and enforcing SLSs; (c) intra- and interdomain traffic engineering schemes to ensure that the network can cope with the contracted SLSs within domains and in the Internet at large.

TEQUILA constitutes, together with the AQUILA and CADENUS projects, the European IST project cluster Premium IP, which deals with the deployment of value-added IP services over the Internet. These projects were well presented at the workshop, resulting in fruitful discussions and exchange of ideas (see the box "Workshop Speakers and Program").

The Challenge: QoS over the Internet

Today's Internet applies best effort IP forwarding. The network attempts to deliver all traffic as soon as possible within the limits of its abilities, but without any guarantees related to throughput, delay, delay variation (jitter), and packet loss. It is up to the end systems to cope with network transport impairments.

The best effort forwarding paradigm worked fine so far because most applications running on IP are low-priority and low-bandwidth data applications with high tolerance for delay and delay variations. The deployment of QoS-based value-added IP services over the Internet is one of the most exciting challenges that service providers currently try to address. Internet service providers (ISPs) are seeking to generate new revenues beyond the low- or zero-income best effort paradigm. Telecom deregulation and emerging voice over IP (VoIP) technology opens huge new markets and potential business. Traditional telephony providers (telcos), on the other hand, fear the competition of these ISPs and are moving toward an integrated data-voice networking solution aimed at cost optimization and new service offerings.

Demanded: Service Level Specifications for the Internet

The workshop focused on two (related) topics: first, the technical modeling and monitoring of customer demands through SLSs; second, the QoS technologies required to meet these customer demands, including the provisioning, management, and traffic engineering (TE) of IP networks. Since value-added IP services are likely to be provided over the whole Internet, their corresponding QoS will be based on a set of technical parameters on which both customers and service providers will have to agree. Such agreements, and especially the negotiations preceding them, will be greatly simplified in the presence of an unambiguous set of (technical) SLS parameters. After signing the agreements and specifying the SLSs, it is further the task of the service provider to meet customer demands through network management and traffic engineering. The customer expects certain performance

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Workshop Speakers and Program

- Next-Generation Networks in the European IST Program (Paulo De Sousa, IST Project Officer)
- Users, Pricing and Resource Reservation — Managing Expectations (Jon Crowcroft, UCL, M3I Project
- Negotiating, Subscribing and Invoking Value-Added IP Services (Danny Goderis, Alcatel, TEQUILA Project)
- Service Creation in SLA Networks (Michael Smirnov, GMD Focus, Cadenus project)
- SLA/SLS in Service Creation for Premium IP (Giovanni Cortese, Cadenus project)
- QoS Monitoring and SLS Auditing (Victor Reijs, Heanet/Surfnet, TERENA TF-NGN)
- Service Specification and TE for the Qbone (Ben Teitelbaum, Internet2)
- Providing QoS through Policy-Driven Traffic Engineering (George Pavlou, Unis, TEQUILA project)
- Traffic Engineering Aspects of the VTHD Network (Dominique Delisle, France Telecom R&D)
- Adaptive Resource Control for QoS Using an IP-Based Layered Architecture (Bert Koch, Siemens, AQUILA project)
- On QoS & Traffic Engineering and SLS-Related Work (Christophe Diot, Sprint Labs)
- The Statistical Nature of Traffic and Its Impact on the Realizability of QoS Guarantees (James Roberts, France Telecom)
- Inter-Operator Management Framework for QoS-Enabled IP Services (Istvan Cselenyi, Telia-Eurescom EQUIP Project)

SLS and Standardization Efforts at the IETF

Members of the TEQUILA project introduced a first Internet draft ("SLS — Contents, Parameters, and Semantics") on the SLS topic in June 2000. Currently a second version of this draft and a proposal for a service level usage and specification framework are available at the IETF Webpage:

http://www.ietf.org/internet-drafts/draft-tequila-sls-00.txt
http://www.ietf.org/internet-drafts/draft-manyfolks-sls-framework-00.txt

These drafts, together with two other proposals of AT&T and the IST-AQUILA project, are currently discussed on a public mailing list: sls@ist-tequila.org.

To subscribe to the list send an email to majordomo@ist-tequila.org with the sentence:

subscribe sls@ist-tequila.org

in the body and nothing in the subject line.

Protocols for Multimedia Systems — PROMS

By Zdzislaw Papir, Poland

Emerging broadband interactive applications along with development of different networking technologies should draw telecom operators' and service providers' attention to protocols supporting multimedia systems as an interface between these two environments, which must still be investigated and modified.

To address such matters, the 5th IEEE Conference Protocols for Multimedia Systems (PROMS 2000) was organized by the Department of Telecommunications, The University of Mining & Metallurgy (AGH), Cracow, Poland and technically co-sponsored by IEEE Communications Society. The conference was held in Cracow, Poland, October 23-25, 2000 and was supported by Alcatel, Lucent, Nortel, and Siemens. 67 participants from five continents (20 countries, 3 participants from Poland) attended the event.

The PROMS 2000 conference was intended to contribute to scientific, strategic, and practical cooperation between research institutes and industrial companies in the area of distributed multimedia applications, protocols, and intelligent management tools, with emphasis on their provision over broadband networks.

PROMS 2000 featured five tutorials, 10 technical sessions held in parallel tracks, and two poster sessions. For both technical and poster sessions 57 submissions were selected from 73, so the acceptance ratio was about 78 percent.

The conference was opened by its general chair, Zdzislaw Papir of Department of Telecommunications, The University of Mining and Metallurgy (AGH), Cracow, Poland. The conference started with two tutorials in series, each lasting 90 minutes. The first tutorial, "Flexible Media and Content Adaptation for Communication Systems," was given by Stefan Arbanowski and Sven van den Meer of the Technical University of Berlin, Germany. The tutorial was devoted to media adaptation technologies to be used for bridging between different telecommunication systems and terminals. The second tutorial, "Practical Introduction to Multimedia Traffic Characterization and Modeling Techniques," was delivered by Stanislaw Jedrus of the Polish Academy of Sciences. The tutorial brought more up-to-date self-similar teletraffic modeling techniques and their overall impact on QoS delivered in multimedia networking solutions.

In the early afternoon two technical sessions, "Multimedia Protocols" and "IP-Based Services," were held. The first day finished with the tutorial "Quality of Service for IP Networks" delivered by Andrzej Jajszczyk, former Editor-in-Chief of *IEEE Communications Magazine*. The tutorial covered major QoS approaches including integrated and differentiated services as well as such protocols as RSVP and MPLS.

The second day of the conference started with the tutorial of Olivier Verscheure, IBM T. J. Watson Laboratory: "Scalable Multi-Windowed DTV Experience." The tutorial, giving an overview of different infrastructures ready for delivering interactive DTV, was a perfect background for the rest of the second day. During the day four technical sessions took place: "QoS Management," "QoS Provisioning," "Video Streaming Performance," and "Media Streaming Architectures."

The last day of PROMS 2000 started with a tutorial, "MPLS Traffic Engineering," delivered by Peter Psenak of Cisco Systems. The third day finished with four technical sessions: "Service Access," "Networking Issues," "Traffic Engineering," and "Media Retrieval." During the closing session three outstanding papers were granted a recommendation for publication in *IEEE Communications Magazine* in the Broadband Access Series.

Electronic versions of tutorials together with abstracts of accepted papers can be found on the PROMS Webpage at http://www.kt.agh.edu.pl/research/conf/proms00.

In summary, PROMS 2000 was a successful conference in terms of the number of participants, their affiliation and country spectrum, the quality of submissions, and high-quality tutorials, as well as a lovely atmosphere.

PROMS 2001 will be hosted by the University of Twente, Enschede, the Netherlands. People interested in the forthcoming event should contact Marten von Sinderen at sinderen@cs.utwente.nl.

Next Generation Networks Initiative Forms an Industry and Research Consortium

By Paulo de Sousa, Belgium

The NGN Initiative (NGNi), a project sponsored by the European Commission, officially started on 1 January 2001. The main objective of this initiative is to bring together interested groups from around the world for a harmonized and smooth transition to the next generation of networks, which will provide seamless services with high security, quality, and performance — a critical step in creating the future information society.

The Initiative will create a worldwide consortium of leading next-generation network (NGN) vendors, industry, research, and education institutions that are shaping next-generation networking. NGNi's mission is to establish the infrastructure to operate the first open environment for research on the whole range of NGN topics. The topics will be discussed, consensus achieved, and collective outputs disseminated to the appropriate international standards bodies, fora, and other organizations. Being of worldwide interest, it is inevitable that some of the Internet-related topics addressed here will also be covered in other worldwide NGN programs. This creates an opportunity for strategic discussions to take place on this subject on a global scale.

The prime objectives identified are:

- To establish an international initiative of NGN expertise that will be a catalyst for clustering activities associated with IST projects, and international initiatives such as Internet 2, NGI, Optical Internet Forum, 3GPP, UMTS Forum, and Mobile Summits
- To benchmark the results from NGN projects activities and developments in the world
- To disseminate the collective achievements
- To produce and submit collective contributions to standards
- To produce roadmaps describing trends and forecasts relating to NGN issues, taking into account the several co-influencing aspects of NGNs
- To identify convergence opportunities offered by new developments
- To identify innovative solutions as a result of having an overview of many technologies

"The NGN Initiative will line up existing research projects

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TEQUILA WORKSHOP/*(Continued from page 2)*

from the network, but the operator also attempts to satisfy these expectations in a cost-effective manner. Therefore, traffic engineering is a basic tool for the operator to accommodate as many as possible of the traffic requests by optimally using the available network resources.

Network Monitoring and Internet Adaptive Control

Several speakers and attendees stressed the importance of the following recent trends in industry and research:

- Monitoring and measurement architectures are becoming increasingly important for providing QoS and service assurance. First, the operator needs to verify whether the QoS performance guarantees committed in SLAs are in fact being met in its network. This requires an in-service verification of throughput, delay, and packet loss characteristics. Second, monitoring may be extremely helpful for proactive control of the network. Monitoring the actual traffic enables operators to refine the reservation over time and drop the level of overprovisioning needed to offer the promised statistical guarantees.
- A relatively new research topic is concerned with Internet adaptive control as an extra hook for providing end-to-end QoS. Mentioned topics include TCP rate adaptive sources, adaptive multimedia applications, resource control, and policy.

Main Workshop Conclusion

The deployment of voice and multimedia over IP definitely requires premium IP and QoS. Although major parts of the relevant technologies (e.g., IP differentiated and integrated services) have been developed, the current "Internet IP QoS chaos" still remains, and research activities at the European and international levels remain necessary. Resolving Internet IP QoS requires refocusing and clearly specifying the following:

- Determine the relevant business model. There is a clear business driver for IP QoS and multimedia over the Internet. However, the business scenario heavily depends on the type of customer (enterprise, residential, content providers, other service providers) and the type of service (retail, composite, multimedia, virtual private network).
- Analyse the current state and upgrade lifecycle of the ISP network infrastructure and technology. Providing QoS can be done in several ways, such as overprovisioning of the whole network (no control of individual flows), overprovisioning of multimedia services only ("loose control"), or strict admission and resource reservation ("tight control"). The preferred strategy of a service provider heavily depends on its current technologies and type of network (tier 1, metropolitan, access, etc).
- Clearly specify the service type and interface. The customer-provider interface may have significant influence, such as retail (ISP-customer) or wholesale (ISP peering). The IP value-added service must be clearly specified through SLAs/SLSs, including the service guarantees, the scope of service (topology), the traffic characteristics, and the means of controlling the service contract (service assurance, i.e., SLA-monitoring and measurement).

All speakers and attendees stressed the importance of interproject exchange of achievements and ideas. Therefore, an important conclusion for the organization of European research is that similar workshop meetings and the recent NGNi project cluster initiative should be further developed.

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NEXT GENERATION NETWORKS/*(Continued from page 3)*

to take the next generation networks where no other networks have gone before, preparing for the coming tidal wave of next generation applications in the Intranet/Internet sector, in the mobile wireless segment, in the always-on applications and in the information soft appliances, promoting new technologies on a world-wide basis sharing knowledge, experience and interoperability and creating common and solid grounds for the Next Networks," according to its mission statement.

For more details on the NGN initiative, please visit the NGNi Website: http://WWW.NGNI.org or http://www.NGNinitiative.com

ENHANCED MEMBERSHIP PROGRAMS/*(Continued from page 1)*

Chapters based on annual activities and new membership developments. Limited funding is provided upon submission of annual proposals. The budget of the Chapters Support program has been sharply increasing in recent years, from US$22,000 in 1999 to $55,000 in 2000 and to $100,000 in 2001, in accordance with the increase of Chapters' activity levels. Chapter Chairs are strongly encouraged to take advantage of this program for the promotion of the Chapter activities.

CONTRIBUTIONS TO THE GLOBAL COMMUNICATIONS NEWSLETTER ARE WELCOME. CONTACT THE EDITOR AT gcn@comsoc.org

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