

INDIA RoadShow Report

February 25th - March 2nd 2007

The India Roadshow approved by the BoG in 2006 was organised perfectly through the offices and support of Madhu Pitke and his colleagues Ashok Jagatia and R. Muralidharan (Past Chair of IEEE India Council & R10 nominated candidate for R10 Director-elect). Doug and Roberto were joined by Madhu on the whole roadshow.

We feel that the objectives we had, i.e. understanding the needs of the Indian constituency and advertise the benefit of becoming a member of COMSOC have been achieved. Thanks to a very good organization set up by our Indian colleagues, in a limited amount of time we were able to address 8 audiences, have discussion with representatives of 20 telecom companies, meet professors from 6 universities and also meet with the president and members of our Sister Society in India (IETE). See Annex 1. A total of over 500 people have listened to Doug's and Roberto's presentations.

We feel that this kind of multiple contact over a very short period of time is something that we should do again in other areas of the world, with possibly a one or two per year roadshow being optimal. It is essential to have good local support for the roadshow organization. In India it was perfect and the results were in line with that splendid organization.

We also noticed that specificity in local/national and industry/academic interests suggests we take a much more focused geographic approach to the development of membership services.

We might also consider the opportunity of leveraging from presence of geographic groups at our flagship conferences to organise a meeting with them to discuss needs and perceptions from that specific geographic area.

In the following we provide a report on all meetings held, with focus on:

- ✚ Issues raised by participants to meetings, and with a
- Action points we suggest to take to the BoG or we are taking

Some general background on the current situation in India, gathered from the various talks we have had, that can be useful to put COMSOC actions into perspective in a market that is our second largest after US with over 2000 members, are the following:

- 1,080 million people as of July 2005, 31.2% in the 0-14 years range, 63.9% in 15-64 range and 4.9% 65 and over;
- 59.5% over 15 years old can read and write. A large share of the population is illiterate. However India has the second largest number of engineers in the world;
- Growth rate in 2006 has reached 9.2%, however inflation is on the raise, 6.7% in January, 6.05% in February following a crash program of the Govern to limit inflation. 33 Indian companies are within the largest 2,000 companies in the world;
- 146 million cell phones (12 MI in the Bombay area), growing at 5-6 million a month, with a price that is the lowest in the world (2\$c a minute, although if one relate it to earning power in the US or Europe the cost becomes significantly higher). SMS cost is 1 c. India has the 4th largest cell phone number, following China, USA and Russia. By the end of March 2007 India should rank 3rd, with 163 million phones (Russia will be 4th with 159 million);
- 6 mobile Operators, 2 operating with CDMA on the 1900 band, 4 with GPS on the 900-1800 band, using a 10-15 MHz spectrum. The overall ARPU in cities is 20\$ a month, based on an average of 400 minutes call and 2 c a minute price. Average ARPU is very very low in rural areas, where CaPex is very high. Huge number of miscalls (call used to signal something

without the called party having to answer, no charge). Notice however that India is a huge market. Hutchinson Telecommunications International derived 41% of its revenues in 2006 from India operations;

- Expected 400 Million cell phones by 2010. In 2007 the number of cells will grow from 100,000 to 180,000;
- 49 million land lines.

There is a consolidation of Operators, two main ones in the fix lines, TATA and RELIANCE, several in the mobile domain. GSM, CDMA 2000, EvDO are the main systems, 3G is being planned as well as WiMax.

Monday, February 26th - Mumbai

Visit at Reliance Communications, Anil Dhirubhai Ambani Group

Dr. P.K. Bhatnagar, RELIANCE Innovation Director

K.T. Subramanian, Head Acceptance Testing Reliance Tech Innovation Centre

Ashok Jagatia, President Acevin Solutions, Chapter Chair

Reliance has a 80k nationwide optical fibre backbone, Tbps on each fibre resulting from an investment of 5 BillionUS dollars.

Technology is felt to be a key differentiator for business. The “Innovation Labs” has 5 main activities: Standardization, Technology evaluation and Validation, Acceptance testing, Consulting, and Development.

The Innovation Labs replicates, on a small scale, all equipment and applications active in the Reliance network. There are 300 engineers (150 of which in development). Few of these engineers today are COMSOC or IEEE members.

IIT Bombay – Indian Institute of Technology

Prof. Uday B. Desai, Dept. of Electrical Engineering, ubdesai@ee.iitb.ac.in and Chair, IEEE Bombay Section.

Presentation of COMSOC and Lecture were given to about 50 students and professors present in the classroom and to several hundreds spread over 9 locations connected via videoconference.

A few of the students attending the event at IIT were members of the COMSOC student program (e.g., student branch).

Meeting with IEEE Bombay section.

We attended a meeting (monthly held) of the local IEEE section. IEEE India has the second largest member population in the world and the largest student base. The general membership is decreasing although the student membership keeps increasing. The problem is that once students graduate they discontinue the membership.

At the end there was an extended discussion on what the COMSOC community in Bombay would like to see. Continuous education is felt to be very important in a world where the half life of know-how is less than 5 years and where the consolidated knowledge of today is likely to be embedded in computers and processes within 10 years, making that knowledge at a human level redundant. In support of these needs, the following would provide value:

- ✚ Certificate of know how from COMSOC would be valued in the Indian market. The current IEEE “new initiative” project on certification is considered important

- ✚ Tutorials are very much valued. A proposal has been made to have tutorial generated in India specifically targeted at the Indian market.
 - The program to create tutorials by synchronising voice and slides will be sent to the COMSOC representatives in India
- ✚ A magazine focusing on India on practical applications of technology would be highly desirable.
 - A proposal will be submitted according to Publications and Magazines rules. We will make sure that the proponents will get all the assistance required to formulate the proposal.
- ✚ Plan for a major conference of COMSOC in India
 - A preliminary proposal to host GLOBECOM 2011 will be submitted in a draft form at ICC07 and a consolidated one at GLOBECOM 2007. Doug and Roberto will assist by sending examples from previous proposals and will provide helpful feedback for the preliminary and final proposals.
- ✚ Although there is a good slate of professors and engineers active in India that can operate within the DLT program there is no participation in that program as DL.
 - Names of DL candidates will be sent to Roberto who will forward to the DLT committee. We should have at least a few DL from India.
- ✚ Need to convince industry to recognise Senior and Fellow grade membership as a distinguishing asset of an employee.
- ✚ There is basically no Indian resident elected or appointed to a Society officer or Committee Chair position in COMSOC. Taking some steps to correct this would surely increase the capability of COMSOC to relate more directly to the specific needs of India.
 - Profiles of potential candidates will be sent to Roberto who will discuss them and submit some to the ComSoc Nominations & Elections Committee. The availability of such profiles should also be considered by COMSOC Presidents as they fill various appointed positions.

Tuesday February 27th, Mumbai

Meeting with TCS, Tata Consultancy Services

TCS has 75k employees, is now a multinational operation, 18% of revenues from TLC biz, 78% of this from Operators, 20% from manufacturers (equipment vendors). A special group dedicated to Telecom Practice is focusing on new opportunities. The research centre, as many throughout India, are funded by charitable funds. TCS has the largest number of IEEE members, probably the highest density in industry in India. It is the result of a policy, nowadays discontinued, to pay for the membership fee and from the fact the the founder was an IEEE key person in India.

TCS has worked with BT in the definition of BT's 21st Century Network (21CN), and is now supporting the testing phase, outsourced from BT. TCS is supporting Nortel for their Asia Pacific customers, as well as Ericsson, Alcatel and Nokia customers. Their offering goes across Elements, Network, Applications and Business, with 140 customers all over the world. TCS provides them with System Integration Services, Offshoring, Consulting and complete Business process management (such as billing). The main focus is on "convergence," embedding of IPTV, cost reduction, carrier outsourcing, and conversion of current networks into NGN (like BT's 21CN).

We gave a presentation on COMSOC and a lecture on the future of Telecommunications focusing on challenges the industry will be called on to meet.

- ✚ There is an interest to engage in stronger relations with COMSOC. Having COMSOC lecturers giving talks to their people is felt important.

Meeting with industry representatives

A brief presentation was given on opportunities that new technologies can offer to a growing market such as India and the need to take a global approach such as the one that can be advanced by being exposed to the breadth of COMSOC. This was followed by discussions out of which came the following points:

- ✚ Tutorials on line are good but they cost a lot with respect to the Indian market. Other associations are providing tutorials for free. Possibly an intermediate step might be to have some sort of platinum membership providing access to.
- ✚ There is little awareness of what COMSOC can do. Actions to increase this awareness are important. One way is surely to have some conferences, even smaller ones, to be organised in India (in addition to several already there, e.g., COMSWARE and IPUWC).
- ✚ There are some gaps in education in several education institutions and COMSOC may be instrumental in providing tutorials to fill in these gaps. It was noted that a specific set of requirements from the “user” community is needed before proceeding.

Wednesday, February 28th - Bangalore

Bangalore has become the world capital for software development thanks to a wide availability (still growing) of software graduates. Whilst in Bombay the accent is on higher education, also in software, in Bangalore there is a great demand for graduated students (note, “graduated” students are those with degrees, while there is also a lower level of “diploma-ed” students, without degrees; this is not to be confused with “graduate students,” who have one more degrees beyond their first level degree). The lower degree of education is not hampering the development and is met by lower salary that makes this industry very competitive. A graduate student may get between 40 to 400 \$ a month (local industry pays less, multinationals based in Bangalore pay more; graduated students go to local companies for a few years to gain experience and then move on to better paid job with a multinational).

Meeting with IETE and local industry

Met with President of IETE Mr. S. Narayana.

IETE charges 2 \$ a year for membership

The Bangalore section has about 3000 members, spread over several Societies.

- ✚ There is an interest in creating a joint Chapter with the Microwave Theory and Techniques Society, Communications Society, Engineering Management Council and the Computer Society.
- ✚ Interest to have specific COMSOC student memberships.
- ✚ Tutorials may be very useful, targeted to graduate students (those having just a diploma).

Meeting with Tech Mahindra R&D Services

Tech Mahindra has a long standing experience in several fields. It is growing rapidly, from 5,600 employees in 2004 to 10,000 in 2006, as well as a plan for 19,000 in 2007. It has a global reach, including the USA, UK, Germany and the Middle East, providing services to Microsoft, AT&T,

BT, O2, Vodaphone, Tiscali, Alcatel, Nokia, Motorola, Siebel, Cramer, Infusio, MBloc, Hutch and many more. They offer consulting and system integration services to Telecom Service Providers, and managing of products in various life cycle stages (engineering, sustenance, testing, certification) to Telecom Equipment Manufacturers,. They cover all vertical layers from transport SONET/SDH, IP, MPLS, etc.) to services (IMS). For Motorola they take care of all testing and integration and have a lab that recreates the Motorola systems deployed in USA, Japan and Europe. They are a strategic partner in BT's transformation towards the 21CN, supporting them in engineering, testing and field deployment. They also have a long standing association with Alcatel-Lucent that has grown to over 500 persons per year with an onsite/offshore ratio of 80/20. Research support is more a partnership than an Outsourcing, emphasizing a "Telecom Eco-system."

We gave the future telecom lecture and presented the COMSOC overview. In the discussion that followed it was pointed out that

- ✚ Some people who had been members, discontinued the membership and when they decided to rejoin they were asked to pay for the years they had not been members.
 - We promised a follow up on this, as that does not seem to make sense.
- ✚ It would be good to have the possibility of accessing abstracts of papers for free; today apparently one has to be a member even to get an abstract. This is not so for related societies, like ACM.
 - We will follow up on this.
- ✚ There is a perception that most of the ComSoc publication, conference and tutorial information is academic-oriented. In India there is much more interest on industry-related aspects, including business perspectives and impacts.
- ✚ There is an interest for the industry to get customised presentations, i.e., DLT-like talks focusing on their specific environment
 - We should think in terms of membership for companies with specific benefits that do not overlap with membership attached to a single person. That might include customised tutorials and DLTs.
- ✚ The Bangalore chapter should be revived starting on Communications topics possibly presented as part of a DLT.
- ✚ Industry has specific interest in the continuous education of their employees and COMSOC may be instrumental in fulfilling these needs.
 - We should develop a value proposition for industry, not necessarily a membership for industry but a way to establish close and continuous relations with specific companies. Some ideas might be to have a contract-like document where a company would pay COMSOC 2,000 \$ / 5,000\$ / 10,000\$ a year and based on the level of fee it would get a certain number of services, including 100 / 300 /1,000 memberships to assign to their employees, access to a certain number of tutorials for free, discounted access to conferences for 1/3/10 of its employee, possibility for the higher fee layers to have focused DLTs, possibility to have specific tutorials developed and streamed/downloaded. We will follow up on this. A reference point has been established with Mahindra and we would like to prepare a formal proposal for the BoG to discuss in June.

Meeting with Sasken

Sasken is a company operating in the wireless area supporting Mobile Operating Companies in the deployment, testing and operation of their network by developing customized software. It has 3,500 engineers (40% computer science and 60% electronics, only 50 PhD). It was founded 15 years ago as a design tool company, but now is focusing on Telecommunications. They have customers that manufacture telecom systems as well as telecom operating companies. They are starting to acquire

other companies internationally, with the last acquisition having been a company in Finland. They are also starting to set up locations in various countries for direct customer support.

The presentation of COMSOC was followed by the “telecom futures” lecture to over one hundred engineers, with a strong interaction. Key interest areas for more value from ComSoc were the following:

- ✚ A value proposition specifically tailored to the needs of the company would be of interest.
 - A Sasken contact person has been identified to work with us on a value proposition
- ✚ The certification program of COMSOC is of interest to the company. They are already subscribing and sponsoring their employees in getting certification in some areas. It was pointed out the need for having a local contact to handle administrative and other aspects of the certification program for local engineers.
 - Information on the program will be sent to Sasken. The issue of a local contact has to be addressed, possibly considering the involvement of Chapters.
- ✚ Concern was expressed that the surplus generated by Indian conferences is going to the USA. It is felt that such surplus should be used for supporting Indian needs, such as launching other conferences, awarding grants, etc.
 - This clearly is an area that has been discussed many times over. It is a sensitive area and for sure COMSOC should provide information on what is being done with surplus from conferences all over the world and also provide information on the geographical areas where money is spent. We might want to start looking at our budget also outlining the geographical areas involved with the various earnings and expenses.
- ✚ There is a need to organize education through conferences-workshops such as in the area of rural communications. Initiative of that type are typically money losers but are felt very important. It would seem appropriate to use the money made as surplus in other conferences to help fund such activities.

Thursday, March 1st - Chennai

Visit to Alcatel-Lucent

We were welcomed by Subhash Bana, the Managing Director of Alcatel-Lucent Development India. He is responsible for all Alcatel-Lucent (A-L) research activities in India. They are a technology company and want to remain so. They are focusing on “Ecosystem,” that is a coherent mixing of technology and applications. A-L India R&D is present in a number of cities: Delhi, Chennai, Bangalore, with research being conducted in partnership with several other companies. All people employed by A-L in India are engineers, including some of the accounting and human resources people (even non-engineer “administrative” people are given some engineering training). The point is that A-L wants every one of its people to understand technology as a prerequisite to doing their job.

Alcatel Lucent is very active in standardization bodies; in India they have leadership on Wimax. We gave a presentation on the challenges of an evolving telecommunication environment and how COMSOC can be beneficial.

Dr. Bana told us of the shift they are witnessing when speaking to their clients (Operators) around the world. The question: What do you think is more important in the next 5 years: products and

services or new business models? The answer used to be, “products and services,” but this is no more. New business models are now the crucial issue for Operators.

ComSoc could provide added value through the following:

- ✚ Alcatel feels that it is most important to have several of its researchers and innovators becoming participants in COMSOC, interacting with a global community. Dr. Bana is interested in considering a proposal for a corporate membership through which the company can get some benefits and its employees can become members of COMSOC at a rate in the order of 5\$ (as he put it, “so they have a stake in their membership”).
 - We have to discuss and come up with a proposal within COMSOC. This need has been manifested in several of the discussions we have had. In the case of A-L, it was just articulated in a very precise way and with a demand to move forward since they have the need and are willing to support it.

Department of Electrical Engineering, IIT Madras.

The head of the department, Dr. Srinivasan, introduced IIT. The dept was founded in 1961 and today support 220 BT, 120 MT 175 Dual Degree, 121 MS and 83 PhD. The faculty includes 15 professors and 28 associate or visiting professors. Of special note is that the average age of professors has decreased sharply over the last 6 years (from 48 down to 40) as result of recruitment of young professors, some from abroad.

Research areas focus on communications, microelectronics, circuits and VLSI design, power electronics, control and instrumentation, and power systems and high voltage engineering. The faculty is engaged in about 50 projects of consultancy to the industry, totalling about 150 Million Indian Rupees in the last 5 years.

Communications research focuses on wireless, TDMA, OFDM, and CDMA. Low cost GSM for rural applications is of high interest as well as low cost satellite communications. On the other end there are studies on cable broadband and wireless-based broadband. Although technology is well progressed there is little competence on IPR and the patenting process in general. The group is partnering with some companies and has a relationship with the Indian Government.

The main research problem is meeting technical requirements within economic constraints on the demand side, e.g., 5\$ a month for broadband (both fixed and mobile). This pressure on cost is leading to a similar issue facing mature markets although from a completely different starting point. IIT looks at the Next Generation Network based on IP reaching every base station.

Telecommunications in the rural area is not just for the sake of providing communications services to most of Indian population, but rather to bring efficiency in agriculture and harvest distribution/logistics. India is lagging behind the rest of the world in agriculture productivity and 30-40% of the harvest rots before reaching the selling point. A number of research activities are going on in this area at IIT. COMSOC may want to consider supporting this effort for communications in rural areas that is of interest to many parts of the world.

After meeting with Dr. Srinivasan we moved to a lecture hall where COMSOC was presented and then a lecture was given followed by a discussion and the activation of a Communication Chapter in Chennai.

The following points were raised for consideration by COMSOC:

- ✚ The potential for growth in the Indian continent is huge. A target of 10,000 members by 2010 is reasonable according to several professors participating in the discussion.
- ✚ Allow a low income rebate for authors of low-income at COMSOC Conferences. The cost of registration at ICC is equivalent to 6 months salary for a graduate. A conference like NCC (India National Communications Conference) has a registration cost of about 50 \$.
- ✚ Allow student authors (with all co-authors from low income category) to present papers on student reduced fee
- ✚ Student travel grant - make policy more transparent
- ✚ Provide travel grants for non-student COMSOC authors from low income category
- ✚ Publishing membership fees in Rp would help several people to perceive a lower cost and a membership to a global organization vs a US-centric one.
- ✚ The value of COMSOC-IEEE seems to be more substantial for the USA, with insurance and other aspects that apply to that audience only. For the India-based potential membership there should be a clearer value proposition.
- ✚ IIT-M offered to host ICC (in 2009) at Chennai
 - ICC 2009 is already assigned (to Dresden, Germany). As previously reported there is an agreement to help in preparing a proposal for a GLOBECOM in India. There is a need to coordinate the proposal locally. (Also, the climate is much better for when GLOBECOM is typically held; ICC timing is during the summer when it is extremely hot and humid, and would not have the appeal of going to a warm place during the cold winter months in North America, Europe and parts of Asia-Pacific.).
- ✚ There is a well attended NCC (Indian National Conference on Communications) with 100 papers (out of 250 submitted). The conference attracts telecom engineers, scientists and academia, about 160 of them. This means that a significant proportion of participants are presenting papers.
 - It may be good to have COMSOC co-sponsor NCC providing advertisements in its Communications Magazine. This may attract foreign participation and would extend visibility for COMSOC in India and Asia. We should also consider hosting NCC papers on IEEE Explore. M&C should be involved in the assessment of this request.

Friday, March 2nd - New Delhi

Meeting with VAVASI

VAVASI is a small start-up company that plans to become very big. They are starting to deploy 4G – like wireless services and infrastructure specifically focusing on low-income, rural areas. They have a staff of 50 people today and an aggressive hiring plan that should result in a workforce of 3,500 by the end of 2008.

They have deployed wireless IP all-the-way in Ulan Bator, Mongolia, with 90 base stations out of a planned 140, to provide voice and data service with a cell capacity of 2 Mbps over a radius of 8.9 km. Their market target is 100 million lines within the next five years. The overall market is very competitive but it is less so in the rural areas where incomes are very low. By focusing on that market they hope to get a strong customer base.

Cell phones are being developed specifically for this service and will be offered at no cost as part of the service; however the plan also calls for general availability of cell phones for sale and then subscribe to VAVASI services.

VAVASI is at the same time a technology-based company and a service provider. They are planning to hire engineers fresh from school. Their aggressive hiring depends upon a consistent training plan to fill the gap between formal “school” education and “practical” engineering skills.

A presentation was given on COMSOC interests in India and how COMSOC services can benefit a variety of companies, including small ones and rapidly expanding ones. The company CTO will get in touch with us to explore a cooperation plan. There are a number of gaps between engineers’ education and industry needs. Engineers do not get a consistent and coherent view of telecommunication as a global field. They only get understanding of a single slice of the technologies. Getting a broader view is important. It would be good to see COMSOC work in close cooperation with universities to provide better education.

Also addressing pre-university students would be of interest to industry, since a lot of hiring is taking place in that area. However this is not a market (at least now) for COMSOC.

Meeting with Dr. Ram Gopal Gupta

Dr. Gupta is Senior Director of the Dept of Information Technology in the Ministry of Communications and Information Technology of the Government of India. He knows very well IEEE, having served in several positions (including current Chair of the India Council’s AESCOM Chapter and a member of the AESS Board of Governors).

He pointed out the following:

- ✚ The cost of registration to conferences makes it impossible to Indian Engineer to attend (ICC 2007 in Glasgow was cited as a recent example of excessively high registration fees)
- ✚ IEEE/COMSOC may want to consider outsourcing some services to Indian companies (or even volunteers). This would both serve as a testimony of being a truly global organisation, non-US-centric, and as a way to save cost, since services can be provided at a lower cost (he specifically would like us to consider outsourcing Communications Magazine production and can provide a “business case” for India)
- ✚ COMSOC should plan to organise one of its flagship conferences in India. GLOBECOM, being held in late November-early December would fit with the best weather in India.

He informed us of the ongoing work to deploy full coverage of New Delhi with WiFi (most probably, “full” has to be interpreted broadly to mean those area where such coverage makes sense) and of discussions to include Broadband as part of a universal service. That would mean that any Operator should strive to provide BB as an integral part of the service without imposing an added subscriber fee.

Meeting with IETE

We met with the top officers of the Institute of Electronics and Telecommunication Engineer for an in depth discussion on mutual activities.

The IETE serves 54,000 members throughout 52 geographic centres throughout India. They promote basic engineering and technical education programs in ET, IT, and CS for human resource development. They also stimulate research and provide a forum for discussion on national policies, providing substantial input to government policy makers. The association fee is 2\$ a year or alternatively 20 \$ for a life membership.

IETE is organized with a President, Vice President, 21 elected members of the council + 10 Centre Chairman and one representative of the industry. There are a number of Committees, including Technical Program committees, Membership and local centre committee, students interactive committee, publication committee, academic and distance education committee. Additionally they have a Board for recognition of excellence, one for e-learning, one for research. Note, a “council” is roughly the same as a ComSoc Board (e.g., for publications).

There are several layers of membership: Honorary Fellow, Fellow, Organization Member (meaning a person who works at a company – not to be confused with a “company” being a member), Student Member, Distinguished Fellow, Member and Associate Member.

IETE offers courses at Diploma, Graduate and Advanced levels. These courses are recognised by the Government of India, and have so far involved over 40,000 students. They have several publications, including the IETE Journal of Research, Technical Review, Journal of Education and Newsletter. One publication is targeting students and their potential careers, another is targeting academia, a third is aimed at professionals, and a fourth is for general research.

Several conferences and lectures are held each year, some under the banner of continuous knowledge update.

On the May 17 each year they organise a “Telecommunication Day,” with lectures and talks. They also promote interaction with industry through an APEX Forum, with shepherding being done through the industry council that is part of IETE.

IETE is also funding courses for the benefit of Industry. IETE has two core areas: bringing higher technical education to those constituencies that cannot afford to attend a university and to provide continuous education to professionals (the advanced level program). At any time they have about 15,000 students taking courses. Graduation from these courses is valued by the industry. There are about 6,000 new students joining every year. The cost for student is a nominal 50 \$ for year and about 5 \$ for every examination. After graduation student may apply to become corporate members (the name has nothing to do with corporation member).

As hot topics come up, IETE takes initiative to be on the forefront of education and provides a technical arena for policy makers to discuss.

Future plans include providing e-learning facilities for technical education, networking with all geographic centres, increase the number of centres, bringing more professional individuals and organizations in the fold of IETE, more interaction with industry and setting up a placement bureau.

The following points were brought up, based on our Sister Society agreement:

- ✚ Promotional ads. IETE is advertising COMSOC and is expecting COMSOC to do the same.
 - We need to have the information to publish. These will be sent to Roberto who will follow up and make sure action is taken.
- ✚ Publication of articles both ways in IETE and ComSoc publications is not happening
 - We will send articles from Communications Magazine for IETE magazine publication, and conversely IETE will send papers for publication on Communications Magazine.
- ✚ Complimentary copies of publications on mutual basis needs follow-up
 - We will send a bulk of copies to IETE.

- ✚ IETE organises several conferences. In the two major ones, in April and September, it would be very appropriate to have the presence of a COMSOC representative to reinforce the relationship. He can give a keynote, a tutorial and present COMSOC to participants.
 - We will see if such participation is possible in September. Roberto will look into that, possibly organising a DLT in India.

Most of the issues raised in the relation between COMSOC and IETE are related to a difficult communications. We have agreed on a strong contact point, between the IETE Secretary General, Brig VK Pandey and COMSOC Sister Society Director Roberto Saracco.

ANNEX 1. Organisations contacts

Industry

- Bangalore

Eagle Photonics, www.eaglephotonics.com – contact: Hitesh Mehta, CTO, hitesh@eaglephotonics.com

MAC – Measurement and Controls India, www.macil.in – contact: P.S. Ramesh, Managing Director, psramesh@macil.in

Power Grid Corporation of India – contact: K.Ramakrishna, Deputy General Manager, kappaganturk@hotmail.com

Sasken, www.sasken.com – contact: G. Venkatesh, CTO, gv@sasken.com

Siemens – contact: A.Ravikiran, Program Manager, ravikiran.a@siemens.com

Tech Mahindra, www.techmahindra.com – contact: A.K. Prasad, Vice President, akprasad@techmahindra.com

- Chennai

Alcatel-Lucent - contact: Subhash Bana, Managing Director, subhash.bana@alcatel-lucent.com

for corporate membership - contact: S. Swaminathan, Swaminathan S
<Seetharaman.Swaminathan@alcatel-lucent.com>

Nicheken – contact: T. Chandrasekaran, Managing Director, csekeran@nicheken.com

- Delhi

Airtel, www.airtel.in – contact: Madhuranjan Kumar, Head Ntwk quality
madhuranjan.kumar@bharti.com

STMicroelectronics, www.st.com – contact: Alok Nath De, Group Manager HPC home entertainment, personal multimedia and comm. infrastructure aloknath.de@st.com

Vavasi Telegence, www.vavasi.com – contact: Navajyoti Patnaik, Executive Director, npatnaik@vavasi.com

- Mumbai

Acevin Solutions, www.acevin.com – contact: Ashok Jagatia, President, ashok@acevin.com

Fastech Telecommunications, www.fastech-india.com – contact: P.B.Parikh, Chairman, pbparikh@fastech-india.com

Hinditron – contact: Quraish Bakir, Vice President, qbakir@hinditron.com
Reliance Communications – P.K. Bhatnagar, Head Reliance Innovation Centre, pk.bhatnagar@relianceada.com

Tata Consultancy Services, www.tcs.com – contact: Behram R. Sethna, Vice President, behran.sethna@tcs.com and Anthony Lobo, anthony.lobo@tcs.com

Vegayan Systems, www.vegayan.com – contact: Girish P. Saraph, Founder Director, girish_saraph@vegayan.com

Videsh Sanchar Nigam, www.vsnl.in – contact: V.P.Aiyappan Pillai, Head Ntwk projects implementation, aiyappan@vsnl.co.in

Universities

- Bangalore

Indian Institute of Science, <http://ece.iisc.ernet.in> – contact: K.J.Vinoy, kjvinoy@ece.iisc.ernet.in

- Chennai

Indian Institute of Technology Madras – contact: Bhaskar Ramamurthi, Dean,
deanplan@iitm.ac.in

- Mumbai

Indian Institute of Technology Bombay – contact: U.B.Desai, professor,
ubdesai@ee.iitb.ac.in

Research Centres and Institutions

- Bangalore

Central Power Research Institute – contact A.k. Tripathy, Director General,
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The Hindu, India's National Newspaper – contact: H.R. Mohan, Associate VP (systems)
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