
SATELLITE AND SPACE COMMUNICATIONS

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SSC Newsletter

Vol.10, No.1, June, 2000

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The Satellite and Space Communications (SSC) Committee is a volunteer group actively involved in advancing satellite and space communication technologies within the IEEE. This committee is approved by the IEEE Communications Society and is governed by the constitution and bylaws of the IEEE as well as the other twenty Technical Committees in the Society.

SATELLITE & SPACE

- JOIN US -

All conference attendees are welcome to join us in the SSC Committee meeting.

Hotel: Hyatt Regency
Room: Girod, 2nd Floor
Date: Tuesday, June 20th
Time: 7:30 am - 9:00 am

ICC 2000 SSC Committee Activities

Sunday, 18 June, 08:00 - 17:30, Tutorial T04
Laser Satellite Communication Challenges and Possible Solutions

Monday, 19 June, 09:15 - 12:30, Session S02
Satcom System Performance Improvements

Monday, 19 June, 14:00 - 17:30, Session S10
Satcom Signal Design

Tuesday, 20 June, 07:30 - 09:00, Breakfast
SSC Technical Committee Meeting

Future SSC Meetings

Nov. 29, 2000	San Francisco
June 13, 2001	Helsinki
Nov. 27, 2001	San Antonio



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MESSAGE FROM THE CHAIR

The goal of the satellite and space communications (SSC) committee is to be actively on top of the new and revolutionary developments taking place in the field and to make sure that they are made visible to the IEEE ComSoc community. In addition, the SSC committee provides a forum to facilitate technical interchange among those working in the field. Toward this objective, the committee continues the process of formulating plans to expand activities, enhance the visibility of the committee, and to attract new members, particularly from the industries and organizations at the fore-front of these new developments.

The committee continues to meet semi-annually at the ICC and Globecom conferences and regularly sponsor technical sessions, tutorials, workshops, and business applications sessions (BAS) at ICC, Globecom, and MILCOM conferences. For instance, two technical sessions, "Satcom System Performance Improvements" and "Satcom Signal Design", were organized by Members Eric Butner, Mary Williams, and Vice Chair, Iwao Sasase, for ICC 2000 in New Orleans. Committee Secretary Ron Smith is supporting the Technical Program Committee for MILCOM 2000 to be held in Los Angeles in October 2000.

The committee has also been actively promoting satellite communications systems and technology via professional journals, transactions, and magazine publications. Member Michael Enoch is co-guest editor for a feature topic section on Free Space Laser Communications to be published in the August 2000 edition of the IEEE Communications Magazine. In addition, Chair Walter Ciesluk and Member Marie-Jose Montpetit continue to serve as area editors on radio and satellite communications for the IEEE "Communications Surveys" electronic magazine. Committee Advisor Desmond Taylor continues to serve as a Senior Editor of the IEEE Journal on Selected Areas in Communications and Member Michel Bousquet serves on the editorial panel of the International Journal of Satellite Communications.

The Committee is also involved in the development of emerging standards related to satellite communications. Sastri Kota continues to be active in ITU-R Ka-band Fixed Satellite Service standards development activities. In addition, he is also active in the Wireless ATM Forum where he chairs the Satellite Access and Infrastructure Mobility group.

Because of the broad range of the technologies involved, and the necessity of integrating and interfacing satellite

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communications with other networks, the committee has attempted to develop liaisons with other committees such as Multimedia Communications, Personal Communications (PC), and Communications Simulation and Modeling (CSIM). For example, The SSC and CSIM committees have jointly organized a symposium on "Satellite Communications for the New Millennium: Networks and Systems" for Globecom 2000 in San Francisco. Sastri Kota is the chair for the symposium and Ron P. Smith and C. K. Toh serve as vice chairs. The committee has been successful in establishing a working relationship with the American Institute of Aeronautics and Astronautics (AIAA) with the objective of co-sponsoring an annual conference on Satellite Communications. Ron Smith, who is now the Vice Chair of the AIAA Technical Committee on Communications Systems (TCCS), is active in the committee formulating plans for the next AIAA International Communications Satellite System Conference (ICSSC-19) to be held in Toulouse, France in April 2001. Professor Michel Bousquet is the General Chair for this conference. The SSC committee has recommended ComSoc co-sponsorship of this conference.

The committee continues to strive to increase our international reach and involvement. For instance, the committee has continued the recruitment of new members

particularly from the satellite communications industry in Europe, Asia, and Latin America as well as North America. In addition, Iwao Sasase has been invited to serve as Vice Co-chair of the Technical Program Committee for the 4th International Conference on Satellite Communications (ICSC) 2000 to be held in Moscow in September 2000.

The committee continues to publish the "SSC Newsletter" semiannually. In addition, Ron Smith continues to maintain and improve the committee web pages. The SSC web site includes a list of reviewers with preferred topics for conference and publication reviews, a list of Technical Program Committee (TPC) representatives and liaisons, past newsletters, meeting minutes, calls for papers and other information to help members be active without needing to attend committee meetings.

The field of satellite communications continues to be interesting and exciting. I encourage all who are interested in this field to join our committee. Visit our website (<http://www.comsoc.org/socstr/techcom/ssc/>) where you can get information on events and upcoming meetings, and interact with committee officers and members.

Walter Ciesluk, Chair
Satellite and Space Communications
Technical Committee

FORTHCOMING GLOBECOM AND ICC CONFERENCES

Globecom 2000
Nov. 27 - Dec. 1, 2000,
San Francisco, USA

ICC 2001
June 11 - 15, 2001,
Helsinki, Finland

Globecom 2001
Nov. 25-29, 2001,
San Antonio, USA

COSPONSORING / RELATED CONFERENCES AND WORKSHOPS

Milcom 2000 (Oct. 22 - 25, 2000, Los Angeles, USA)
Hosted by TRW and The Aerospace Corporation, unclassified sessions will be held at the L.A. Airport Marriott and classified sessions at The Aerospace Corporation. The conference focus is on architectures and technologies needed for information superiority in 21st century military communications.

ICSSC 2001 (April 17 - 20, 2001, Toulouse, France)
The 19th AIAA International Communication Satellite Systems Conference is a pre-eminent technical conference in the field of satellite communication. The conference will be held in Toulouse, France, and will focus on Internet and broadband communications, digital broadcasting, personal communications and positioning services. **Abstracts due 31 August 2000**

SCANNING THE WORLD

For this installment of Scanning the World, Prof. Iwao Sasase, Vice Chair of the SSC TC has invited Mr. Masahiro Inoue, Radio network Development Department, NTT DoCoMo inc., to introduce the 64kbps packet data mobile communications service via satellites.

NTT DoCoMo has been providing the satellite mobile communications since March 1996 using two geostationary satellites; N-STAR a and b. The system uses the S-band (2.6/2.5GHz) for the service link and the C-band (6/4GHz) for the feeder link. Each satellite covers Japan and its economic waters with four beams in the S-band, thus the mobile terminal can be small. There are three kinds of mobile terminals: maritime, car-mount, and portable. The smallest terminal, portable one, is about 26cm x 18cm x 6cm in size and about 3kg in mass. The system transmits both digitized voice and fax with the transmission rate of 4.8 kbps.

The service was started as the circuit switched base, but in March 2000 the system was enhanced with the 64kbps packet data communications service. The network of this enhanced system connects the NSP (Network Service Provider) and the corporate LAN by dedicated lines so that the data terminals can access the internet and the intranet. Since download data traffic is dominant in these communications, the system employs asymmetrical user information transmission rate, 64kbps for forward link and 4.8kbps for return link. The size and power consumption of the

mobile terminal equipment is almost the same with circuit switched base maritime terminal.

PDC (Personal Digital Cellular) and PDC-P (PDC-Packet) technologies are fully utilized in developing these satellite communication systems so that the system can be realized economically. Figure shows the basic network configuration. The satellite communication system is integrated with the terrestrial cellular system through MCC (Mobile Control Center). Every system components, such as satellite, base station, are configured fully redundant to realize very high system reliability.

One of the unique points of the satellite packet system is the channel assignment scheme for the return link. Common 4.8kbps FDMA is used for the return link to make the terminal compact and economical. The throughput becomes lower if the time to assign the return channel becomes longer, which is the case in geo-synchronous system. The scheme developed is that when the return link channel is once assigned to the terminal, the terminal reserves the channel as long as there is the data to transmit and releases the channel when certain time passed without sending data. More than 50 kbps throughput is achieved by this algorithm.

More information, see NTT DoCoMo Home Page URL, <http://www.nttdocomo.com/>.

Masahiro INOUE
Radio Network Development Department
NTT DoCoMo, Inc.

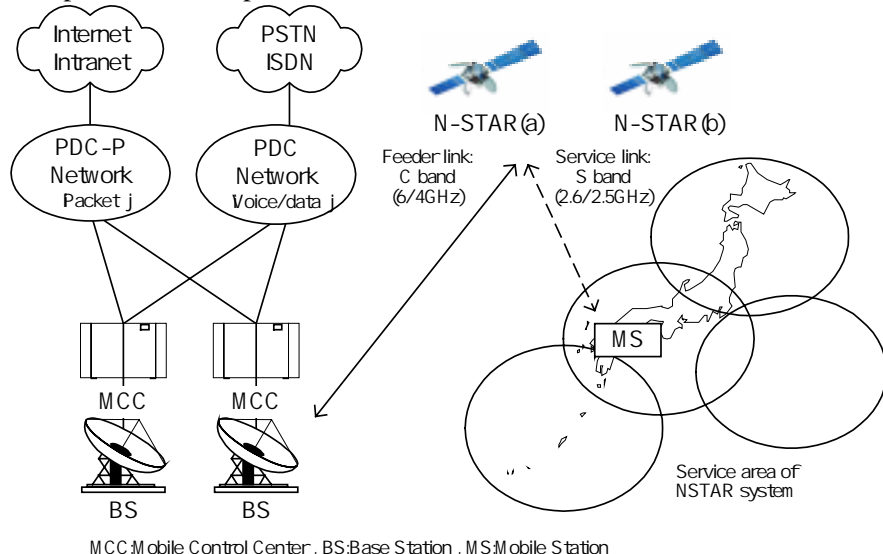


Figure1. Overview of the N-STAR satellite mobile communications system

CONFERENCE CALENDAR

Conference	Date / Location	Information
ISSSTA 2000 International Symposium on Spread Spectrum Techniques & Applications	Sept. 6-8, 2000 Parsippany, USA	Prof. Clare Naporano Center for Communications & Signal Processing Research, NJIT Newark, NJ 07102, Tel: +1 973 596 8474 E-mail: clare@magahertz.njit.edu http://www.isssta2000.org/isssta.html
PIMRC 2000 Personal, Indoor and Mobile Radio Communications	Sept. 18-21, 2000 London, England	Prof. A. H. Aghvami E-mail: hamid.aghvami@kcl.ac.uk http://www.pimrc2000.com
VTC 2000/Fall Vehicular Technology Conference	Sept. 24-28, 2000 Boston, USA	Mr. Stuart J. Lipoff, Aurthur D. Little, Inc. 20 Acorn Park, Cambridge, MA 02140 Tel: +1 617 498 6077, Email: s.lipoff@ieee.org http://www.vtc2000.org
ICSC 2000 4th International Conference on Satellite Communication	Sept. 26-29, 2000 Moscow, Russia	Dr. Henrich Lantsberg Russian Academy of Sciences Mokhovaya Str. 11, 103907, Moscow, Russia Phone: 7(095)203-4985. Fax: 7(095)203-8414 E-mail: h.lantsberg@ieee.org
MILCOM 2000 Military Communications International Symposium	Oct. 22-25, 2000 Los Angeles, USA	Mr. Jamie Morgan TRW Space & Electronics Group One Space Park, Redondo Beach, CA 90278 Tel: +1 310 813 7685 E-mail: jamie.morgan@trw.com
GLOBECOM 2000 Global Telecommunications Conference	Nov.27-Dec.1, 2000 San Francisco, USA	Ms. Gayle Weisman IEEE Communications Society 305 E. 47th St., New York, NY 10017 Tel: +1 212 705 8941
ICPWC 2000 International Conference on Personal Wireless Communications	Dec. 17-20, 2000 Hyderabad, India	Dr. Ram Gopal Gupta Dept. of Electronics, Govt. of India 6 CGO Complex, Lodhi Rd. New Delhi 100 003, India Tel: + 91 11 436 3095 E-mail: guptarg@xm.doe.ernet.in http://www.citr.ece.uvic.ca/icpwc2000
ICSSC 2001 19th AIAA International Communication Satellite Systems Conference	April 17-20, 2001 Toulouse, France	Prof. Michel Bousquet SUPAERO, B.P. 4032 31055 Toulouse Cedex 4, France Tel: +33 62 178086, Fax: +33 62 178330 E-mail: bousquet@supaero.fr

To all SSC members: If your postal or e-mail addresses, telephone or fax numbers have changed, please update them with the committee secretary. You can review our current records on our web page at www.comsoc.org/socstr/techcom/ssc

SSC COMMITTEE MEMBERSHIP APPLICATION

You can participate in the SSC Committee as a member by attending the SSC Committee meeting which is held twice a year during ICC and GLOBECOM conferences or you can participate as an associate member by filling in and mailing the application form below (preferably send an e-mail with the same information). Please note there is no difference between a member and an associate member except that an associate member has never attended an SSC Committee meeting.

The members and associate members can receive various information through the SSC newsletter and on our web page at www.comsoc.org/socstr/techcom/ssc, and also may propose hot topics, workshops and tutorials as well as provide paper reviews for conferences and publications. The members and associate members may provide regional conference / workshop information to the Editor which may appear in the SSC newsletter and on our web page if it is applicable to the committee's charter.

Place
Stamp
Here

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Name _____

Title _____

Affiliation _____

Business Address _____

Tel _____ Fax _____ E-mail _____

Paper topics you would like to review (optional) _____

Please Note: Your contact information will appear on our web page unless requested otherwise.