

NEWSILEIMIER

Vol 11 No 5, Sep-Oct 2009

FROM PRESIDENT'S DESK



India has just celebrated achievement of target of 500 Million telephone connections by the year 2010, much ahead of time. There has been phenomenal growth in this area as last 100 million connections have come up just in a period of 8 months. India now needs to focus to take the connectivity to the rural areas where the tele-density is still very sparse.

The world is recovering fast and growth prospects are within the sight from one of the worst recessions of this century. The economy is coming back to track, consumer confidence is restoring, housing conditions improving, etc. are some of the indicators of recovery. Fortunately the impact of recession was less in India

compared to developed nations, however, the eradication of poverty slipped little far than expected. In such economical situation, there is good news for telecom industries. In a recent study by Economic Times (ET), telecom industry has shown significant progress as compared to other industries. At the aggregate level, the eight companies in the telecom sector that made it to the ET industry listings saw sales growth of 29%. This was better than some other industries such as cement (17%), IT (19%), FMCG (24%), metals (no growth), pharmaceuticals (25%) and textiles (18%). This obviously, is a good news for telecom professionals.

The Indian telecom space is witnessing a monthly subscriber addition of 12 million on the average as compared to 8 million a year ago. In spite of the increase in subscribers, the sector has witnessed a relentless fall in average revenue per user (ARPU) and minutes of usage (MOU) over the last two years. ARPU has fallen by one-third while MOU have declined to the levels of two years ago, despite rising for a few quarters. The dropping ARPUs and MOU have eroded profitability of the sector to a certain extent. This is the huge challenge to professionals across telecom industry. Telecom service providers, therefore, need to be more innovative to explore various other options to fill this gap by providing applications value added services to the user over the network. This will be win-win condition for both, the service providers by enhancing their revenue and the user enjoying different services on their cell phones.

The Indian telecom has done well in achieving unprecedented growth in cell phone connections. While the main focus has been in providing voice connectivity to the user but very little has been done in providing the data service to the user. It is surprising that for a country of this size with a population of over 1 billion people, India has only 7 million Broadband connections. Similarly, we have to work hard to increase telecom penetration in the rural areas. The challenges such as lack of infrastructural facilities like power and lower usage of network in sparsely populated areas as compared to urban networks, have to be addressed partly by supplementing it with USO fund which over the period has swelled up to Rs. 25,000 Crores. Innovation is required in exploring energy efficient networks and use of alternate sources of energy for villages not connected with power grids.

Nearing the anniversary of terror experienced in Mumbai last year on 26/11, IETE recently organized Annual Technical Convention on "Technology and Terror- Use of ICT in war against Terrorism" at Mumbai on 26-27 Sep '09, discussing in detail about the various aspects of prevention and control of terrorists activities with the help of modern technology. Dr E Sreedharan, Managing Director, Delhi Metro and other dignitaries have given their perspective and provided impetus to resolve the problems of terrorism whole world is facing. The nation has a huge challenge to find the ways and means to curb terrorism from across the border. IETE has been continually playing role to provide impetus to the telecom professionals and the industry for an active role in exploring new technologies and means to protect the nation.

Lt Gen Ashok Agarwal, PVSM (Retd)

CONTENTS

2

5

7

9

12

_			
Erom	Presid	lont'o	Dook
	PIESIO	iei ii S	LIESK

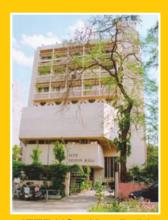
52 nd	۸Т		٦,	100	
מב	ΑТ	(,	OT	II - I	_

Cellular Services : Challenges Ahead

News from Centres

Minutes of the 55th (2008-09) AGM of IETE

Minutes of the 1st (2008-09) SGM of the Corporate Member of IETE 13



IETE HQs, New Delhi



News From Headquarters

52nd IETE ANNUAL TECHNICAL CONVENTION (ATC-2009)

TECHNOLOGY & TERROR- ROLE OF ICT IN WAR AGAINST TERROR

After September 11 terrorists' attack in USA, the trend of techno terrorism has become an unstoppable global threat. The lethal activities have become more effective with the easy availability of sophisticated technology. Terrorists reliance on technology is becoming very apparent with their increasing activities meant to cause mass unrest and destruction. However, technology alone cannot be blamed as it plays its part only in the realm of communications.

With this as the background, IETE chose the theme of "Technology & Terror- Role of ICT in War against Terror" for its Annual Technical Convention at Mumbai on 26-27 Sept 2009, where in academicians and professionals across the country participated to discuss this issue of global importance.

The two-day long event was inaugurated by the Chief Guest, **Dr E Sreedharan**, Managing Director, Delhi Metro Rail Corporation, New Delhi, by lighting the ceremonial lamp after the customary Saraswati Vandana. The welcome address was delivered by **Dr K T V Reddy**, Chairman IETE Mumbai Centre. He was confident of providing a meaningful platform to the participants to collaborate & develop a kind of strategy to meet the safety requirements of the nation by using ICTs to combat the menace of terrorism.



The Chief Guest Dr E Sreedharan, MD, DMRC, New Delhi, and dignitaries inaugurating the 52nd ATC of IETE

Shri P N Chopra, DIG, BSF (Retd), Chairman Technical Programmes Committee, apprised the audience about how various technical sessions were planned to deliberate achievements of ICT to fight terrorism. Multimedia devices were the need of the hour to channel ICT capabilities to face natural and man-made challenges. He also appreciated the cooperation of all the corporate members and the hard work put in by the IETE HQ & Centres to make 52nd ATC a grand success.

The formal announcement of re-election of Lt Gen A K Agarwal, PVSM (Retd), as the President of the Institution



President IETE being re-installed for the year (2009-10)

for the second consecutive term, was made during the convention. In his presidential address Lt Gen Agarwal highlighted the activities of IETE and its contribution to the profession and the society. He mentioned how IETE has been providing technically trained manpower at a very low cost. On the role of ICT in War against Terror he said that its role could not be refuted in providing speedy response and interactivity for handling insurgencies and to ensure safety of life & property. He explained the relevance of the theme in the context of terror attacks on Mumbai and said that tactful practice & usage of the technologies were the need of the hour. He informed the audience about satellite education, ERP software installation at IETE HQ and video conferencing facilities which were to be started soon.

The **Honorary Fellowship** of the Institution was conferred on **Dr E Sreedharan** for his outstanding services to the nation in general and Indian Railways in particular. The Distinguished Fellowship of IETE was conferred on

Prof K K Aggarwal, President, South East Asia Regional Computer Confederation (SEARCC), Former Vice Chancellor, GGSIP University, New Delhi and IETE's Past President (2002-04) in recognition of his outstanding contribution in the field of Electronics and Computer Engineering and to **Shri H O Agrawal**, Former Chief Engineer, AIR, for his contribution in the field of Electronics, Telecommunication & Information Technology.



Conferment of Honorary Fellowship on Dr E Sreedharan.



President IETE, presenting citation to the Chief Guest.



Presentation of Distinguished Fellowship to Prof K K Aggarwal.



Presentation of Distinguished Fellowship to Shri H O Agrawal

The Guest of Honour, **Shri Sekhar Dutt**, Dy NSA, NSCS, New Delhi, highlighted the contribution of Dr Sreedharan for nation building and of the services being rendered by IETE. He expressed that ICT was not only being used for the mankind but also by the terrorists and anti social elements who have easy access to such technologies. It was important to hold relevant forums to provide & share thoughts about latest ICT systems for speedy responses during acts of terrorism. He was of the view that research forums should collaborate to increase connectivity and greater security to the nation & the mankind.

The Chief Guest, **Dr E Sreedharan**, in his inaugural address praised IETE's objectives and its services to the nation. He said that institution should take the lead in disseminating the latest technologies. Sharing his experience of Delhi Metro, he highlighted the importance of punctuality, integrity and honesty for the success of the project. He appealed to wipe out every traces of corruption from the society. He emphasized values and ethics to be built-in and integrated in every field of working. He asked all IETEians to be committed to the practice of ethics and moral values and the fraternity to emphasize on this responsibility. The souvenir and IETE- Special issue were released on the occasion.

The 41st Bhabha Memorial Lecture was delivered by Dr Srikumar Banerjee, Director, BARC on "Electronics and Computers: DAE Initiatives". He described the Nuclear Energy as an important and inevitable option to satisfy future energy needs of the country. He praised Dr Homi Bhabha's great vision and sowing the seeds of frontier science in the country for giving it the much needed self reliance. He explained how Electronics & Computers have continuously played key roles in all the areas of work-

science, metallurgy and engineering. The advances in ICTs hold great promise for the future and have been in the forefront of modernization in the Dept of Atomic Energy (DAE). The E&I technologies of DAE had proliferated into many national programs, necessitating an institute, "Electronics Corporation of India Ltd. (ECIL)" for manufacturing & servicing. He enlightened the audience about the pioneer work of DAE in the areas of reactor control & automation, image & video processing, antennae, microelectronics and VLSI, digital signal processing, digital communications, supercomputers etc apart from its involvement in projects of national importance. He also informed about department's excellent laboratory facilities and of high speed fibre optics campus LAN with supercomputing control.

During the Awards Ceremony, IETE awardees were felicitated by the Chief Guest. For the year 2008-09, the 1st Best Centre Award was bagged by **IETE Bangalore Centre** and the 2nd Best Centre Award by **IETE Pune Centre**. The 1st position in Best Sub-Centre Award category was secured by **IETE Palakkad Sub-Centre** and the 2nd Best Sub-Centre



1st Best Centre Award-IETE Bangalore Centre



2nd Best Centre Award-IETE Pune Centre

Award by **IETE Dharwad Sub-Centre**. Mementoes were presented to the dignitaries followed by the vote of thanks by **Brig V K Panday (Retd)**, Secretary General of IETE.

The Chief Guest inaugurated the exhibition where



1st Best Sub-Centre Award-IETE Palakkad Sub-Centre



2nd Best Sub-Centre Award-IETE Dharwad Sub-Centre

companies exhibited their impressive range of latest ICT systems and hardware. The exhibition received an overwhelming response.

The 31st Ram Lal Wadhwa Memorial Lecture was delivered by Shri Narendra Kumar Malik, Outstanding Scientist & Dy Director, ISRO, Bangalore, on "Spacecraft Control Systems Design & Mission Management Challenges & Innovations". He presented an overview of spacecraft including the configuration drivers for attitude control systems & its basic techniques. Shri Malik also presented challenging examples of control & mission management. First- the step & stare control technique for highly agile remote sensing & earth observation spacecraft, Second- the mirror & image motion compensation technique for Geostationary Meteorological Spacecraft. Both these

applications demanded very stringent pointing & stability requirements taxing the control system designer's ingenuity. The complexity of managing spacecraft mission operations was also highlighted.

The technical convention was held in five technical sessions covering ICT in Crisis Management; Cyber Terrorism; Broadcasting in Emergency; NGN for Public Security and Surveillance, Network Security & Sensors. The invited speakers included Brig X P Adrivanwala, Rear Admiral A R Karve, Col Malay, Col Alok Sardhana (Tech Session I); Brig Lakshman Singh, VSM (Retd), Shri R K Mittal, Shri S S Sarma, Brig A P Sharangapani, Shri S C Khasgiwal, Shri S N Gupta, Shri Suresh Naik (Tech Session II – III); Shri Pradeep Jain, Shri Deepak Mukherjee, Shri S N Gupta, Col Kunta Vinay and Dr D B Alaspure (Tech Session IV) ; Shri Zahid, Dr V Gunasekhar Reddy, Capt Ravi Nagalia, Shri Ganesh Manza & Ms Rachna P Narkhede (Tech Session V). Sessions were chaired by Lt Gen AKS Chandele, AVSM, DGEME, & Sr Col Comdt Dte, New Delhi; Shri S R Agarwal, Engineer-in-Chief, AIR, New Delhi & Dr U V Bhosale (combined Session); Shri J Gopal, Exec Dir, MTNL, Mumbai; Lt Gen AKS Chandele and Brig Sarvate S W (jointly for Session V).

In the panel discussion presided over by **Lt Gen A K Agarwal, PVSM (Retd),** President IETE, the Chief Guest was **Shri Sekhar Dutt,** Deputy National Security Advisor, NSCS, New Delhi and the Guest of Honour **Shri Brijesh Singh,** DSP Zone-8, Mumbai. IETE was praised for its selection of the theme and for organizing the convention professionally. Participation was good in the interactive session. Mementoes were presented to all EC members of Mumbai Centre. The vote of thanks was delivered by **Dr J W Bakal,** Hony Secy of Mumbai Centre. The pre-convention activities on Sept 25, 2009 included Council Meetings, Students' Session, Students' Award Ceremony, 55th Annual General Meeting and 1st Special General Meeting. It was well attended by the Members and students fraternity from all over.

IETE APEX FORUM ON CELLULAR SERVICES: CHALLENGES AHEAD

Mobile Communications are of utmost priority and importance not only for commercial activities but also for day to day living. Demand for mobile services continues to grow rapidly worldwide and presents unique challenges in the area of development and deployment of broadband

wireless systems. IETE recently deliberated the related issues with many experts during the 3rd Apex Forum for the year 2008-2009 on "Cellular Services: Challenges Ahead" held on Aug 27, 2009 at the India International Centre, New Delhi. The forum received an overwhelming response from the experts and achieved the aim of attracting the attention of the telecom fraternity on challenges & plethora of common problems faced by cell phone users. The experts and dignitaries present at the round table conference were: Shri J S Sarma, Chairman, TRAI, as Chief Guest; Lt Gen D P Sehgal, PVSM, AVSM, VSM (Retd), DF and Past President of IETE; Lt Gen Ashok Agarwal, PVSM (Retd), President IETE; Maj Gen K B Jhaldival, AVSM (Retd), Chairman, Industrial Coordination Committee (ICC); Shri R K Gupta, Co-Chairman, ICC; Shri PN Chopra, ex DIG, BSF; Brig V K Panday (Retd), Secretary General, IETE; the keynote speaker, Shri Bharat B Bhatia, Director, Motorola India Pvt Ltd and the panelists: Shri R N Padukone, Shri Sanjeev Banzal and Wg Cdr Arif Khan.

Giving the synopsis of the theme, Maj Gen K B Jhaldiyal, AVSM (Retd), pointed out different facets of cellular services including network strategies to be followed to meet the emerging challenges. The necessary measures to be taken were in the areas of value added quality services, availability of connectivity, upgradation of technology fixed mobile services, number portability and reduction in tariff rates. He hoped for some pragmatic and important recommendations from the forum for consideration of all concerned.

Shri PN Chopra introduced the theme and justification for its selection. Recounting Sir J C Bose's experiment on Radio Waves, he said that Sir Bose couldn't have fathomed the importance of his discovery at that time what connectivity has actually brought and achieved today. He opined that technology, raw material & capital were the three keys to national prosperity but telecommunication has taken the lead to become new engine for economic growth. On the darker side of this revolution, he discussed about social effects like radiation, use-misuse of SMS/ MMS; Skyline cluttered with towers; problems on connectivity; telemarketing calls at odd hours, spectrum requirement for OoS etc.

Lt Gen Ashok Agarwal, PVSM (Retd), opined that enough was not being done to find solutions for problems like cell configuration, spectrum sharing amongst service providers, delay in 3G spectrum auctioning, slow penetration of mobile internet, number portability, new technologies for FMC, etc. He lamented about insufficient infrastructure despite increased number of players in the field & their incapability to provide quality services with growing demand. Appreciating country's networking quality, he said US still had more mobile internet users with more 3G usage and provides effortless and affordable downloading of applications to cellular users. According to him, challenging issues were in the areas of delivering services with easy experience to users, looking into mobile's penetration role, adequate remuneration for the Service Providers, development of applications, conservation of spectrum, etc. He assured that IETE being professionally neutral body and totally committed, was ever willing to join hands in the national efforts to further the common objective of providing better services to the users.

The keynote address was by Shri Bharat Bhatia, who endorsed the telecom sector as the largest contributor of country's GDP and called it to be the major growth driver in the next five years. He talked of some mega targets set for future broadband services like doubling of the teledensity, 10 to 15 times growth of the broadband so as to raise the present position from 8th to 1st towards GDP contribution. Shri Bhatia expressed his concern for the spectrum challenges in the areas of availability, management, pricing etc. He drew the attention of the participants to the need of converging and aligning technologists', operators', regulators' and consumers' needs. He appealed to concentrate on the demands for electricity, dependence on batteries, recycling of the e-junks, improving skylines, reducing carbon footprints, etc. Shri Bhatia concluded by highlighting the need of expediting the decision making processes in the country.

According to the Chief Guest, **Dr J S Sarma**, Chairman TRAI, the real challenge was in to see how GDP grew in a big way and was made part of inclusive growth. He asked for peoples' participation and contribution to the growth process. Some of the points highlighted by him were: communication touching the various segments of the society; growth of data-centric services; right balance between civil & defense needs; wiring of all villages; minimizing the spectrum needs; speed; teledensity; application developments; quality of services; policy challenges to match the future requirements and above all "to ensure deficiency free services".

"3G & FMC – Next in limelight" was the topic covered by Shri R N Padukone, Pr GM (Corporate Planning &

Monitoring), BSNL. He concentrated on prospects and advantages of 3G technologies like universal global roaming, multimedia (voice, data & video), increased data rates, capacity, IP architecture etc. For Fixed Mobile Convergence, he shared its image as "any device, any access, and any service"; it's utility for voice and messaging and its integrated infrastructure's capability to bring down both Capex and Opex while retaining the flexibility to provide any service.

Shri Sanjeev Banzal, Joint Advisor (MN), TRAI presented his views on "Mobile Number Portability & Quality of Service". He said that it would facilitate competition in the telecom sector; promote efficiency in the operations of telecommunication services in India; give choices to subscribers for telecom service providers & tariffs without changing the mobile number; would act as catalyst for service providers to improve their quality of service; introduce new and innovative products & services; improve the mobile network coverage and above all ensure the rule of 'Survival of the fittest' in mobile telephones market.

Wg Cdr Arif Khan (Retd), Director – Regulatory Affairs Ericsson India Pvt Ltd, devoted his talk to "Technology Trends: Growth of the Network". He talked about untapped mobile broadband opportunities in many markets; its benefits to individuals, businesses, institutions, the society and the economy; EDGE Evolution and HSPA to be the most cost effective and commercially sustainable means to provide mobile broadband to all. He pointed out the need for regulators to take action.

Lt Gen D P Sehgal, summed up the views presented by the panelists. He said issues were challenging but telecommunication being the necessary tool for desired economic growth of people living in every part of our country should be keenly looked into. Challenges in the cellular services touched various aspects like connectivity, telemarketing effecting QoS, Spectrum sharing, but most important ones were its radiation effect and increased skyline / towering concepts. The impact of cellular services and its access applications were also highlighted.

SEMINAR ON NEXT GENERATION NETWORKS FOR MULTIMEDIA

IETE and Ajay Kumar Garg Engineering College, Ghaziabad, jointly organized on **Aug 28, 2009,** a seminar on "Next Generation Networks for Multimedia" at the college campus. The aim was to provide a forum for research

scholars, technocrats & academicians to present their contribution related to various aspects of the chosen theme. The Chief Guest, Lt Gen Ashok Agarwal, PVSM (Retd), President IETE, presented his valuable views in his inaugural address. Dr R K Agarwal, Director AKGEC, delivered the welcome address. The technical lectures were spread over two sessions. The first technical session was presided over by Shri P N Chopra, Vice-President, IETE with panelists- Dr Rakesh Mehrotra, Senior Consultant, Telecom and Dr S M Sharma, Deputy Wireless Advisor, Min of Communications. Shri K M Paul, Former Director General, AIR, presided over the second technical session with the panelists Shri S N Gupta, Advisor, BT International and Shri D Venugopal, CTO, Devas Multimedia Pvt Ltd.

News From Centres

Bangalore

The following activities were conducted at the Centre:-

- Modern Radars Course was held for BEL employees with 37 candidates on July 30, 2009.
- One day workshop on "WiFi and WiMAX Advanced Wireless Communication" was arranged for about 50 candidates on Sept 5, 2009.
- Commencement of short term courses on "DSP Design using Matlab" and "VLSI Design" on Sept 13, 2009.
- Engineers Day Lecture was delivered on "Radar Scanning-Past, Present and Future" by Dr A K Singh, Project Director LRDE and IETE-IRSI-83 Awardee for the year 2009 on Sept 15, 2009.

Bhopal

The Centre during its Annual General Meeting on Sept 13, 2009 presented **Life Organizational Membership shields** to **Lakshmi Narain College of Technology, Bhopal** and **LNCT, Indore**. The shields were received by Dr B K Prasad, Principal of the College.



Chairman, Shri P P Khare presenting IETE Life Membership Shield to Dr B K Prasad, Principal, LNCT, Indore.

Coimbatore

The Centre conducted and organized a number of seminars, workshops, Faculty Development Programmes (FDP) and opened new Student Forums under its aegis for the benefit of members of the Centre. Seminars were held on "Novel Techniques to Solve Partial Differential Equations" by Dr EP Sumesh, NIT, Calicut; "Cloud Computing" by Dr Jai Menon, Fellow IBM and Vice-President Technical Strategy, IBM; "Wireless Sensor Network Applications" by Dr Sergio Barabossa, Prof of Electronics at University of Rome La Sapienza, Italy and "Lifestyle Improvement" by Swami Samarpan, a yoga instructor. Workshops on "Research Applications in Wireless and VLSI Design" and "Nanotechnology". Faculty Development Programmes on "Signals & Systems" (29th June - 03 July 09); "Laboratory Courses in Electrical & Electronics Engineering" (15th-19th) June 09) and "FPGA based RTL and System Design" (6th-7th July 09).

IETE Students' Forums opened under Coimbatore Centre were: PSG College of Technology, Coimbatore - Aug 25, 2009; Jayaram College of Engineering and Technology, Trichy-Aug 19, 2009; Oxford College of Engineering, Trichy-Sept 15, 2009; Sri Ramakrishna Institute of Technology, Coimbatore- Aug 25, 2009; SSK College of Engineering & Technology, Coimbatore- Sept 30, 2009; Sri Angalaamman College of Engineering, Trichy-Sept 15, 2009; MAM College of Engineering, Trichy-Aug 19, 2009 and Saranathan College of Technology, Trichy- Aug 06, 2009.

Hyderabad

- The Centre organized two-day short term course on "VLSI Design" on 8th-9th August, 2009, inaugurated by Dr S R Rama Swamy, Retd. Scientist, DLRL, Principal, T K R College of Pharmacy, Hyderabad. Dr K Lal Kishore, Rector, JNTU, Hyderabad, was the Chief Guest for the Valedictory function held on the second day. A total of 135 students participated in the course.
- The Flag Hoisting Ceremony in connection with **Independence Day** was organized on 15th August, 2009 attended by Executive Committee Members, staff and students of the Centre.
- A technical talk was organized on "A Sub 2W Low Power IA Processor for Mobile Internet Devices in 45nm Hi-K Metal Gate CMOS" on 14th July, 2009. Dr Sankaran Menon, Intel Corporation, Austin, Texas was the Chief Guest and addressed the audience. Dr V Gunasekhar Reddy, Chairman, IETE, Hyderabad Centre presided over the programme.



Short term course held at IETE Hyderabad Centre.

• A two-day short term course on "Image Processing & Current Trends" inaugurated by Shri Ch Malla Reddy, Chairman, Malla Reddy Group of Institutions, Hyderabad, was organized by the Centre on 12th-13th Sept 2009. Prof B L Deekshatulu, Former Director NRSC & Visiting Professor, Univ of Hyderabad, was the Chief Guest for valedictory function who also distributed certificates to the participants.

Lucknow

A technical talk was organized on 25th July, 2009 at the Centre. Shri Prabhakar Dubey, Member IETE & Asstt Prof, R R Institute of Modern Technology, Lucknow, delivered a talk on "Modern TV Technology", discussing the comparative features of LED TV & LCD TV. Shri Tarun Gulrazani and Shri Mayank Kumar Gautam, Students of RR Institute of Management and Technology, Lucknow, delivered a talk on "Plasma and LCD TVs". While Shri Manish Dixit, Sun Microsystems, Chicago, USA, on "Network is the Computer". He justified his company's theory that future of computing industry lied with



A technical talk in progress at IETE Lucknow Centre.

Networking. He informed about cloud computing concept and said that through the use of thin clients and massive computing, powers of Grid and Cloud servers could be unleashed. Companies or individuals could subscribe to the cloud computing model and save on infrastructure, maintenance and engineering costs at the same time taking advantage of scalability, availability, reliability, security, serviceability, efficiency, flexibility and agility. The program was concluded with the vote of thanks by Shri Alok Sinha, Hony Secretary, IETE Lucknow Centre.

Pune

A technical lecture on "Calibration of Instruments" by Shri K S Yenpure, MD, Yenkay Instruments and Controls, was conducted in Aug 2009. He described the hierarchical levels of calibration of Instruments and the calibration Index with what, why, who, when, where, & how to calibrate. Shri Yenpure dwelt on traceability, accuracy, error calculation, concept of digital display and its interpretation. He then described resolution and calculation of permissible limits as per accuracy, different classes of instruments like Process Control Instruments, Pressure/Temperature Gauges, Mechanical Instruments and calibration procedure for each type. Several slides and photographs were presented to illustrate the various points through out the lecture.

Nagpur

- Shri Nitin Kulkarni, Manager Networks, TATA Teleservices Maharashtra, Ltd, Nagpur, delivered a lecture on "Photon + Mobile Broadband Service" on Aug 07, 2009 divulging on its capacity to render Surfing Services 20 times faster on the Best Wireless Network that could cover all the villages and help take education, technology, latest trends & development to the grass root levels.
- A technical lecture on "Data Mining" by Prof Vilas Mahatme, Head, Dept of Computer Technology, KITS, Ramtek, Nagpur, was delivered on Sept 12, 2009 through the understandable pattern used with KDD process, Data Mining Operations and Data Mining Applications.
- IETE Nagpur Centre and VMV Commerce, JMT Arts & JJP Science College, Nagpur, organized "Hands on Workshop" on Sept 27, 2009 giving hands on training to Electronics and Science students of IETE on construction of three basic units of any electronic equipment.



Hands on workshop in progress at IETE Nagpur Centre

Noida

- An Electronics and Telecommunication Lab was inaugurated on June 28, 2009, for conduct of LAB Practice at the Centre for IETE students.
- A technical lecture by Brig Lakshman Singh, VSM (Retd), Council Member on "Digital Security" was delivered on Aug 23, 2009. He precisely explained the concept and ways of simplifying the complex security problems by simple measures. He demonstrated how difficult it was for him to secure his own digital data during one such malicious virus attack resulting in corrupting the entire system. He called digital security an important prerequisite for computing so as to become an utility. What heightened the risk of breach of security according to him was easy connectivity & convenience. He talked of various tools that exploited the vulnerability of computers through internet. Cautioning about internal & external attacks, he said that human failing could undermine even the cleverest security measures. He opined that even right blend of technology, policy and



Brig Lakshman Singh, VSM (Retd), delivering the technical lecture

procedures sometime are not enough until new threats with emerging technologies are vigilantly observed but maintained that vulnerability would always remain.

Vadodara

- An open seminar on "Hardware Software Co-Design for Network Processor Architecture through Integration of Scheduling Algorithm for Switching Fabric Using VLSI" was organized by EE Dept, IETE Vadodara Centre and MSU, ISF on Aug 31, 2009. Other present were: Prof (Mrs) S A Kanitkar, Prof A I Trivedi, Prof Sunil Pate, Prof (Mrs) M Joycee, Prof S K Joshi, Prof (Mrs) Deshpande. Shri Mihir V Shah, Asst Professor, EC Dept, LDCE, Ahmedabad, was the invited speaker, who presented a comprehensive study of packet processing functions of network processors. Dr Y P Kosta, Principal, CITC, Changa, was the Guest of Honour.
- Maj Gen Harkirat Singh, Commandant, EME School and Chairman, IETE –Vadodara Centre after retiring from Army on superannuation, was given a farewell party. He resigned from the post of chairmanship of the Centre. Prof M M Pathan has assumed the charge as Chairman of the Centre.
- A two-day national level conference on NCEVT-2009 was jointly organized by the Centre and EC Dept, PIET, Limda, Vadodara on 11th-12th 2009. **Prof M N Patel**, Vice Chancellor, Gujarat Technical University, was the Chief Guest and Guests of Honour were: Dr Devanshu Patel, Management Trustee, PASM, Limda, Vadodara and Prof Satish K Shah. The conference was divided into four technical sessions. Prof Satish K Shah delivered the keynote address on the theme "Next Gen Mobile Multimedia Communications", while Dr Mehul **Rawal**, the guest speaker talked on "Image Processing". Thirty-four papers were selected for presentation on varied topics such as: Digital Image Processing; Wireless Communications; Nano Technology; Embedded Controllers and Nano Computers. Certificates were distributed to the participants.

ISF Activities

- ISF at Govt College of Engineering, Jalgaon, was inaugurated on April 15, 2009 followed by a technical talk.
- The ISF at AISSMS IOIT, Pune, was inaugurated on July 25, 2009 by Shri R V Datar, Chairman IETE Pune Centre. The Guests of Honour on the occasion were: Shri

Mahadevan, Hony Secy, Pune Centre, Prof S V Kharkar, DFIETE, Capt Shivaji Mahadkar, Hony Secretary, AISSMS, Pune and Shri Dilip Umbarkar, Chairman Gov Committee, AISSMS, Pune. The other dignitaries present were: Dr P B Mane, Principal, AISSMS IOIT; Prof D K Shedge, HOD Electronics Dept and Prof S P Bhosale, Staff Coordinator. Prof Kharkar, the senior most guest, inspired the students by sharing with them his experience of IETE and its activities.

- A two-day orientation programme on "MATLAB Fundamentals and its Applications" was conducted on 25th -26th July 2009 at Aditya Institute of Technology and Management".
- A lecture on "Television and Video Engineering" was conducted on July 29, 2009 at ISF KLN College of Information Technology, Sivagangai, Tamil Nadu, by Shri O N Kannan, AV Programmer, Sourashtra Arts & Science College. The lecture was held in two sessions with the aim to equip the students to work with television picture tubes and its circuits.
- ISF at CITC, Changa and IETE-Vadodara Centre organized an On Line Aptitude Test on July 30, 2009 at V T Patel Dept of E & C Engineering, with a tremendous response from participants. It was aimed to encourage, train, inspire and guide the technically sound minds for their overall personality and communication skill related developments.
- ISF was inaugurated at Dept of ECE, Kalasalingam University, Krishnakoil on Aug 05, 2009 by Dr V Abhai Kumar, Principal, Thiagarajar College of Engineering, Madurai.
- The ISF & ECE Association of Dept of ECE of M P Nachimuthu M Jaganathan Engineering College, Chennimalai, Erode, was inaugurated on Aug 08, 2009 by Thiru R Subramaniam, Vice President, Hexaware Technologies Ltd, Chennai.
- A three day national seminar on "Computer Vision & its Applications" was organized on 10-12 Aug 2009 at IES College of Technology, Bhopal. It was spread over three days each comprising different activities. First day had three technical sessions, "Digital Image Processing" by Dr K V Arya; "Theory of Computation" by Dr Manohar Chandwani and "Artificial Neural Network" by Dr R N Yadav. The next day was devoted to Paper/ Poster Presentation Competition, and the concluding day had technical sessions on "Image Processing" by Dr Jyoti Singhai and "Knowledge Discovery from Images" by Shri Deepak Tomar, both from MANIT, Bhopal.
- ISF at Kongu Engineering College, Erode, Tamil Nadu, conducted on Aug 18, 2009 a special lecture by

- Shri M Perinbam, Centre Manager, IBM, Advanced Career Education Unit Business Partner-Tecknoturf Info Services (P) Ltd, Bangaluru, on "Recent Trends in Telecommunication". Another Guest lecture on "Introduction to Avionics & Use of EFB in Aviation Industry" by Shri B Ramesh Kumar, Technical Head-Software Development, Goodrich India Design Centre-Begaluru, on Sept 19, 2009.
- ISF at the Dept of ECE, Jayaram College of Engineering & Technology, Karattampatti, Pagalavadi, Tiruchirapalli, was inaugurated on Aug 19, 2009. Dr P Ravikumar, College Principal, presided over the function. The Chief Guests on the occasion were Prof K Gangadharan, Immt Past Chairman & Founder Hony Secy of IETE Coimbatore Centre and Shri C Arunkumar, ISF-Coordinator, Coimbatore.
- ISF at Sasi Institute of Technology & Engineering, Tadepalligudem, AP, was inaugurated on Aug 20, 2009 by Dr Raja Rajeshwari, Professor in ECE Dept of Andhra University & Chairperson of IETE Visakhapatnam.
- ISF Chapter was opened on Aug 22, 2009 at Lords Institute of Engineering & Technology, Himayathsagar, Hyderabad, by Prof K Babu Rao, Vice President and Zonal Coordinator IETE (South) in the presence of other dignitaries from IETE, staff, students and management of LIET.
- ISF of Sri Ramdeobaba Kamla Nehru Engg College, Nagpur, hosted a seminar on Aug 22 2009, on desirability of joining IETE with Shri M G Joshi, Chairman and S L Dravekar, Hon Secy, Nagpur Centre, as Chief Guests. A paper presentation competition for all engg students was organized and judged on the basis of their content, innovative ideas, presentation skills, vocabulary and their response to questions. The winners for the first three prizes were Gaurav Trevedi & Mahant Tiwari; Uzma Quadri & Faiza Quadri and Arpit Rawat respectively. Cash Prizes and certificates were also distributed during the valedictory function.
- One day national seminar on "Mobile Devices & Systems" was organized on Aug 25, 2009 by Dept of EE Engineering of Guru Nanak Dev Engineering College, Bidar, Karnataka. Dr Raj Kamal, Ex Vice Chancellor of Devi Ahilya University, Indore, was the resource person.
- Padmabhushan Vasantdada Patil Pratishthan's
 College of Engineering, Sion, Mumbai, established
 Electronics and Telecommunication Student's Council
 (ETEC) and IETE Student Forum as its part on Sept 01,
 2009. ISF organized on the same day a technical paper
 presentation on topics related to latest technology &

Obituaries

It is with deep sorrow that IETE notifies all readers, of the passing away of the following illustrious and highly respected senior members of IETE community. IETE mourns and offers deepest sympathies & heartful condolences to the bereaved families. May God give them courage to bear the irreparable loss.

Dr J H Agarwal (**F058935L**), IETE Founder Member, passed away on 11 Oct, 2009 at Bhopal. Former Univ Prof & Dir (Instrumentation) JNAU, Jabalpur, Dr Agarwal was associated with several ministries/ Dept of GOI as expert member on technical committees & was active in professional societies like CSI, IETE, IE(I) and ISC. He was a pioneer in the field of applications of Electronics, Microprocessors, Computers and IT in Agriculture and Biosciences. Associated with IETE since 1960's, his contributions to IETE were many-streamlining of working of the IETE Centres/ Sub-Centres, promoting them; reframing and updating of the Rules and Regulations of IETE; streamlining the role & functions of elected members of IETE; revision of syllabi of IETE Examinations; conduct of various Committees, to name a few. He will be dearly missed by the IETE fraternity.

Col J C Anand (F02741), Founder Member of IETE who served in the Council for two decades in various capacities as Honorary Treasurer, Member of the Council and had chaired a number of meetings. He was instrumental in changing the name of the Institution from ITE to IETE. Helped in preparing the syllabus of Grad IETE examination as well as in getting its recognition.

Dr M C Chandra Mouly (F042156L), Council Member (2005-2008) and Chairman, Vijayawada Centre (1999-2000) passed away on 26 Sept, 2009. He earned his specialization in Antennae, Biomedical and Navigation and had the experience of more than 35 years as faculty member at various engineering colleges. Senior member of many professional societies, he published more than hundred papers on topics of his interest and organized many seminars/workshops under ISTE, IE(I) and IETE & its student activities. His contributions to IETE were many and varied.

Shri P S Saran (F17684L), Padmashree and Former Member, Telecom Services and was also the Founding Chairman of ITU APT Foundation, passed away on 22 Oct, 2009. He had been a very active member of IETE Council and contributed a lot for its growth. He has served in the Council as Vice President, Member of the IETE Council and chaired a number of IETE meetings for recommendations of National Telecom Policy.

Shri O N Shukla (F150940L), Chairman IETE Mankapur Centre, passed away on 23 Sept, 2009. IETE on behalf of fraternity is deeply saddened to learn about his untimely, unfortunate and tragic death. Shri O N Shukla was very valuable and respected member of the Centre and instrumental in its upgradation to its full fledged status helping it grow in great strides. His efforts and contributions will ever be remembered.

Dr D L Subramanyam (F011670L), Senior Fellow of IETE, passed away on 25 Oct 2009. He was the First Chairman of IETE Ahmedabad Centre and was very closely associated with IETE and professional activities of Shimoga Subcentre. He was the member of IETE Shimoga Subcentre and JNNCE ISF, Shimoga, since its inception.

Lt Gen I D Verma, PVSM (Retd) (DF02481L), Distinguished Fellow IETE, expired on 30 Oct, 2009. One of the Founder Members of IETE, President IETE (1969-71), he served IETE Council for 2 decades in various capacities and was responsible for construction of IETE HQ building. He was commissioned on 22 Dec 1940 and retired as the 4th Signal Officer-in-Chief & 8th Col Comdt. Even after retirement he continued shaping the future of the Corps and fostering the spirit of camaraderie amongst them.

Shri R N Wadhwa (F044016L), who passed away on 01 Oct, 2009 was a senior Fellow Member of IETE.

trends. The first three winners of the competition were: Rohit Mathur& Sneha Rawool, BE EXTC (INS Arihant); Sindhuraa Natarajan & Nikita Raje, TE EXTC (Re-entry Satellite) and Shiva Shrivastava and Sneha Wadke, SE EXTC (INS Arihant).

- Dr Pawan Kapur, Director, CSIO and Chairman IETE Chandigarh Centre, inaugurated an ISF at Rayat Institute of Engineering and Information Technology, Railmajra, Distt SBS Nagar, Punjab, on Sept 06, 2009. He explained the role of professional bodies like IETE in spreading awareness about global
- technical advancements. S Gurinder Singh Bahra, Vice Chairman Rayat-Bahra Group of Institutes, expressed the need of having more of such public private partnerships for overall development of the society.
- ISF and Professional Activity Centre at Sri Jagadguru Chandrashekaranatha Swamiji Institute of Technology, Chickballapur, was inaugurated in the Dept of ECE & TC on Sept 09, 2009 by Shri Lakshmi Narayan Rao, Chairman IETE Bangalore Centre, Shri R A Bhagavan, Hony Secretary & Wg Cdr Sri Parthasarthy, Treasurer. A technical talk on "Optical Networks" was

- delivered by T Srinivas Talabattula, Associate Professor, IISc, Bangalore.
- Several local, environmental and humanitarian groups gathered with the students & faculty members of ISF at Asia Pacific Institute of Information Technology, Panipat, to commemorate Engineers' Day on Sept 15, 2009. Dr R K Choudhary, the Director, emphasized on coming together to overcome hardships in the time of recession. Several competitions were held to mark the occasion.
- ISF was inaugurated on Sept 15, 2009 at Guru Nanak Institute of Technology, Ibrahimpatnam, Hyderabad. The Chief Guests on the occasion were Prof K Babu Rao, Vice President, Zonal Coordinator (South) and Dr V Guna Sekhar Reddy, Chairman IETE Hyderabad Centre. The Guests of Honour included- Er N Namassivaya, Hony Secy, Er K Subbi Reddy, Hony Treasurer, Prof C R Sarma, Vice-Chairman and Er A Sarreswara Rao, Member, IETE Hyderabad Centre.
- Engineers' day was celebrated at ISF of Sir C R Reddy College of Engineering, Eluru, on Sept 15, 2009.
- TKR Engineering College, Hyderabad and Vidya Jyothi Institute of Technology, Hyderabad, also established new Student Forums' at their colleges on Sept 15th & 19th 2009 respectively.
- ISF Annual day at MLR Institute of Technology, Hyderabad, was organized on Sept 19, 2009.

Professional Activity Centre (PAC)

• ISF-PAC at CITC, Changa and IETE Vadodara Centre together celebrated Teacher's Day in a very innovative way on Sept 05, 2009. The seniors student conducted lectures for the junior students and a gettogether for IETE-EC Dept to share real life incidents and role of the teachers during their studies.

55^{TH} (2008-09) ANNUAL GENERAL MEETING (AGM) - MINUTES

MINUTES OF THE 55TH (2008-09) ANNUAL GENERAL MEETING OF THE INSTITUTION HELD AT 1700 HOURS ON FRIDAY, THE 25 SEP 2009 AT MUMBAI

Lt Gen A K Agarwal, PVSM (Retd), President, IETE was in the Chair. The Secretary General confirmed the quorum, as required under Byelaw 79, complete. The President then called the meeting to order.

ITEM 1 TO CONFIRM THE MINUTES OF THE 54TH (2007-08) ANNUAL GENERAL MEETING HELD ON 28 SEP 2008 AT NEW DELHI

1.1 The President stated that the minutes were circulated through the Sep-Oct 2008 issue of IETE News Letter (Vol.

- 10, No. 5, Page No. 11). No comments have been received.
- 1.2 Shri M L Gupta proposed that the minutes of the 54th (2007-08) AGM held on 28 Sep 2008 at New Delhi, be approved and Shri H O Agrawal seconded the proposal. The minutes were confirmed.

ITEM 2 TO CONSIDER AND ADOPT THE 55TH (2008-09) ANNUAL REPORT OF COUNCIL FOR THE YEAR ENDED 31 MAR 2009

- 2.1 The President informed the members that the 55th Annual Report of the Institution for the year 2008-09 were circulated to the Members and may be treated as read. However, for the benefit of Members, the President highlighted some of the important points.
- 2.2 Dr S S Agrawal proposed that the 55th Annual Report of the Council 2008-09 be adopted. Prof Samir K Bandyopadhyay seconded the proposal. The 55th Annual Report of the Council for the year 2008-09 was accordingly adopted by the House.

ITEM 3 TO CONSIDER AND ADOPT THE AUDITED BALANCE SHEET AND INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MAR 2009

- 3.1 The Hony Treasurer brought out that during the year 49 Centres have sent the Audited Statement of Accounts. He further highlighted the salient points of Balance Sheet and the Income and Expenditure account for the year 2008-09.
- 3.2 Maj Gen K B Jhaldiyal, AVSM(Retd) proposed that the Audited Statement of Accounts consisting of the Auditors report, Balance Sheet and Income and Expenditure Account for the year ending 31 Mar 2009 be accepted. This was seconded by Shri H O Agrawal. The House adopted the Auditors Report, Balance Sheet and Income and Expenditure Account for the year ended 31 Mar 2009.

ITEM 4 TO APPOINT AUDITORS FOR THE YEAR 2009-10

- 4.1 The President stated that the Council has recommended M/s Brijesh Mathur & Associates, Chartered Accountant, New Delhi, be appointed as Statutory Auditors for the year 2009-10 at an annual remuneration of Rs 24,000/- plus taxes.
- 4.2 Shri M L Gupta proposed that M/s Brijesh Mathur & Associates, Chartered Accountants, New Delhi, be appointed as Statutory Auditors for the year 2009-10 at an annual remuneration of Rs 24,000/- plus taxes and the proposal was seconded by Dr Basavaraj. Accordingly M/s Brijesh Mathur & Associates, Chartered Accountants, New Delhi, be appointed as Statutory Auditors for the year 2009-10 at an annual remuneration of Rs.24,000/- plus taxes.

ITEM 5 OTHER POINTS FROM THE MEMBERS UNDER BYELAW 69

- 5.1 No points were received from the Members for discussion in the AGM as per Byelaw 69. However, following points were raised by the Members present in the AGM with the permission of the Chair:-
- **5.1.1** Increase in Expenditure:- It was felt by some Members that there is a requirement of controlling various expenditures on the basis of necessity and essentiality and

by following procedures strictly. The President while appreciating the need for observing economy in all expenditure stated that all efforts are made to keep the expenditure to the minimum. Further, it is ensured that proper procedures are followed in all procurement and that no expenditure is incurred unless it is budgeted and duly approved by the Council.

- 5.1.2 Placement Activities: It was felt that the steps taken for placement of students be publicized vigorously to attract more number of students. Task Force for Training and Placement should put in more efforts. It was felt that a proactive approach by Centre in this respect was needed.
- 5.1.3 Staff Requirements at Centres:-It was suggested that the Council should take suitable steps for providing adequate staff at Centres for their functioning. The President informed that the Council has already appointed a Committee to study the matter in detail and recommend suitable suggestions in this regard.

Vote of Thanks

6.1 There being no other item, the meeting ended with a vote of thanks to the Chair.

(Sd/-)

(VK Pandey)

Brig (Retd)

Secretary General

Ref: IETE/55TH (2008-09) AGM/09

Dated: 24 Oct 2009

DISTRIBUTION

The President and Members of the Council

All Corporate Members of IETE

MINUTES OF THE 1ST (2008-09) SPECIAL GENERAL MEETING OF THE CORPORATE MEMBERS HELD AT 1800 HOURS ON FRIDAY THE 25 SEP 2009 AT MUMBAI

Lt Gen Ashok Agarwal, PVSM(Retd), President, IETE was in the Chair. Secretary General confirmed the quorum, as required under Byelaw 79, complete and thereafter, the meeting was called to order.

ITEM 1 CONFIRMATION OF THE 1ST (2007-08) SPECIAL GENERAL MEETING OF CORPORATE MEMBERS HELD ON 28TH SEPTEMBER 2008 AT NEW DELHI

- 1.1 The President informed that the minutes of the 1st (2007-08) meeting were circulated through the Sep- Oct 2008 issue of the IETE News Letter (Vol. 10, No.5, Page No. 13). No comments have been received.
- 1.2 Dr S K Aggarwal proposed that the minutes of the 1st (2007-08) Special General Meeting of the Corporate Members be confirmed. It was seconded by Dr M L Goyal. The minutes were confirmed.

ITEM 2 CONSIDERATION OF AMENDMENTS TO BYELAWS

2.1 The President invited the views of the Members on the proposed amendment to the Byelaw as circulated vide IETE/M/323/2008-09 contained in the Annual Report 2008-09 as given below:

EXISTING

(a) LOCAL CENTRE (S)

Local Centre(s) in all places appearing in the Byelaws

(b) MEMBERSHIP

Byelaw 2

(c) ABBREVIATION

Byelaw 7(a)

(d) Byelaw 16 NEW

PROPOSED

(a) CENTRE (S)

Replace the words "Local Centre(s)" by "Centres" in all places appearing in Byelaws

(b) MEMBERSHIP

Byelaw 2 Add-"**Student (Post Graduate)**", after Diploma Members in line 3.

(c) ABBREVIATION

Byelaw 7(a)Insert after Diploma Member "Student (Post Graduate Scheme)": "Student (PG)"

(d) Insert new Para 16 as under:-

Bvelaw 16

Every student for election to the class of Student (PG) shall satisfy the Council that he is not less that 20 years of age and has passed an Engineering Degree or MCA / MSc - Computer Science, Electronics, Physics, Mathematics, Statistics, Operation Research or any other equivalent qualification recognized by the Council of the IETE and is sponsored by a Corporate Member. Every Student (PG) successfully completing the Post Graduate Examination as per regulations prescribed by the Council from time to time, shall be awarded a certificate of having passed the Post Graduate

(e) NOMINATED MEMBERS

Byelaw 36

26-28 Three Distinguished (eminent) Professionals/ Personalities as may be nominated by the President on the recommendation of the Council every year, as Nominated Members who shall hold office for a period of one year at a time provided they are of the class not below that of Fellow of the Institution.

(f) NUMBERING OF BYELAWS

Examination of the Institution. He shall then be automatically transferred to the class of Member or Associate as per his qualifications and meeting other eligibility criteria.

(e) NOMINATED MEMBERS

Byelaw 36

26-28 Three Distinguished (eminent) Professionals/ personalities other than Chairpersons of Centres/ Sub-Centres may be nominated by the President on the recommendation of the Council every year, as Nominated Members who shall hold office for a period of one year at a time provided that they are of the class not below that of Fellow of the Institution.

(f) NUMBERING OF BYELAWS

To re-number Byelaw 16 and onwards

- 2.2 The SGM, after detailed discussion, unanimously approved the above proposed amendments.
- 2.3 Further, President invited the views of the Members on the proposed amendment to the Byelaw 19 as circulated in the notice.

ORGANISATIONAL MEMBERS

Byelaw 19

Organisational Membership shall be open to an individual or to a company or to an organization concerned with telecommunication, electronics/ or electrical engineering and/or allied subjects.

ORGANISATIONAL MEMBERS

Byelaw 19

Organisational Membership shall be open to a company or to an organisation / institution concerned with telecommunication, electronics/ or electrical engineering and /or allied subjects.

2.4 The SGM, after detailed discussion, approved the above amendment as under:

ORGANISATIONAL MEMBERS

Byelaw 19

Organisational Membership shall be open to a company or to an organization/institution concerned with Telecommunication Engineering, Electronics, Computer Science and Engineering, Information Technology and allied subjects.

Vote of Thanks

3.1 There being no other item, the meeting ended with a vote of thanks to the Chair.

Sd/-(V K Panday) Brig(Retd) Secretary General

Ref: IETE/1st(2008-09) SGM/09

Dated: 25 Oct 2009

DISTRIBUTION:

The President and Members of the Council

All Corporate Members of IETE





Note: The Institution of Electronics and Telecommunication Engineers (IETE) assumes no responsibility for the statements and opinion expressed by speaker(s) and contributor(s).

Printed and Published by Brig (Retd) V K Panday, Secretary General for the Institution of Electronics and Telecommunication Engineers, 2, Institutional Area, Lodi Road, New Delhi - 110003 (India) at Vats Publications, 1930, Sec-A, Green Fields Colony, Faridabad - 121002 (HR)

Dy Managing Editor: Cdr A P Sharma, IN (Retd)

(Cost of Production: Rs 4.00) E-mail: mgeditor@iete.org; publications@iete.org