

IEEE Victorian Section ANNUAL REPORT 2011



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COVER PHOTO: E-Class electric locomotives were designed by the Chief Electrical Engineer's Department of the Victorian Railways and built at the Newport Railway Workshops in Melbourne. They were the first non-steam locomotives introduced in Victoria (and probably in Australia). Notwithstanding their very "basic" electrical design, they significantly out-performed many of the steam locomotives of their day. E1102 (shown here) first entered service in 1928 and is now on display at the Australian Railway Historical Society Museum, Williamstown.

(Photo courtesy Mark Bau)

Section and Chapter Officers

Financial Accounts

List of Section Events

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From the Section Chairman



Paul Kubik

AS ENGINEERS, we are not always the best at marketing our own achievements and communicating the benefits of technology in layman's terms, so that others can build them into products and solutions. In the same way, IEEE often struggles to explain the important role it plays as a member of the international community, not just benefits for members but as influencing people's everyday lives.

From the co-ordination of technology standards, the sharing of information through 1,100 conferences held annually, the publishing of specialist technical journals through IEEE Xplore, to the coverage of important technology issues such as the Fukushima nuclear disaster - IEEE is an acknowledged authority and leader in the professional engineering world. Then there are Humanitarian projects such as the reconstruction of power in Haiti, where IEEE represents the common international will of 400,000 Engineers with the common goal of "Advancing Humanity through Technology".

At the local Section level we hold close to fifty (50) organised events every year. These events range in format from technical, tutorial, industry and networking

meetings through to student activity. During 2011, our technical calendar covered topics ranging from "The History of Audio Recording in Australia" by Bill Armstrong, to "The Internet's Off Switch – Wikileaks, Arab Protests & Beyond" by Narelle Clark. In addition, our Distinguished Lecturer Program provides us with an opportunity to hear overseas experts present on their particular fields of research. This year we had Prof. Andy Schwartz present on "Progress Toward High-Performance Brain-Machine Interfaces" in which he described progress towards the development of bionic limbs.

Melbourne was also host to several IEEE international conferences this year, including the annual Industrial Electronics Society conference (IECON 2011) and the Antennas Propagation and Microwave Conference (APMC 2011). These two events jointly attracted over 1200 delegates to Melbourne, so providing a boost to the State's economy as well as contributing to the international transfer of knowledge.

In student affairs, the Section has continued its support of five (5) IEEE Student Branches, including the Latrobe University Student Branch, which became fully active for the first time during 2011. Our Student Conference Paper Travel Grant competition attracted entries of outstanding quality and this competition is now an established feature on our calendar. We also sponsored two university students, Leila Koushaeian and Edhem Custovic, to attend the IEEE Student Congress 2011 held in Auckland, New Zealand. And we are pleased to acknowledge the energy and dedication of many other student volunteers, throughout the year.

A highlight of the year was the IEEE Victorian Section Annual Dinner, held in Melbourne in December, which was very well attended by members and invited guests. Our guest speaker, Prof. Natalia

Nikolova, gave an excellent presentation on “Microwave Near-Field Imaging of Human Tissue” and its application to the detection of early stage breast cancer. Sincere thanks are due to the volunteer organisers of this event, notably Julia Gibney and Fleur Stephens.

This is my final report as Section Chair and I am pleased to now welcome Dr Greg Adamson as IEEE Victorian Section Chair 2012. Greg has been a member of the Section Committee for some years as Chair of our Society on Social Implications of Technology (SSIT) Australian Chapter, and more recently as Section Vice-Chair. He also serves on the international Board of Governors of the IEEE SIT Society.

The “social aspects” of engineering have become an ongoing concern of the IEEE and its enlightened global policies. When we talk about IEEE we are talking about a volunteer-based organisation for Professional Engineers that improves the way we work through technology standards, conferences and the sharing of technical knowledge.

I encourage you all to attend at least one technical or networking event in the coming year and keep across the latest advancements in your field. I also encourage you all to be bold in asking how we as Engineers, through the discerning application of technology, can improve the quality of life for everyone.

PAUL V. KUBIK

Section Chair 2011

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Digest of Activities in 2011

Election Report

Nominations were called for the Section Executive Committee in September 2011. Since no position received more than one nomination, no formal elections were required. The positions and nominees who will serve on the Executive Committee in 2012 are as follows: -

- Chair – Greg Adamson
- Vice-Chair – (vacant)
- Secretary – (vacant)
- Treasurer – Enn Vinnal
- Asst. Treasurer – Anthony Gascoigne

Congratulations to each of the successful candidates. In accordance with our Section constitution, the vacancies for Vice-Chair and Secretary will now be filled by resolution of the incoming Section Committee. Also, Paul Kubik will serve as Immediate Past Chair. Thanks are due to all outgoing members of the 2011 Committee for their valuable service during the past year.

Membership Development

The Section membership continued the pattern of growth observed in recent years. Total membership in Victoria and Tasmania (all grades) now stands at slightly over 2000, an increase of approximately 6% for the year. Particularly gratifying is the current trend in Student Grade membership, which is now approaching 200. Similarly, Graduate Student numbers have increased and are now over 250.

As satisfying as these figures may be, we know from experience that membership

perturbations are often due to random factors beyond the control of the Section executive. The Section Committee is aware of the need to deploy continuing effort and resources in expanding our membership base.



IEEE Student Members and their partners at the 2011 Annual Dinner.

Conferences

International conferences held during 2011 included the annual Industrial Electronics Society conference (IECON 2011) and the Antennas, Propagation and Microwave Conference (APMC 2011). Both of these events attracted large numbers of delegates, with over 700 attending in each case.

Some important conference events on the calendar or in planning include the IEEE International Conference on Multimedia and Expo (ICME 2012) and the anticipated International Symposium on Circuits and Systems (ISCAS 2014).

Finally, we congratulate Dr Alan Harvey for delivering the Keynote Address at the International Conference on Business, Engineering and Industrial Applications held in Kuala Lumpur, Malaysia, in June 2011. The activities of Dr Harvey's Circuits & Systems Chapter are summarised later in this report.

Student Paper Awards

The Student Paper Travel Grant competition provides financial support to IEEE Student Member authors wishing to present accepted papers at IEEE (or approved non-IEEE) conferences. Two such awards were made during 2011. The successful authors were Hao Hao of Monash University for his paper on "The Measurement of Multiple Retinal Images", and Amir Vahid-Dastjerdi of The University of Melbourne for his paper titled "QoS-Aware Deployment of Network of Virtual Appliances across Multiple Clouds". The judging panel commented favourably on the high standard of entries received this year.

Sponsorship and Prizes

The Section continued its support of Student Project work at several universities. Grants were made in support of the Endeavour program at the University of Melbourne, the EnGenius exhibition at RMIT University, and the Hooper Memorial prize presentations at La Trobe University.



Some of our Members ordered cake!

Uplink

Three (3) issues of the Section newsletter *Uplink* were published during 2011, edited by Alan Harvey and produced by Peter Barrett and other volunteers. We

very much appreciate the efforts of Dr Harvey and his editorial team. Regular and occasional contributions to this publication are always welcome, particularly on current issues of concern to IEEE members or professional engineers generally.

Section Administration

One of the principal administrative tasks we have in IEEE Victorian Section is to provide access to high quality local and international speakers; also to ensure that we have the necessary resources to run events. Over the past two years, the number of active volunteers in the Section has grown to about thirty(30). We plan to invest in the training of our volunteers through Leadership Training and Handbooks for Section Officers. And of course, we are always seeking new recruits, since there are always many more tasks needing attention than people to perform them!

IEEE members wishing to become involved in Section or Chapter affairs are encouraged to visit the IEEE Centre of Leadership Excellence at <http://www.ieee.org/go/cle> to see the different volunteer roles available. Prospective volunteers should contact the Section by email to contact@ieeovic.org.

IEEE Region 10 Activities

The IEEE Region 10 Student/GOLD Congress was held in Auckland, New Zealand, from 7th – 10th July 2011. This event was jointly organised by the University of Auckland Student Branch, The University of Auckland WIE Affinity Group, and the GOLD Affinity Group of IEEE Auckland Section. The congress was a significant success, with over 150 delegates attending over the 4-day period. Twenty (20) of the delegates were from Australia, two (2) being sponsored directly

by IEEE Victorian Section (Leila Koushaeian and Edhem Custovic).

The congress ran in plenary and parallel sessions and offered a broad range of activities of interest to youthful members, including Leadership Training, Project Management, and New Technology developments. Delegates were also able to meet and interact with a number of IEEE dignitaries who attended, including the 2012 President-Elect Gordon Day.

R10SC organisers made particular mention of their experiences at our ANZSCON 2010 held in Melbourne, which they considered inspirational for their immediate task.

IEEE Global

The major global activity of the year was Sections Congress '11, held in San Francisco, CA, in August 2011. Over 1000 delegates representing IEEE Sections around the world attended this event. They were joined by the IEEE President and several Vice-Presidents, together with Regional Directors and senior IEEE staff members. Two (2) delegates attended from IEEE Victorian Section – our Section Chair Paul Kubik and Vice-Chair Greg Adamson, respectively.

Sections Congresses are convened every three (3) years and provide one of the principal mechanisms for worldwide collaboration and interaction within the IEEE. Also, many delegates benefit from the workshops and discussion sessions held at this forum.



Section Chair Paul Kubik introduces the guest speaker at the 2011 Annual Dinner.

Looking Forward in 2012



Dr Greg Adamson

TOGETHER WITH members in industry, academia, government and elsewhere, IEEE Victoria is an important representative of Professional Engineering and other technology domains. We have a responsibility to take an end-to-end view of our profession. In the coming year we need to encourage young people's interest in the field, address the interests and challenges of our working members' professional lives, and acknowledge the contribution and continuing interests of our retired members. We also need to consider the impact our work has on the broader community.

Today, our colleagues in North America and Europe are facing difficult economic times, and this will inevitably affect the global profession. Nevertheless, there is no reason to think that the need for professional engineers and other technologists will diminish.

I was pleased to see in 2011 that renowned business theorist Dr Michael Porter, who originally trained as an engineer and is well known for his Theory of Competitive Advantage, has focused on the concept of "shared value" in response to the current global economic difficulties.

This basically means that we should recognise the importance of social needs such as health, better housing, improved nutrition, help for the ageing, greater financial security and less environmental damage. Such priorities are reflected in IEEE's own goal of "Advancing Technology for Humanity".

Two activities I see as key to expanding our professional community are the work of our Women In Engineering Group, and the activities of our Student Branches across Victoria. In recent years these activities have become increasingly important, and I believe we will continue to build on this success.

In undertaking such tasks, I want to thank Paul Kubik for the excellent work he has done as Chair over the past two years.

Finally, I want to encourage all IEEE members in Victoria and Tasmania to take an active role in our work as Volunteers. We always have many more responsibilities and opportunities than we can fulfil, and in my experience participation at all levels of our organization is both appreciated and personally satisfying.

Please feel free to contact me, on any and all issues regarding IEEE, at the email address below.

GREG ADAMSON

2012 Chair, IEEE Victorian Section

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Financial Report

A BRIEF SUMMARY of Victorian Section finances is given in the table opposite. For further details, please refer to the Consolidated Accounts appended to this Annual Report.

Section financial results for 2011 differ considerably from the previous year because of the strong (one-off) influence of the ANZSCON Student Congress held in November 2010.

Total expenditure for the year was \$27,788, reflecting a strong level of activity throughout the Section, particularly in the Student Branches. A significant portion of the above outlay was spent on overseas travel and accommodation, first in connection with the IEEE Region 10 Students/GOLD Congress held in Auckland, N.Z., and secondly at the triennial IEEE Sections Congress held in San Francisco, USA. We are pleased to acknowledge the generous financial support of the former event by the University of Melbourne.

Total Revenue for the year was 5.6% less than expenditure, resulting in a cash deficit of \$1544. The main sources of revenue were the Rebate received from IEEE Headquarters, and Interest earned from our bank deposits, a situation that has been unchanged for a number of years. Both of these income sources are influenced by economic conditions and currency movements and so are difficult to predict with accuracy.

In the coming year, Section Committee will be examining prospective new sources

Item	Amount \$	% Change from 2010
Revenue	26,244	-40 (*)
Expenditure	27,788	-16 (*)
Operating surplus/deficit	-1544	(*)
Aggregate cash at bank	163,858	-1
Bank interest earned	8906	-9
IEEE HQ rebates received	10,221	-22

IEEE Victorian Section consolidated financial results at a glance. Items marked (*) reflect the influence of ANZSCON 2010 on the results for the previous year.

of income to support and augment these traditional sources. We also plan to introduce new financial metrics and incentives for our operating units, to raise the general levels of business awareness in our programs and activities, throughout the Section.

Since this is my final report as Treasurer, I am pleased to now hand over to the 2012 Section Treasurer, Enn Vinnal. Enn has a long and distinguished record of service in IEEE Victorian Section and in recent years he has worked closely with me as Section Assistant Treasurer. I wish him every success in his new role, and assure him of my ongoing support.

ANTHONY GASCOIGNE
2011 Section Treasurer

Tasmanian Sub-Section

THE MAIN ACTIVITY of the Tasmanian Sub-Section during the year was a special Graduates of the Last Decade (GOLD) seminar held at the CSIRO IT Centre in Hobart on 30 Sep 2011. We had three (3) speakers who gave presentations as follows: -

Matthias Reumann – IBM

Matthias spoke on the significance of the GOLD program within IEEE and how valuable it can be for young professionals in the early post-graduate years. He also gave a technical presentation later in the day about his work in Life Sciences, with particular reference to techniques for simulating heart rhythms electronically. In future work, he will attempt to simulate particular cardiac pathologies in various categories of patient.

Julia Gibney – RMIT

Julia made an interesting presentation about the organisation of the ANZSCON student congress held in Melbourne in 2010. She also gave an overview of her experiences as an active student member of IEEE. Julia has been involved in the formation of a student WIE group and has held key volunteer positions on the RMIT campus.

K.S. Vijayalayan - IEEE Student Branch Chair, University of Melbourne.

Vijay spoke about the activities of his IEEE



Paulo De Souza, Tasmanian Sub-Section Chair (left), with 'Vijay' Vijayalayan, UniMelb Student Branch Chair, at the GOLD seminar in Hobart.

Student Branch. An interesting aspect of the UniMelb program is the monthly "tea sessions", which have been well received by the students.

We had about 30 attendees at this seminar, including CSIRO officers, students from The University of Tasmania, and engineering professionals.

In the coming year, we hope to proceed further with moves for an IEEE Student Branch at the University of Tasmania. We also plan to run at least part of our technical program outside Hobart to serve a wider cross section of Tasmanian engineers and IT professionals.

PAULO DE SOUZA

Chair, Tasmanian Sub-Section

Chapter & Group Reports

Circuits & Systems /Solid-State Circuits Chapter

Our Circuits and Systems Chapter organised three (3) technical seminars during 2011, all presented at RMIT University School of Electrical and Computer Engineering.

2011-02-24: The first, by our Section secretary and webmaster, Graham Gordon was titled "A Simple RFID System Using Low-Power Low-Cost Microcontrollers". The application was targeted essentially at the metropolitan rail network and how RFID systems could be used to signal speed limits and other operational information to the driver.

2011-07-13: This was followed in July by Gokham Tanyeri, Founder of Clarinox Technologies. His talk on "Microprocessor Debug Tools" covered embedded system debugging and the latest trends in microprocessor system debugging methods.

2011-09-14: The final Circuits and Systems presentation was by Frank Smit, Managing Director of Dyne Industries Pty Ltd, on the topic of "Australia versus China in Electrical Manufacturing". This talk covered the nature of the trading relationship between Australia and China and examined the manufacturing strengths and weaknesses of both countries.

The Circuits and Systems Chair presented two tutorials on power management for electronic systems. One was presented in Malaysia in September at the ICOS 2011 conference, held on the island of Lankawi, and the other at IECON, held in Melbourne in November.

He also delivered the Keynote Address at ICBEIA 2011 (International Conference on Business, Engineering and Industrial Applications), held in Kuala Lumpur, Malaysia, in June.

All of the above were IEEE-sponsored conferences.

ALAN HARVEY, Chapter Chair

Communications Chapter

This year saw some changes in the Communications Society Chapter with the retirement of Mr. Craig Skinner from the position of Chair. We extend out sincere thanks to Craig for his efforts and acknowledge his ongoing work for the Chapter over the past 13 years, as well as his contributions to Victorian Section activities generally. The Chapter now welcomes four new volunteers to its ranks and we look forward to their enthusiastic involvement in Chapter affairs and activities.

Two (2) technical talks were organised this year, and the details of these are summarised below.

2011-06-14: This was a presentation by Mr. Mike Wright, Executive Director of Networks and Access Technologies, Telstra, titled "Opening the LTE 1800MHz Ecosystem as a Tool to Manage Wireless Broadband Growth". This talk was well received by the audience of 30 people and was followed by many interesting questions and much discussion on the evolution of mobile wireless broadband in Australia.

2011-08-25: Professor Rod Tucker is Director of the University of Melbourne's multidisciplinary Institute for a Broadband-Enabled Society (IBES). He is also Director of the Centre for Energy-Efficient Telecommunications (CEET). Rod gave a talk titled "A Broadband-Enabled Society" to an audience of 20 people. This talk focused on the development of innovative applications for the emerging National Broadband Network and generated much discussion.

Other activities of the Chapter included support for IB2COM 2011 and participation in its technical program committee. This was the 6th International Conference on Broadband Communications and Biomedical Applications

organised by La Trobe University Student Branch and was held in November.

Finally, in December, the Chapter hosted a visit by Mr Arief Hamdani Gunawan from Telkom Indonesia. Mr Gunawan is a past IEEE Indonesia Section Chair, and a past Chair of the Communications Chapter of that Section.

PAUL FITZPATRICK, Chapter Chair

Computational Intelligence Chapter

CIS in 2011 held two (2) events:

2011-08-20: Kevin Korb & Ann Nicholson presented "Bayesian Artificial Intelligence" and participated in a panel discussion on the future of AI at the Singularity Summit Australia, held at RMIT University.

2011-11-07: CIS invited the IEEE Distinguished Lecturer Prof. Jun Wang (Chinese University of Hong Kong) to give a talk on Neurodynamic Optimization at Monash University.

KEVIN KORB, Chapter Chair

Computer Chapter

We organised or co-organised three (3) events during 2011 and outline details are given below.

2011-06-02: This was a presentation by New York Times best-selling author and investigative journalist Edwin Black on the subject of Computing Ethics. The event was co-hosted by Monash University and the SSIT Australia Chapter of IEEE Victorian Section. It was well attended and some interesting discussion followed.

2011-03-16: We also hosted a talk on software testing by Prof Y.T. Chen, (joint with the University of Melbourne Student Branch).

2011-03-17: We ran a talk on Software Engineering for the Research Environment, presented by myself.

As to the year ahead, a Career Seminar is now planned for early 2012. We are collaborating with the Signal Processing Society and RMIT University to arrange a visiting lecturer from overseas, and we have been working with colleagues in the Section, interstate and overseas to secure IEEE technical co-sponsorship for the 7th International Conference on Computer Science & Education, which will be held in Melbourne in July 2012.

The IEEE Region 10 Newsletter included a full-page report of our chapter's activities in its September 2011 issue. During the year we have been assisted by the Computer Society head office and have received various promotional materials from them, as well as securing permission to reproduce and distribute an article from the IEEE *Computer* magazine at one of our events.

The Chapter committee remains strong. While two committee members retired at the end of last year due to relocations interstate, three new volunteers have stepped forward. Ron Van Schyndel has continued his excellent work as Chapter Vice-Chair and immediate past chair. This year all members of the committee attended at least one meeting of the Section Committee, so ensuring that the chapter was always well represented, as well as providing an opportunity for our volunteers to learn more about the wider IEEE structures and organisation.

We are always interested in members' views and ideas for future activities. Please contact us by email to oboler@ieee.org if you have any such proposals, or would like to become more active in our Chapter.

ANDRE OBOLER, Chapter Chair

Electromagnetic Compatibility Chapter

The EMC Society Chapter held two (2) technical lectures during the year, covering topics as below.

2011-07-20: "Advanced Numerical Techniques for EMC-related Bioelectromagnetic and Medical Applications".

2011-10-25: "Design Challenges When Attempting to Reduce Susceptibility to EMI of Analog Integrated Circuits".

We are working with the EMC Society of Australia to organise a large conference in about May 2013 called APEMC 2013. Also, there will be a joint meeting with the EMCSA on Thursday Feb 23, 2012, with a visiting speaker from the USA.

I am in the process of handing over the Chapter Chair role for the EMC Society to Dr Jean-Michel Redoute. Formal notification of this change will be posted on the Section website.

MALCOLM MULCARE, Chapter Chair

Engineering in Medicine & Biology Chapter

In mid-2011, the position of Chapter Chair was taken over by Dr Saman Haghighooie. We extend our sincere thanks to founding chair Brian Lithgow for his efforts on behalf of the chapter over the past 14 years. We held one (1) technical meeting for the year, details as below.

2011-12-09: "Progress Towards High-Performance Brain-Machine Interfaces", by Professor Andrew Schwartz from Pittsburgh, USA. This event was organised by EMBS in collaboration with IEEE Victorian Section and the Vision Group of Monash University, and was part of the IEEE Distinguished Lecturer Program for 2011. There were about 40 attendees from different engineering disciplines and from both industry and academia. Prof. Lowery (Head of the Electrical Engineering Dept., Monash University) and Prof. Rob. Shepherd (Director of the Bionics Institute) were both present.

The invited lecturer is one of the pioneers of brain-machine interfacing. He presented some of his first-hand unpublished data, including a bionic hand said to be worth more

than \$70 million.

SAMAN HAGHGOOIE, Chapter Chair

Microwave Theory & Techniques/ Antennas & Propagation Chapter

MTT/AP chapter held two distinguished lecturer presentations during 2011.

2011-12-09: The first talk was presented by Professor Minoru Fujishima from University of Tokyo, Japan on 09/12/2011. The title was "Millimetre-Wave and Terahertz CMOS Design". Twenty-five people attended, from both industry and university.

2011-12-08: The second talk was presented by Professor Natalia Nikolova from McMaster University, Canada. The title of her talk was "Microwave Near-Field Imaging of Human Tissue: Hopes, Challenges, Outlook". This presentation was delivered during the Annual General Meeting of IEEE Victorian Section. There were sixty (60) attendees.

The MTT/AP Chapter Chair also chaired the Asia-Pacific Microwave Conference, APMC2011, which was held at the Melbourne Convention and Exhibition Centre. More than 710 attended from 37 countries around the world. The conference was hosted by Engineers Australia and the IEEE MTT Society. Further details are found at www.apmc2011.com

KAMRAN GHORBANI, Chapter Chair

Photonics Chapter

We ran five (5) technical events during the year. Here is a brief summary.

2011-02-16: "Silicon Photonics: a New Technology Platform to Enable Low Cost and High Performance Photonics". This was presented by Professor Lorenzo Pavesi, Head of the Nanoscience Laboratory, University of Trento, Italy.

2011-03-18: "Non-Asymptotics in Information

Theory". Presented by Professor Sergio Verdú, Princeton University.

2011-04-11: "III-V Quantum Structures for Infrared Detection". Presented by Dr Sarath Gunapala, Manager, NASA Jet Propulsion Laboratory, Caltech USA.

2011-05-05: "Spectrum Sensing Under Uncertain Channel Modelling". Presented by Professor Ezio Biglieri, UPF Barcelona

2011-06-02: "Delivering Photonics Circuits to Transform the New Information Age: Smaller, Faster and Smarter". Presented by Professor Benjamin J. Eggleton, ARC Federation Fellow and CUDOS Director.

MALIN PREMARATNE, Chapter Chair

Power and Energy Chapter

The current focus areas for PES Victorian Chapter are new technologies, large-scale renewable energy technologies and the power systems business in a complex world. We ran two (2) evening events in 2011, both with international speakers.

2011-11-07: Prof. Noel Schulz (Kansas State University) presented a seminar "Beyond Blackouts and Natural Disasters: Recovery and Advancements for a Smarter Grid for the Future". This seminar addressed the strategies necessary for designing power systems that are as close to 100% fault-tolerant as possible, while still operating within practical economic constraints. The presenter also highlighted the key role played by IEEE in the dissemination of technical information. There were 37 present at this event.

2011-11-11: Also of particular note was a presentation by Wanda Reder (Vice President of the Power Systems Services Division at S&C Electric Company, a large North American power systems technology company), entitled "Practical Lessons from Wind Farm Collector Systems and Interconnections". This presentation focused on current issues in electric power systems design and operation, with particular reference to the integration of

large wind farms into the US and Canadian power grids.

This is an area of particular relevance in Australia, given the current widespread proliferation of wind farms at remote locations. The presenter offered many interesting insights into the planning and commissioning of large scale wind farms. There were 16 attendees at this event.

For 2012, PES chapter plans to address the following topics areas: -

- * The changing face of the National Electricity Grid in Australia
- * Power Systems Security and Risk Management
- * Challenges associated with Green Technologies.

ROBIN LISNER, Chapter Chair

Signal Processing Chapter

2011 was the tenth year of operation for the Signal Processing Society Chapter of IEEE Victorian Section, having been formed in December 2001. During the year the Chapter organised or co-organised five (5) technical lectures by international and local experts, as noted below.

2011-03-21: "Advanced Coding Tools for HEVC (H.265 Video Compression)" by Dr King Ngan, Chinese University of Hong Kong

2011-09-06: "Digital Signal Processing: Road to the Future", by Dr Sanjit Mitra, University of California, Santa Barbara & University of Southern California, Los Angeles

2011-10-05: "Contributions to the History of Audio Recording in Australia", by Bill Armstrong, Melbourne, Australia

2011-11-02: "Visible Light: The Next Frontier for Wireless Communications?" by Dr Jean Armstrong, Monash University

2011-12-07: "Image Quality for the Social Media Era", by Dr Stefan Winkler, University of Illinois' Advanced Digital Sciences Center (ADSC) – Singapore.

The Chapter details are maintained within the IEEE Victorian Section website www.ieeevic.org and are regularly updated. Whenever the presenter has permitted, presentation slides are made available for later viewing. We also send out email notices of events and have occasional features on the main Section website.

ROBERT SLAVIERO, Chapter Chair

Social Implications of Technology Chapter

SSIT Australia had a busy 2011, holding fifteen (15) technical meetings, with an aggregate attendance of 570 people, at widely separated venues in Melbourne, Sydney, Canberra and Geelong. Outline details are given below.

2011-03-11: Professor Wanlei Zhou of Deakin University spoke at the Waurn Ponds campus on "The Social Implications of the NBN Rollout in Geelong".

2011-03-15: Narelle Clark presented "The Internet's Off-Switch" (joint with the Internet Society).

2011-05-18: In Sydney and Melbourne, Dr Mohamed Chawki, a Senior Judge of the Egyptian Council of State, spoke on "Egypt's Cyber Revolution" (joint with the Cyberspace Law and Policy Centre).

2011-06-02: Edwin Black spoke at Monash University on "Information Technology and the Holocaust" (joint with Monash University and the IEEE Computer Chapter).

2011-06-25/26: For the Singularity Summit (Australia), we presented two sessions at the "Humanity Plus" symposium in Melbourne, first Slade Beard on "Architecting the Future"; then on the following day, Greg Adamson on "Technology and Social Control".

2011-09-21: In Canberra, Department of Defence CIO Greg Farr spoke on "External Drivers of Technological Change" (joint with IEEE ACT Section).

2011-10-01: In Melbourne, we presented a

panel on "Technology, Society and Engineers' Responsibility" at the Climate Change, Social Change conference sponsored by the University of Melbourne Office for Environmental Projects.

2011-10-27: Tim Cousins spoke in Sydney on "Before, During and After Recovery From a Disaster".

2011-11-14: Linda White of FaHCSIA, Canberra, spoke in Melbourne on "The Gender Pay Gap: Can We Engineer Solutions?" (joint with WIE Affinity Group).

We also undertook presentations to tertiary students at Swinburne University, Sydney University and Australian National University on technology and professional issues, including engineering ethics.

In September, Sydney committee members launched a blog with Young Lawyers, www.thesocialinterface.com. With 1,000 viewers in the first week alone, this has been a significant success. Other initiatives include the establishment of a student Facebook page, <http://www.facebook.com/home.php#!/pages/IEEE-Society-on-Social-Implications-of-Technology-SSIT-Aus-Student-Chap/163655087033291>.

On the international front, two SSIT Australia members, Katina Michael and Greg Adamson, presented to SSIT's International Symposium on Technology and Society in Chicago in May. Dr Michael was also elected as 2012 Editor of the IEEE *Technology & Society* magazine, and Dr Adamson continued in his term on the SSIT Board of Governors.

Finally, we have invested significant effort in the IEEE Conference on Technology and Society in Asia, scheduled for 27-29 October 2012, in Singapore. This is a co-operative venture between IEEE Singapore Section and IEEE Victorian Section. Details are found at www.TechnologyandSocietyinAsia.org.

GREG ADAMSON, Chapter Chair

Technology Management Chapter

The TMC Chapter was chaired by Kedaar Kale. Unfortunately due to other commitments the chapter was unable to organise any events this year.

KEDAAR KALE, Chapter Chair

2008. In 2011 she was Immediate Past Chair.

The WIE group in Victoria maintains an attractive and useful website at <http://wie.ieeevic.org/>

IRENA ATOV, Chair, WIE Affinity Group

Graduates of the Last Decade (GOLD) Affinity Group

There were no GOLD activities in Victoria during the year. Please see the Tasmanian Sub-Section report on page 10 for details of the GOLD event held in Hobart in September 2011.

PAUL KUBIK, Acting Chair, GOLD Affinity Group

Women in Engineering Affinity Group

The IEEE Victorian Section WIE Affinity Group organised two (2) events in 2011.

2011-03-09: The first event was an evening talk by Supriya Iyer from Orica Australia on the business benefits of *diversity*, and what current research on diversity and diversity of perspectives tells us. This was followed by a networking dinner, which also marked a notable occasion – the 100th anniversary of International Women's Day.

2011-11-14: The second event was an evening talk by Linda White from FaHCSIA on the subject of Gender Pay Equity (joint with SSIT Chapter). Linda presented statistics and reviewed some of the causes and consequences of the male/female pay gap. She also discussed some possible solutions to the problem.

During the year, individuals within the Section also contributed to IEEE/WIE standing committees. Dr Irena Atov continued her work on the worldwide IEEE Women in Engineering Committee (WIEC) where she has served since

Student Branch Reports

La Trobe University Student Branch

2011 was the inaugural year of the La Trobe University Student Branch. The Branch organised numerous activities during the year and outline details follow.

2011-03-07: We organised a start-of-semester barbeque and information session (joint with the Faculty of Science, Technology and Engineering and other Faculties). This was seen as a means of establishing a strong IEEE presence at La Trobe. Given the inter-faculty nature of the event, the attendance was overwhelming (estimated over 1000). We recruited over 20 new IEEE Student Members.

2011-05-18: Towards the end of the first Semester, the LTU Student Branch ran complimentary exam tutorials for IEEE members. This event had tremendous support from both staff and students in the Department of Electronic Engineering. It allowed IEEE volunteers to assist students in their preparation for exams, so improving their own communications and teaching skills.

2011-10-25: One of the most successful events of the year was the surface-mount soldering workshop organised by committee members Brian Bienvenu and Martin Lim. In this workshop, students gained hands-on experience in soldering a complete printed circuit board, including the mounting of a 64-pin CPLD device. There were forty (40) participants in this workshop.

The Branch was active in promoting the Profession of Engineering, throughout the year. We made presentations at Open Days at Bundoora, and also at La Trobe's regional campuses in Mildura, Shepparton, Albury/Wodonga and Bendigo. We also visited regional high schools and gave addresses on similar themes.

IEEE volunteers from La Trobe played a leading role in the organisation and running of the Sanjit Mitra DSP presentation and the IB2COM'11 conference, and also the 19th Hooper Memorial Presentations.

EDHEM (EDDIE) CUSTOVIC, Chair, La Trobe Student Branch

Monash University Student Branch

We held three (3) events during the year.

2011-06-03: BBQ, Monash University Campus. Approximately 45 people attended. It served as an introduction for IEEE Monash Student Members and potential members. We prepared printed flyers and we had several enquiries about IEEE membership. It was a successful beginning to our 2011 activities.

2011-09-20: Technical Visit to Telstra Global Operations Centre, Clayton. Twelve people attended this visit of inspection, which was an exciting event for us. We now have a much better appreciation as to how Telstra operates. Our host was IEEE Victorian Section Chair, Paul Kubik, who is a manager at Telstra. Paul also gave us a great speech on the day.

2011-10-05: LaTeX Workshop. Twenty (20) people attended this one-hour workshop at Monash. The workshop leader was our very own lecturer. We have plans to run a similar event in 2012, possibly organised jointly with other student Branches in Melbourne.

In summary, we successfully organised several activities during 2011 and we aim to do at least as well during 2012. It would be great if IEEE Monash Student Branch can attract some famous academics coming here to make a presentation. So how to manage the finances and work out the program will be major challenges for us in 2012.

XIAOFEI SHI, Chair, Monash Student Branch



Monash Students at the Telstra Global Operations Centre in September, 2011.

RMIT University Student Branch

The RMIT Student Branch has been active throughout 2011. An overview of the year's events is given below.

2011-05-05: This was the Annual General Meeting at which a new executive Committee was welcomed. It was also an enjoyable social occasion where the student members got to know the new executive committee and who was representing them.

2011-08-10: This was a MATLAB workshop, continuing our successful series of such events held in recent years. It was well attended and we welcomed attendees from outside RMIT as well as from industry. Overall, it was a good learning experience and students developed MATLAB skills and gained a good understanding of its applications.

2011-09-22: Industry Social Night. At this event, eight employer representatives attended a student-run social evening. The objective was to introduce students to the various employment opportunities available to them, in a relaxed environment. They were also met recent graduates and learned of their employment-search experiences. It was a successful event with 35 students attending.

ZHAO FENG YANG, Chair, RMIT Student Branch

University of Melbourne Student Branch

The IEEE UniMelb Student Branch has been very active throughout the year, thanks to the efforts of our volunteers. Our 2011 program included the following:-

2011-03-17: Technical talk on "Software Engineering for the Research Environment" by Dr. Andre Oboler. This was held jointly with the IEEE Computer Chapter.

2011-04-05: LaTeX skills development workshop for post-graduate students. We had twenty (20) students at this workshop, which was the full limit on numbers. We received positive feedback from many students and several new Student Members joined the IEEE. The event was highly commended by the Faculty of Engineering and individual academics.

2011-09-20: Industrial visit to Telstra's Global Operation Centre in Clayton. Attended by fifteen (15) IEEE student members.

2011-11-25: This was a combined social and IEEE-promotion event. A barbeque was arranged jointly with the postgraduate student associations of CSSE and IS departments of the University of Melbourne. There were over one hundred (100) in attendance.

2011-12-14: Annual General Meeting and dinner held at the Nirankar Restaurant, Lygon Street, East Brunswick. This was attended by 26 members, and Dr. Greg Adamson, IEEE Victorian Section Chair-Elect, was the chief guest.

Three of our volunteers attended the IEEE R10 Student Congress held in Auckland, New Zealand, from 7th to 11th July, 2011. It was a great opportunity for our active volunteers to meet their peers from around IEEE Region 10, gain new skills and exchange ideas. Thanks are due to the University of Melbourne for their generous sponsorship of these students.

Four of our members presented Abstracts of their research work at the IB2COM conference, and won two prizes. Finally, on 30 Sep 2011,

K.S. Vijayalayan delivered a presentation on "IEEE Student Branches: An Insider View" to a seminar organised by the Tasmanian Sub-Section (see page 10 of this report). He described the challenges faced by IEEE student branches and how they can be overcome.

K.S. VIJAYALAYAN, Chair, UniMelb Student Branch

Victoria University Student Branch

The activities of our IEEE Student Branch during 2011 are outlined below.

2011-02-08: The Branch held formal elections to elect three vacant officer positions. Mohammadreza Pourakbar, Robabeh Amirkhanzadeh and Braveena Santhiranayagam were elected as Vice-Chair, Treasurer and Secretary, respectively.

2011-11-07: This was a technical seminar titled "Beyond Blackouts and Natural Disasters: Recovery and Advancements for a Smarter Grid for the Future", organised in collaboration with Victoria University. The presenter was Prof. Noel Schulz. The presentation reviewed current opportunities for making the electric power grid more fault-tolerant and strategies for effective recovery when system failures do occur.

2011-11-22: This was a presentation at the VU Footscray campus by Dr. Horace King, titled "21st Century Telecommunications". The presenter gave an overview of past inventions that have culminated in the ubiquitous wireless communications of the 21st century. He examined the advantages of integrating existing wireless technologies with new developments such as 4G, and reviewed the general outlook for telecommunications technology.

2011-12-09: The IEEE VU Student Branch organised a presentation on "Wireless Communication for Ultra-Portable Devices", by Prof. Henrik Sjöland, head of the RF Integrated Circuit Design research group at Lund University, Sweden. The presenter described IC transceivers operating in the 2.45GHz ISM band that consume less than 1mW of power in active mode, while communicating at 250kbit/s. Such systems require less than 1mm² of chip area when implemented in 65-nm CMOS technology. Possible applications include hearing aids and mouth keyboards for paraplegics.

SHABBIR AHMED, Chair, VU Student Branch

Section and Chapter Officers 2011

Paul Kubik - Chairman, IEEE Victorian Section; paul.kubik@ieee.org

Greg Adamson – Vice-Chair, IEEE Victorian Section; g.adamson@ieee.org

Anthony Gascoigne - Treasurer, IEEE Victorian Section; aeg@teksupport.net.au

Enn Vinnal - Assistant Treasurer, IEEE Victorian Section; e.vinnal@ieee.org

Kam Ho - Secretary, IEEE Victorian Section; kam.ho@windprospect.com.au

Paulo de Souza – Chairman, IEEE Tasmanian Sub-Section; paulo.desouza@ieee.org

Chapter Officers:

Greg Adamson – Society on Social Implications Of Technology Chapter Chair, Email: g.adamson@ieee.org

Irena Atov - Women-in-Engineering Affinity Group Chair, Email: i.atov@ieee.org

Iouri Belski - Education Society Chapter Chair, Email: iouri.belski@rmit.edu.au

Paul Fitzpatrick - Communications Society Chapter Chair, Email: paul.g.fitzpatrick@gmail.com

Robin Lisner - Power & Energy Society Chapter Chair, Email: lisner@eng.monash.edu.au

Saman Haghgooe - Engineering in Medicine & Biology Society Chapter Chair, Email: saman@monash.edu.au

Kedaar Kale - Technology Management Council Chapter Chair, Email:

Kevin Korb - Computational Intelligence Society Chapter Chair, Email: kbkorb@gmail.com

Kamran Ghorbani - Antennas & Propagation / Microwave Theory & Techniques Societies Chapter Chair, Email: kamran.ghorbani@rmit.edu.au

Alan Harvey - Circuits and Systems / Solid-State Circuits Societies Chapter Chair, Email: harvey@rmit.edu.au

Malcolm Mulcare - Electromagnetic Compatibility Society Chapter Chair, Email: malmulcare@pacific.net.au

Andre Oboler - Computer Society Chapter Chair, Email: andre@oboler.com

Malin Premaratne - Photonics/EDS Societies Chapter Chair, Email: malin@ieee.org

Robert Slaviero - Signal Processing Society Chapter Chair, Email: r.slaviero@ieee.org

For further contact details, please visit the Victorian Section website at www.ieeevic.org

Financial Accounts 2011

I. Consolidated Operating Statement (calendar year)⁽¹⁾

Income	(2011, \$)	(2010, \$)
Meetings & social	1484	769
Student activities	4154	15,119
IEEE HQ rebates	10,221	13,088
IEEE Societies	824	1306
IEEE Region 10	0	691
IEEE Australia Council	0	2060
Sections Congress (SC'11) receipts	655	0
Bank interest	8906	9811
Miscellaneous income	0	555
	26,244	43,399
Expenditure		
Meetings & social	9427	9345
Student activities	4601	18,347
Grants & awards	1577	1950
Publication expenses	1756	1140
Travel & accommodation	825	465
Conferences/Workshops	0	0
Sections Congress (SC'11)	7272	0
Australia Council levy	971	907
Postage supplies & miscellaneous	1359	932
	27,788	33,086
Operating Surplus (Deficit) for Year:	(1544)	10,313

II. Balance Sheet as at 31 December 2011

Assets	(2011)	(2010)
Cash at bank - Section accounts	131,410	134,247
- Comsoc Chapter accounts	28,876	27,686
- All other subunit accounts	3572	3184
	163,858	165,117
Liabilities		
Sundry debits	0	500
Net Assets:	163,858	164,617

NOTE 1: All income and expense items are ex-GST.

List of Section Events for 2011

- 2011-12-15 [Speech Modelling for Analysis, Coding and Synthesis](#)
- 2011-12-09 [Millimeter-wave and terahertz CMOS design](#)
- 2011-12-09 [Wireless Communication for Ultra Portable Devices](#)
- 2011-12-09 [Progress toward high- performance brain-machine interfaces](#)
- 2011-12-08 [IEEE Victorian Section Annual General Meeting \(Dinner\)](#)
- 2011-12-08 [Microwave Near-Field Imaging of Human Tissue: Hopes, Challenges, Outlook](#)
- 2011-12-07 [Image Quality for the Social Media Era](#)
- 2011-11-22 [21st Century Telecommunication](#)
- 2011-11-14 [The Gender Pay Gap – Can We Engineer Solutions?](#)
- 2011-11-09 [Practical Lessons from Wind Farm Collector Systems and Interconnections](#)
- 2011-11-07 [Beyond Blackouts and Natural Disasters: Recovery and Advancements for a Smarter Grid for the Future](#)
- 2011-11-02 [Visible Light Communications: The Next Frontier for Wireless Communications?](#)
- 2011-10-25 [Design Challenges When Attempting to Reduce Susceptibility to EMI of Analog Integrated Circuits](#)
- 2011-10-05 [Bill Armstrong: Contributions to the History of Audio Recording in Australia](#)
- 2011-10-01 [SSIT Panel: Technology, Society, and Engineering Responsibility](#)
- 2011-09-14 [Australia versus China in Electrical Manufacturing](#)
- 2011-09-06 [Digital Signal Processing: Road to the Future](#)
- 2011-08-25 [A Broadband-Enabled Society](#)
- 2011-08-10 [MATLAB: The Language of Technical Computing](#)
- 2011-07-20 [Advanced Numerical Techniques for EMC-related Bioelectromagnetic and Medical Applications](#)
- 2011-07-13 [Microprocessor Debug Tools](#)
- 2011-06-26 [Technology and Social Control - Humanity+](#)
- 2011-06-25 [Architecting the Future - Humanity+](#)
- 2011-06-15 [Semantic knowledge-based framework to improve the situation a](#)
- 2011-06-14 [Opening the LTE 1800 MHz Ecosystem as a Tool to Manage Wireless Broadband Growth](#)
- 2011-06-02 [Delivering Photonics circuits to Transform the New Information Age – Smaller, Faster and Smarter](#)
- 2011-06-02 [Computing Ethics with Edwin Black](#)
- 2011-05-12 [Computational methods for the assessment of mental health](#)
- 2011-05-05 [Spectrum sensing under uncertain channel modelling](#)
- 2011-04-11 [III-V Quantum Structures for Infrared Detection](#)
- 2011-03-21 [Advanced Coding Tools for HEVC \(H.265 Video Compression\)](#)
- 2011-03-18 [PTRI Workshop on Identification and Control](#)
- 2011-03-18 [IET Victoria: Present Around The World: The IET Technical Presentation Prize - 2011 Victoria Final](#)

- 2011-03-18 [Non-asymptotics in information theory](#)
- 2011-03-17 [Software Engineering for Research Environment](#)
- 2011-03-16 [Testing the Non-Testable Programs](#)
- 2011-03-15 [The Internets Off Switch - Wikileaks, Arab Protests & Beyond](#)
- 2011-03-11 [Social Implications of the NBN rollout in Geelong: A perspective for Research, Teaching and Business](#)
- 2011-03-09 [Diversity of Perspectives – What is it and why organisations need it?](#)
- 2011-02-28 [Achieving Defensible Risk Management \(Mechanical Engineering Branch, Systems Engineering Society and Institution of Mechanical Engineers\)](#)
- 2011-02-24 [A Simple RFID System Using Low-Power Low-Cost Microcontrollers](#)
- 2011-02-16 [Silicon photonics: a new technology platform to enable low cost and high performance photonics](#)

[NOTES]