

Reliability Society

NEWSLETTER

Vol. 51, No. 3, August 2005

CONTENTS

President's Message

[From the Editor](#)

Feature Articles:

[New IEEE RS Standard](#)

Society News:

[Fellow Citation Award Remarks](#)

[RS Digital Library Announcement](#)

[2004 Chapter Awards](#)

[August Adcom Meeting](#)

Society Solicitations:

[2005 RS Engineer Award](#)

[2005 Lifetime Achievement Award](#)

Chapter Activities:

[From the Chapters](#)

Technical Operations:

[Technical Committee Recruiting](#)

Announcements:

[See Announcements Section](#)

Latest Copy

[SOCIETY SENTINEL NEWS](#)

President's Message



Dear IEEE Reliability Society Members:

2005 is well past the 1/2 way point, and the Reliability Society's ADCOM just held its 3rd (and last) meeting in beautiful Monterey CA at the Naval Postgraduate School. In this message, I'd like to share a few of the outcomes from that meeting. I believe these outcomes have the potential to reshape the Reliability Society for many years to come.

To begin, most societies within IEEE are shrinking in membership. This is not a new trend; it has been going on for years. Our Society is no different, and while we can take comfort in the fact that we are not the only one, it is still an issue that we continue to look for answers to, given that the problem is more complex than most members probably realize.

For example, you do not need to join a society or even the Institute to get access to all IEEE publications if your employer subscribes to XPLORE. And you certainly do not need to join a society or the Institute to attend IEEE-sponsored conferences. Further, you can get all of the benefits (e.g., life insurance, reduced conference rates, etc.) by only joining the Institute, and if you are willing to give up voting privileges, you can join as an Associate member for even less cost. In short, there are many ways to get all you want from IEEE without joining any particular society, and that is affecting society memberships.

One place, however, where we can take comfort remains in our *Transactions* and our conferences (IRPS, RAMS, IRW, ISSRE, etc.). In those offerings, we continue to find acceptance, and our *Transactions* continues to be a widely referenced journal. In short, people are reading it, submitting to it, and citing it, and we have no reason to expect that will change. Further, our conferences continue to be profitable and well attended, and we also expect that continue.

However these are difficult times, and the revenue model needed for societies, councils, and the Institute as a whole is changing. Therefore the ADCOM of the Reliability Society is embarking on a new project this Fall to determine what additional fields in science, outside of reliability but that are related to reliability, need to be incorporated into our Field of Interest (FOI) Statement. For those of you who do not know what an FOI is, it is simply a definition of the areas in science and engineering that a society claims to be promoting and representing. (Councils also have an FOI.) Our is on our website if you care to review it under Article III in our Constitution.

The first reason that we are reevaluating our FOI (and I suspect we will modify it along with the Bylaws and Constitution) is to reverse membership shrinkage and to offer our existing members more value. We realize that in a few short months, you will be receiving your renewal package from IEEE Headquarters, and as we all know, the bottom price tag on the renewal form has recently become painful. And when that occurs, people start opting out of products and services that they once received.

But besides membership, the second key reason that we are reevaluating ourselves is that we believe that our society needs to move into other areas than just reliability. Everyone that I know wants and talks about reliable systems, but there are also demands for security, safety, interoperability, performance, scalability, etc. So for example, where does reliability fit in with bio-terrorism or cyber-terrorism? If the milk supply can be contaminated maliciously, who cares if the dairy infrastructure was reliable before the attack?

And so these are the sorts of questions that we hope that our Society can address with additional publications and conferences. But before we can do so, we need to first evaluate our current offering portfolio, and decide what we want that portfolio to look like in future years. And that process is now underway.

Any feedback from you is welcome, and thank you for your continued support.

Best Regards,

Jeffrey Voas

<mailto:JEFFREY.M.VOAS@SAIC.COM>

From the Editor

Welcome to the IEEE Reliability Society e-Newsletter. An issue will be published quarterly and published to the Reliability Society website.

We welcome your articles, comments or questions. All RS Newsletter inputs should be sent electronically to Lchase@ieee.org.

February	Inputs due January
May	Inputs due April
August	Inputs due July
November	Inputs due October

Publishing of advertisements will be available in future issues. Advertisements will be accepted in common graphic format.

Notice: Permission to copy without fee all or part of any material without a copyright notice is granted provided that the copies are not made or distributed for direct commercial advantage, and the title of the publication and its date appear on each copy. To copy material with a copyright notice requires specific permission. Please direct all inquiries or requests to IEEE Copyrights Office.

[Top](#)

Society Announcements

Reliability Society Conference Digital Library

Explore access to The Reliability Society Conference Digital Library which is available free to members will expand in 2006 to include the proceedings of the International Symposium on Physical and Failure Analysis of IC's (IPFA).

Chapter Awards 2004

The annual Reliability Society Chapter Awards were awarded on July 30 at Monterey, CA at a banquet in conjunction with the Society Administrative Committee Meeting. The awards were for chapter activities from Jan 1, 2004 through Dec 31, 2004. I am pleased to announce the winners for the 2004 RS Chapter awards.

Place Chapter

- 1 Twin Cities Chapter
- 2 Boston Chapter
- 3 Japan Chapter
- 4 Baltimore Chapter
- 4 Cleveland Chapter
- 4 Dallas Chapter
- 4 Denver chapter
- 4 Italy Chapter
- 4 San Diego Chapter

Congratulations to all. "GREAT JOB" to all the chapters for your activities in 2004.

Loretta Arellano

ljarellano@raytheon.com

[Top](#)

Society Solicitations

Reliability Society Engineer of the Year Award for 2005

The IEEE Reliability Society is soliciting nominations for its Reliability Society Engineer of the Year Award for 2005. This award is aimed to recognize key contributions to the Reliability profession within the last few years. Nominees will be considered according to the following criteria:

- **Reliability Contributions**
 - Reliability Technical Contributions
 - Reliability Management Contributions
 - Reliability Publications
 - Contributions to Reliability Education
- **Professional Services to IEEE**
 - Reliability Society Service
 - Other IEEE service positions

An administrative superior of the nominee (e.g. department head, supervisor, or chapter chair) should make and submit the nomination. The nomination package should consist of a one-half page biography of the nominee plus up to four pages of concise descriptions of the accomplishments. For technical contributions, please concisely describe why the contribution is unique. For managerial and educational contributions, please concisely explain the obtained benefits. Please limit identified publications to only those in which the nominee was the sole or principal author. The accomplishments should be organized according to the above-described criteria. The nominations must be submitted by 1 October 2005. Send the nominations to Dennis Hoffman, your Society's Jr. Past President, at d.hoffman@ieee.org

Reliability Society Lifetime Achievement Award for 2005

The IEEE Reliability Society is soliciting nominations for its Reliability Society Lifetime Achievement Award for 2005. The IEEE Lifetime Achievement Award was created to recognize sustained outstanding contributions to the field of Reliability Engineering. Typically the contributions will span the career of the individual, usually in excess of 25 years. The contributions meriting this award must clearly be within the area of Reliability Engineering.

Nominations must be submitted by a peer or supervisor of the nominee. Self nominations or nominations from a member of the IEEE Reliability Society Nominations and Awards Committee will not be accepted. The nomination package should consist of a one-half page biography of the nominee plus up to four pages of concise descriptions of the nominee's lifetime accomplishments / achievements. Nominations may be submitted until the end of September 2005. Send the nominations to Dennis Hoffman, your Society's Jr. Past President, at d.hoffman@ieee.org

[Top](#)

Chapter Activities

[Boston](#)

[Boston Chapter Brief to the Adcom](#)

[Dallas](#)

[Top](#)

Technical Operations

Society Technical Committee Recruiting Notice

The IEEE Reliability Society national organization is recruiting technical committee members and possibly committee chairpersons for the following technical committees: Software Reliability, System Safety Technology, Human Interface Technology, Mechanical Reliability, Standards & Definitions, CAD/CAE, Microelectronic Technologies, Industrial Systems, Sensor Systems, Information Technology & Communications, Consumer Electronics, International Reliability, Aerospace & Defense Systems, Testing and Screening Technology, Automotive Systems, Energy Systems, 6 Sigma Reliability, Medical Systems, Reliability Design, Warranty, Nuclear Reliability, Maintainability Technology, Assurance Technology, and Emerging (New) Technology.

The basic work for each technical committee consists of developing plans associated with the reliability aspects of the respective field, both present day tactical issues, and long term strategic direction. This is accomplished through four short quarterly written reports that are edited and compiled by the reliability society technical operations editor, and placed in the Reliability Society newsletter, which can be found on our [Web site](#). Additionally, an annual written assessment of the technology in the committee's area of interest is requested. This Annual state of Reliability Technology Report is published world wide, and receives a high level of readership and interest from communities that extend well beyond the IEEE and the Reliability Society. It has become the societies cornerstone publication.

Other work may include the development of standards, guidelines and educational tutorials through the society infrastructure. Working in one of the technical committees is an excellent opportunity to "network" and keep your knowledge current. If you are interested, please contact me and send a short biography with an indication of your experience in the field of interest.

If you do not have a direct interest in either of the above opportunities, please pass this to a fellow reliability, hardware, software, or systems engineering professional who might have an interest.

Thanks for your consideration.

Shuichi Fukuda

VP Technical Operations
E-mail: ShuFukuda@aol.com

[Top](#)

A list of the Technical Committees and their Chairs:
[IEEE RS Technical Committees](#)

Technical Committee Activities Focus Spot

Excerpts from the Annual state of Reliability Technology Report

To be included in future newsletters!

[Top](#)

Announcements

[IEEE Transactions on Reliability, Special Issue on Reliability Studies on Nanotechnology](#)

[Asian Reliability Conference](#)

[Integrated Reliability Workshop](#)

[Emerging Technology Conference](#)

[Top](#)

<</body>



- Useful Information
- Transactions on Reliability
- Reliability Training
- Discussion Forum
- Job Postings & Resumes
- What is Reliability?
- Bylaws & Constitution ▶
- Chapters, Committees & Officers ▶
- Annual Technology Report
- Reliability Society Newsletter
- RS Blog
- RS LinkedIn
- Site Map
- E-mail IEEE RS Web Master
- JOIN NOW!**

REMARKS BY DR.T. REGULINSKI

CHAIR OF THE RS FELLOW EVALUATION COMMITTEE

PRECEDING THE PRESENTATION OF FELLOW CITATION

TO DR. HOANG PHAM AT THE ANNUAL RS AWARDS BANQUET .

The IEEE bylaws stipulate that the conferral of the Fellow award lie solely within the purview of the IEEE board of directors and until 1988 the bylaws stipulated further that the citation presentation of the fellow conferral be executed at a black tie function whose venue (usually at IEEE HQ in New York) was to be specified by the board. In the 90's the requirement for the presentation of the conferral citation was given to the Societies and in 1992 it was made optional with candidates choosing the venue of the presentation. This year, two members of the Reliability Society Dr. Hoang Pham and Dr. Lois Walsh were conferred as IEEE fellows and Dr. Pham chose to have the presentation made at the RS Adcom awards function. By the power vested in the chair of the society evaluation committee, I am very pleased to perform the honor.

Before doing so, however, I would like to preface the presentation with few observations pertaining to offering the honor in general and the presentation of the citation to Dr. Pham in particular.

A number of literati, Sir Bertrand Russell and Ernest Hemingway among them, have written that monuments built to men and women of power or wealth soon stand obliterated by the ravages of environment. To that I would add that the merciful shortness of human memory and the onslaught of pigeons, contribute significantly to the obliteration.

But the fate generally suffered by monuments is not the fate of ideas and ideals which are impervious to environment, are time invariant, and are embedded deeply in human memory by what we teach and what the ideas and ideals teach us.

Joseph Cambell, contemporary polemicist once observed that society devoid of heroes, i.e. men and women of achievement, is a society devoid of vision, of prescience, of horizons, and role models to emulate.

It is within the framework of these observations I would submit that world wide time revered institutions, honor their men and women of ideas, ideals and achievement with such honors as the

- Pulitzer award
- Nobel award
- Legion of merit
- Man/woman of the year award

to cite but a few.

The IEEE has its own honors and awards and confers its highest honor with the title of a fellow for those who are deemed by their peers to be extraordinary scholars, theoreticians, pedagogues, engineers and engineering managers who have contributed significantly with their ideas, their theories, research, publications, patents to the discipline as represented by the IEEE societies.

Dr. Pham joins the pantheon of IEEE elites, among whom are Marconi, Bell, Maxwell, and Shokley to cite but a few. And who of you who have graduated in the late 60's or later have not studied out of textbooks written by IEEE fellows:

- Prof. Van Falkenburg on circuits,
- Prof. Kraus on electromagnetic theory,
- Prof. Shannon on information theory,
- or Prof. Shooman on reliability theory.

These, among other are all individuals of manifest achievements and I submit to you, so are the achievements of Dr. Hoang Pham who has was cited for his extraordinary contributions to the reliability discipline by his profuse publication efforts and by extension as an educator.

1. He has published 75 papers in refereed journal including in our transactions, contributed to 14 book chapters, edited 5 books, authored graduate text on software reliability published by Springer in 2000 and is currently editing the Springer handbook on engineering statistics.
2. Edited all 12 proceedings of the International Conference on Reliability and Quality in Design
3. Is the Editor-in-Chief of the International Journal of Reliability, Quality and Safety Engineering
4. Is the Editor-in-Chief of the book series on industrial and systems engineering by world scientific
5. Was a guest editor of our Transaction on Software Reliability issue
6. Is currently associate director of the NSF/Industry Reliability Engineering Center at Rutgers University
7. And is the Rutgers University fully tenured professor of industrial engineering

Clearly, Dr. Pham fits admirably the metric by which we measure men and women of extraordinary achievement worthy of emulating.

Ladies and gentlemen, it is right and proper that we all rise and with your applause bring Dr. Pham to the podium to receive the fellow citation.

July 30, 2005
ADCOM Agenda
Naval Postgraduate School
Monterey, CA

8am ◆ 8:15am

Jeff Voas and Bret Michael: ◆ **Welcome** and Logistics for Saturday and Sunday

8:15am -- 8:30am

Bill Tonti: ◆ Acceptance of the Previous Minutes and Review of Previous Action Items

Previous Minutes accepted, action items updated. ◆ Refer to prior e-mail (previous minutes not attached). ◆◆

Motion to accept minutes made by Alan Street, and seconded by Lon Chase. ◆◆ Motion passed, minutes accepted.

8:30am ◆ 8:45am

Bill Tonti: ◆ Synopsis of the Chantilly TAB meeting

Net:

- 1) Societies can spend up to 3% of their reserves on projects they wish to fund. ◆◆ Beyond this limit, FINCOM will be involved. ◆
- 2) RS is on the hook to develop an OPS manual.
- 3) PSES was not voted in as a full fledged society. ◆◆ They were voted in as a provisional society, they have to comeback at the next TAB to produce a business plan. ◆ The probationary period is 5 years.
- 4) Clearly RS is a ◆ little guy ◆ in terms of the competing societies
- 5) IEEE has available loaner (for a very reasonable fee) digital projectors (BIG ONES) for conferences. ◆ This will save conferences lots of \$\$, but opens the question of professionals who man/run these units.
- 6) Nominal Conference Budget: ◆ Return of 20% ◆ (Up from 15%, and previously 10%)

8:45am ◆ 9:15am

Dick Kowalski: ◆ Treasurer's updates

2004 Operating Results and Net Worth

Exhibit 1 presents the Society's Operating Financial Results for 2004 through FM13 (Fiscal Month 13). ◆ This is the same exhibit that was presented at the April AdCom meeting in San Jose. ◆ The IEEE has not released 2004 FM14 results yet.

The best estimate of our net worth as of 12/31/04 is obtained by adding our FM14-03 net worth of \$974k and our FM13-04 net worth of \$111k shown in Exhibit 2. ◆ The result is \$1092k.

2005 Budget

Exhibit 2, column 2, presents our 2005 budget as approved by the IEEE. ◆ This budget projects a surplus of \$15.2k. ◆ The third column (Actuals through June 2005) presents our 2005 income and expenses as reported on our June Financial Summary Statement from IEEE, dated 13 July 2005. ◆ No surprises to date.

The Second pass budget described to meet IEEE requirement, i.e. net budget not to exceed 3% reserve

spending. Motion made to accept the second pass budget by W. Tonti, seconded by Lon Chase. Motion passed.

9:15am Noon

Matt Loeb: Scan of Reliability

See Attachment: *IEEE Environmental Scan Reliability Society (Final).pdf*

Some points through the presentation.

- ◆ Society memberships are declining ~3.3% yr.
- ◆ Associate members down 11.5%
- ◆ Question: Certification programs. IEEE very interested in certification from the top down.
- ◆ XPERT Modules: Societies benefit from proceeds. Cost Model?: Action item (Tonti) to send model d.miklas@ieee.org a note on seed money availability and cost model.
- ◆ Enterprise: XPLORE use driven base model, for startups. Net: Business model is IEEE not Societies.
- ◆ Org. Structure that has the same breadth / depth
- ◆ Net to Matt (IEEE need to establish a new org term that would have the following):
 - Retain all society rights as today
 - Have our own membership
 - Control our destiny
 - Hold conferences / have publications / hold training / etc
 - Internal IEEE Society Co-op conferences / have publications / hold training / etc
 - Internal IEEE Society Co-op affiliation.
 - Internal IEEE Society Co-op members join as no (or low) cost.
 - Internal IEEE Society Co-op can engage in participating inter society Tech Ops committee leadership / activities / information.
 - IEEE needs to remove the competitiveness between Societies ◆ foster a collaboration environment

Action item: Modification of IEEE structure to incorporate the above. Matt Loeb with Dennis Hoffman as RS POC

Net: In a vote of confidence the Reliability Society is not at this juncture going to embrace changing its charter from a Society to a Council.

1pm 1:30pm

Marsha Abramo and Christian: Membership and Publication updates

Society Membership Overview: Year over Year RS is down 3.6%, compared to all societies having a decrease in membership of 3.3%. Net we are not out of line with other societies.

2006 Society Membership benefits:

- Xplore access to RS conference digital library: IRPS, and RAMS presently, IPFA will be added at a \$2K set up fee. Talk about adding ISSRE and IRW. General discussion of what the costs might entail. \$4K? Action Item: Marsha Abramo to inquire.

- Additional discussion on Members, and why they do/do not renew. See attached file:

RS Membership Report.pdf for additional information.

Publications:

- The ASPP algorithm for how much money each Society / Council is allotted from IEL is now changed. ♦ The net for RS is a loss in 2005 of ~26K. ♦ Note, this was expected.
- All pre-1988 Transactions on Reliability will be scanned and added to the IEL database, at a cost of ~21K
- Transactions on Reliability have an estimated 2006 page count of 576. ♦ Publications are always on schedule, and citation metrics are at their best since 2004. ♦ All signs of a healthy publication.
- The RS newsletter is soliciting inputs for the August publication. ♦ Please submit technical articles to Lon Chase.
- T-SM is healthy. ♦ Surplus estimates are \$2-3K.

See Attachment ♦ *VP_Pubsreport.pdf* ♦ for additional detail

- Transactions Advertisement. ♦ Scott Abrams has made significant progress in securing long term commitments for RS ads. ♦ Presently only the back cover remains to be filled. ♦ Other opportunities are available for RS income. ♦ See the attached report, ♦ *advertising.pdf* ♦ for additional details.

1:30pm ♦ 2:15pm

Dennis Hoffman: ♦ Status of: ♦ (1) Officer Operations Manuals (2) Slate for the next ADCOM class starting 2006, (3) updates on FOI, Bylaws, etc.

Action Item: ♦ ♦ To Do

1) First Inputs needed by: ♦ Meetings, Sen. Past Pres., Membership. (Street, Abramo, LaSala)

2) Review by all officers of present document. i.e. red line version.

♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ Target: ♦ 9/1/2005 (Inputs and feedback back to Dennis).

3) Review by AdCom members with feedback to Dennis by Sept 1

♦ 4) **A must!** ♦ The RS needs to decide how we are going to change even staying as a Society. ♦ Change is needed to sustain and grow RS. ♦ We need to get this resolved so the Ops Manual, Bylaws, and Constitution can be revised to reflect our desires of our org for the future. ♦ Present Ops Manual reflects us as RS is now. ♦ This is a time critical action. ♦

2:15pm ♦ 3:00pm

Suichi Fukuda: Info about the event in Japan in November and other Tech Ops related information

- The Japanese conference is on Schedule. ♦ If there are any additional speakers who would like to speak at the conference please contact Suichi directly. ♦ Hotel Rooms at the conference are relatively inexpensive, at ~100US/night.

3:30pm ♦ 5pm

Loretta Arellano: ♦ Chapters Congress updates

- Jeff Clark of the Boston Chapter presented the working model of the always successful Boston Chapter. ♦ Please contact Jeff at jcclark@fcgnetworks.net for a copy of his presentation.

Jeff Voas: ♦ One more EXCOM in 2005? ♦

- Pending a need we will entertain an EXCOM in the Fall 2005, however presently this is not planned. ♦

All: ♦ New Business/Old Business (e.g., conference in France in 2005)

- Dick Doyle brought an update to the trifold nanotech brochure that can be used to promote nanotechnology. This is attached, i.e. *Brochure_RelNano2005.pdf* for anyone that is interested in spreading the word.

Respectfully Submitted

William R. Tonti
RS Secretary

IEEE Reliability Society Newsletter Submission
from the Boston Chapter
August 2005

The Boston Chapter ended its 2004-2005 season in May with a meeting on *The Reality of Lead-Free Reliability* by Craig Hillman of DfR Solutions. ♦ Dr. Hillman addressed the impact that lead-free soldering materials and processes, which involve higher melting temperatures and reduced bonding strength, will have on common field failure mechanisms. ♦ This talk attracted one of our largest attendances for the season.

Although no technical meetings are scheduled during the summer, the Chapter AdCom is busy planning its 2005-2006 season. ♦ We will begin the season in September with a talk on *Implementing an Electrical Parts Derating Guideline* by Gene Bridgers of Mercury Computer and Results MA. ♦ In October, we will present a Fall Lecture Series on *Simplifying Complex Modeling Using Simulation*. ♦ Other topics we plan to hold meetings on include fault tree and FMEA software, capacitor reliability, six degrees of freedom, and chip-level ESD.

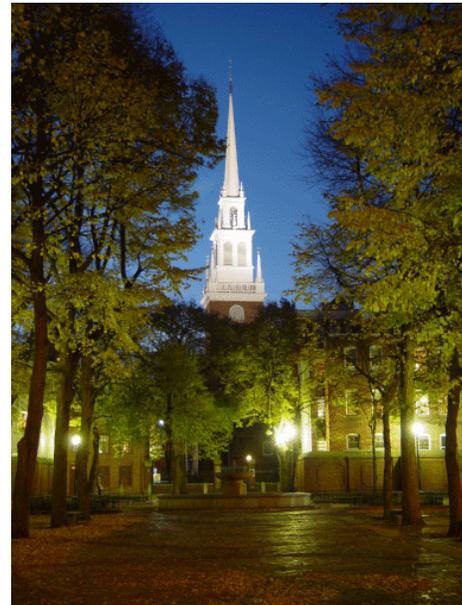
Jeff Clark
Chair, Boston Chapter



Boston Reliability Chapter Report

Jeff Clark
Chapter Chair

July 31, 2005



Overview

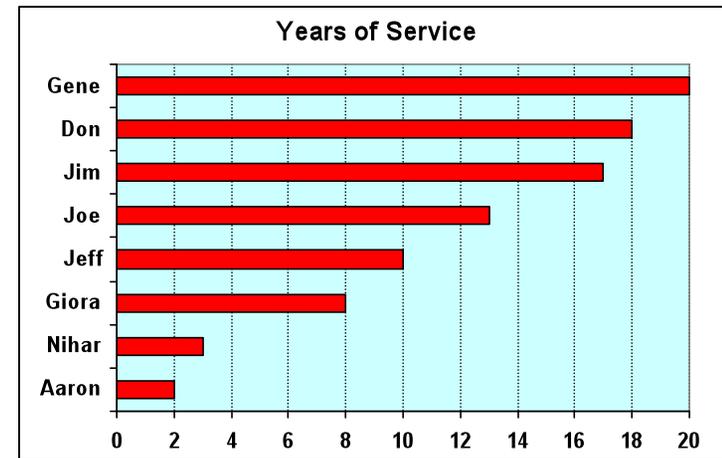


- Established in 1960
- Part of the 5 section Central New England Council
 - Includes Boston, Worcester, Providence, New Hampshire, and Maine
- 240 members including 2 subsections (North Shore & Merrimack Valley)
 - 10% decline in membership since 2003
- Annual events (September – May)
 - 6-7 monthly technical meetings
 - Past Chairs Dinner Meeting (in December)
 - Fall and/or Spring Lecture Series (held over 3 evenings)
- Advisory Committee (AdCom)
 - 8 members
 - 8-10 meetings per year
- Web site: <http://www.channel1.com/users/ieee/home.html>
 - Moving to a new URL in September 2005

AdCom



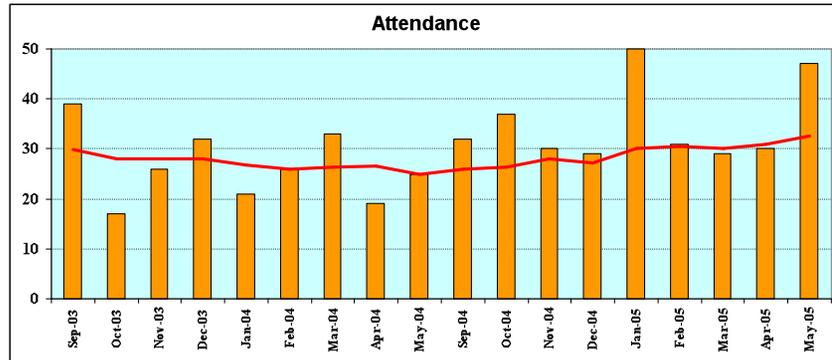
Chair	Jeff Clark	MITRE
Vice Chair	Aaron Demarderosian	Raytheon
Secretary	Joe Dzekevich	Raytheon
Treasurer	Don Markuson	ArrAy
Arrangements	Aaron Demarderosian	Raytheon
Lecture Series	Gene Bridgers	Consultant
Lecture Series	Joe Dzekevich	Raytheon
Publicity	Nihar Senapati	Avici
Web Manager	Jim Fahy	EMC
Member at Large	Giora Kedem	RSA Security



Positions Held

	Chair	Vice Chair	Secretary	Treasurer	Arrangements	Lecture Series	Publicity	Web Manager	Symposium
Jeff	X	X	X				X	X	X
Aaron		X			X				
Joe			X		X	X	X		X
Don	X		X	X			X		X
Gene	X	X		X	X	X			
Nihar						X	X		
Jim	X	X	X		X		X	X	X
Giora	X	X	X			X		X	X

Past Events



Date	Topic	Attendance
10-Sep-03	It Takes Reliability Teamwork to Get Smiling Customers	39
08-Oct-03	Fall Lecture Series: Applied System Reliability Modeling	17
12-Nov-03	Concurrent Product Development and Plant Tour	26
10-Dec-03	Software Reliability Panel Discussion	32
14-Jan-04	Reliability Growth Management in the Medical Diagnostics Industry	21
11-Feb-04	Optimizing Manufacturing Product Life Cycle Activities	26
10-Mar-04	M/A-Com Achieving New Levels through Six Sigma: Case Studies Demonstrating Tools and Applications	33
14-Apr-04	Spring Lecture Series: Building a Reliability Engineering Process to Meet Your Business Needs in Today's Climate of Limited Resources and High Competition	19
12-May-04	Integrated Circuit Reliability in the New Millennium	25
8-Sep-04	In Reliability Technology, NTF is a Four Letter Word	32
13-Oct-04	System Level HALT	37
10-Nov-04	GPS Landing System Availability	30
8-Dec-04	Changing the Reliability Culture of the Army, DoD, and Our National Industrial Base	29
12-Jan-05	Class 0 ESD - A Driver for Transformation in ESD Control Programs in Electronics Assembly	50
9-Feb-05	Electronics Cooling - Trends, Challenges, and Cooling Options	31
9-Mar-05	HALT Frost Risk Due to High Air Flow	29
13-Apr-05	Personal Power and the Art of Perception	30
11-May-05	The Reality of Lead-Free Reliability	47

Issues



- Past Issues (from 2003 Chapter Congress)
 - Support for unemployed Chapter members
 - Rebuilding the Chapter bank account
 - Finding new speakers and places to hold meetings
 - IEEE rules, regulations, and reporting, and lack of communication

- Current Issues
 - No major issues – everything is going well
 - Minor issues
 - Finding fresh topics for meetings and lecture series
 - Rebuilding the Chapter bank account
 - Continuing to recruit and retain AdCom members

Lessons Learned



- Dedicated AdCom members are the key to a successful Chapter
- Lecture series take only a modest effort and generate the most revenue
- Symposia require too much work and produce little revenue
- Plant tours make easy meetings and get high attendance
- Joint meetings can be beneficial if work/expenses are shared
- Website meeting notices and registration greatly reduces workload
- Chapter members want a regular date and location for meetings
- Everyone likes food at meetings

Dallas Chapter

Lon Chase,

Dallas Chapter Chair

The Dallas IEEE Section held its annual awards banquet on April 16, 2005. The Dallas Reliability Society chapter presented the Outstanding Volunteer award to Faye Bilger. Faye was an outstanding volunteer for the Reliability Society Dallas chapter this year. She continues her tradition of superior professional support over the last several years, and has exceeded expectations as always. Faye has energetically taken on Program Chair responsibility for the chapter and made a significant contribution to its activities. Faye is very active as a professional in the community through local school science fair judging, activities through Raytheon's Women's Leadership Network, IEEE in Action and Habitat for Humanity. Faye has become an essential part of the local Reliability Society chapter.



Chapter Technical Program

Title: ?The Facts about Predicting and Managing Software Reliability?

Date: Tuesday, March 22, 2005, 6:30 P.M.

Speaker: Mrs. Ann Marie Neufelder, SoftRel

Program Summary:

Software reliability prediction methods have evolved significantly in the last 2 decades. During the 1970s and 1980s, the prediction methods weren't usable until late in the software development lifecycle when it was too late to make key tradeoffs or improvements.

In the late 1980s and 1990s, one parameter prediction models based on either the Software Engineering Institute Capability Maturity Model level or the industry/application type were developed. While these models were simple to use, they were not conducive to establishing short or medium term improvement scenarios. They are also some accuracy issues because they have so few input parameters.

In 1988, The US Air Force Rome Laboratory produced a publicly available multi-parameter prediction model that was tailored specifically to aerospace and aircraft systems. This model hasn't been updated since 1992 and is

difficult to use for applications that aren't related to aerospace or aircraft systems.

Today, there is multi-parameter prediction model for software that can be used very early in development while there is still time to manage the reliability. Additionally, the prediction model can also be combined with reliability models for hardware so as to allow for management of the system level reliability. This multi-parameter model has been observed to be significantly more accurate than early one parameter models and is also more versatile and more current than the Rome Laboratory model. This model is kept up to date every 18-24 months with real data from several industries including defense, aerospace, space, medical devices, and semiconductor manufacturing equipment. Currently, more than 150 software characteristics have been modeled.

This presentation will highlight how the prediction model works and the data required for it. Most importantly, the speaker will also show some interesting correlations between escaped software defects and certain development, organization and product characteristics. Finally, the presentation will show how the predictive model can also be used to predict the probability of a late software delivery.

Speaker:

Ann Marie Neufelder has been the owner of SoftRel since 1991. SoftRel provides software reliability training, software tools and services. Since 1983, Ann Marie has been applying reliability engineering to real software systems. She has measured the reliability and development characteristics at more than 80 organizations.

Ann Marie's accomplishments include authoring a Military Handbook on Software Reliability with Boeing Corporation in 1997, authoring a Sematech Guidebook on Software Reliability in 1995, Authority a hardback book "Ensuring Software Reliability" in 1993, and receiving a US Patent in 1993 for a prediction model PStiMate patent number #5,473,741 - Method for Determining the Time To Perform Raster Image Processing (RIP).

Ann Marie has numerous publications on software topics which includes: "The Naked Truth about Software Engineering", "The Facts about Predicting Software Defects and Reliability", "How to Measure the Impact of Specific Development Practices on Fielded Defect Density", "How to predict software defect density during proposal phase", "System and Software Reliability and Assurance Notebook" and "Tactical Software Reliability".

Ann Marie resides in Portland, Oregon but is from Texas and spends a significant amount of time in the Dallas, Texas area with her husband Tom and daughter Rachel.

Title: ?Factors Influencing the Occurrence of Black Pad Defect?

Date: Tuesday, April 19, 2005, 6:30 P.M.

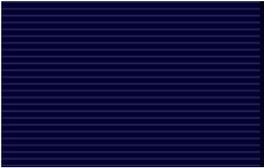
Speaker: Jodi Roepsch

Program Summary:

Recent studies of PWB's and components with the ENIG plating stackup indicate there are many factors that influence the occurrence of black pad defect. Such factors include pad geometry, copper surface roughness, solder mask, phosphorus content, stress and nickel grain structure. Total stress in the plating, which results from a variety of sources including applied stress, phosphorous content and grain structure, plays a very significant role in black pad formation. Because the effect of these stress related factors is cumulative, it can be misleading to consider the impact of factors independently of each other. This presentation will detail the influence each of these factors has on the formation of black pad defect.

Speaker:

Jodi Roepsch is a Senior Failure Analysis Engineer with honors for Shared Services Failure Analysis Lab. She has been with Raytheon, formerly Texas Instruments, since 1996. She has a Masters Degree in Materials Science from the University of North Texas. She has also been certified as a Six Sigma Specialist. In recent years, Jodi has contributed to many publications/presentations pertaining to the preparation and characterization of aerogels for use in the semiconductor industry, failure analysis of components, PWB's and materials. Jodi's main job function is to support internal projects within Raytheon by performing failure analysis for production and field returns as well as analyses for research and development. The main tool used for these analyses is SEM/EDS. Jodi also holds the position of Safety Coordinator/Chemical Hygiene Officer. She holds memberships to ASM, IMS, SMTA, MSA and TSM. She currently is Program Chair for the Texas Society for Microscopy.



Send questions or comments to [Webmaster](#), IEEE Reliability Society.
© Copyright 2005-2010, IEEE | [Nondiscrimination Policy](#)



- Useful Information
- Transactions on Reliability
- Reliability Training
- Discussion Forum
- Job Postings & Resumes
- What is Reliability?
- Bylaws & Constitution ▶
- Chapters, Committees & Officers ▶
- Annual Technology Report
- Reliability Society Newsletter
- RS Blog
- RS LinkedIn
- Site Map
- E-mail IEEE RS Web Master
- JOIN NOW!**

Tech Ops Committees

Status of Tech Ops technical committees:

Technologies:

- | <u>Name</u> | <u>Chair</u> |
|-------------------------------|---|
| 1) Reliability Design | vacant |
| 2) Software Reliability | Sam Keene s.keene@ieee.org |
| 3) MicroElectronics | vacant |
| 4) Human Interface | Ken Lasala: k.lasala@ieee.org |
| 5) International Reliability | Joe Fragola fragola@prodigy.net |
| 6) Warranty | Judith Koslov Judith.Koslov@Sun.com |
| 7) Testing and Screening | Anthony Chan h.a.chan@ieee.org |
| 8) Standards and Definitions | Y. Lord yvonne.lord@ngc.com /
T. Brogan Thomas_L_Brogan@raytheon.com |
| 9) CAD / CAE | vacant |
| 10) Mechanical Reliability | Dick Doyle ddoyle@cts.com |
| 11) System Safety | Takeshia Khoda kohda@vib.kuaero.kyoto-u.ac.jp |
| 12) Assurance | James Bret Michael bmichael@nps.navy.mil |
| 13) Six Sigma Reliability | Sam Keene s.keene@ieee.org |
| 14) Maintainability | Stefan Mozar s.mozar@ieee.org |
| 15) Emerging (new) Technology | vacant |

Systems:

- | | |
|---|---|
| 16) Aerospace and Defense | Lon Chase l.chase@ieee.org |
| 17) Automotive | Guangbin Yang gyang1@ford.com |
| 18) Information Technology & Communications | vacant |
| 19) Energy Systems | Mark Lively MbeLively@aol.com |
| 20) Medical | Patrick Corcoran patcorkshome@yahoo.com |
| 21) Consumer Electronics | Fred Schenkelberg fms@hp.com |
| 22) Sensors | Ken Lasala (acting) k.lasala@ieee.org |
| 23) Industrial Systems | Hiroshi Yajima yajima@sdl.hitachi.co.jp |

IEEE Transactions on Reliability, Special Issue on Reliability Studies on Nanotechnology

Guest Editors: J.-C. Lu, W. R. Tonti and S.-L. Jeng

- Useful Information
- Transactions on Reliability
- Reliability Training
- Discussion Forum
- Job Postings & Resumes
- What is Reliability?
- Bylaws & Constitution
- Chapters, Committees & Officers
- Annual Technology Report
- Reliability Society Newsletter
- RS Blog
- RS LinkedIn
- Site Map
- E-mail IEEE RS Web Master
- JOIN NOW!**

AIM

Over the past two decades, the ability to measure and manipulate matter at the scale of atoms and molecules has led to the discovery of novel materials and phenomena. These advances underlie the multidisciplinary areas of research and development known today as nanotechnology. Now, nano-technology has been recognized as a revolution that will impact virtually every sector of our economy and our daily lives. In the nano era, device sizes will be in the range of several nanometers, leading to a potential for high degree of failures, due to (i) special physics and chemistry properties of materials in nano scale, (ii) transient faults resulting from reduced noise tolerance at reduced voltage and current levels in device or system design, (iii) faults due to ageing in the processes of using molecular and other techniques for creating nano-devices, and (iv) manufacturing defects.

Scope

Contributions should discuss the application of reliability methods in nanotechnology research. Interdisciplinary papers are particularly welcome. Possible topics of applications, within this scope, include but are not limited to:

- ? Reliability of nanostructured materials
- ? Reliability design in nanoscale products and systems
- ? Reliability testing and failure-mode analysis for nano-devices and systems
- ? Reliability, analysis and fabrication of Self-Assembled-Systems
- ? Aging, degradation, failure-rate, reliability models for nano-devices and systems
- ? Lifetime assessment techniques of nanoscale products
- ? Manufacturing quality issues related to reliability of nano-products
- ? Reliability standards for nanoscale products and systems
- ? Trade-offs between design, reliability and performance of nanoscale products
- ? Reliability prediction and assurance considering variations in device manufacturing performed by different supply-chain organizations.

Submission Guidelines

Papers must be submitted to the **guest editor** J.-C. Lu at JCLU@isye.gatech.edu

Although there is no restriction on length, we would prefer shorter papers (20 pages or less) to longer ones, for the sake of greater diversity and more thorough reviewing. Authors are therefore encouraged to be as concise as possible.

Electronic submissions are encouraged, and may be sent as one email. The message should contain the whole paper in PDF or Word. Authors who cannot meet these requirements should submit five hard copies by post instead.

All submitted papers will be refereed according to the usual *IEEE Trans. on Reliability* refereeing process.

To aid planning and organization, we would appreciate an email or a letter of intent to submit a paper (including author information, a tentative title and abstract, and an estimated number of pages) as early as possible.

Important Dates

Official announcement of call-for-papers in the <i>IEEE Trans. on Reliability</i>	June, 2005
Letter of intent	September 1, 2005
Submission of papers:	May 1, 2006
Invitation for paper revision	August 15, 2006
Possible second revision	November 30, 2006
Notification of acceptance:	January 5, 2006
Delivery of final LaTeX or Word file:	January 30, 2007
Publication of special issue:	June, 2007

Guest Editors' Addresses

Dr. Jye-Chyi Lu
 Georgia Institute of Technology
 School of Industrial and Systems
 Engineering
 765 Ferst Drive
 Atlanta, GA 30332-0205, U.S.A.

Dr. William R. Tonti,
 IBM Microelectronics
 1000 River Street
 Essex Junction, VT 05452
 M/S 861-H
 802 769 6561



phone: 404-894-2318
fax: 404-894-2301
JCLU@isye.gatech.edu

wtonti@us.ibm.com

Dr. Shuen-Lin Jeng
Tunghai University
Dept. of Statistics
No. 181, Sec. 3, Taichung-kan Rd.,

Taichung, Taiwan, R.O.C. 407-04
phone: (886) 4-23590206 Ext 10
fax: (886) 4-23594710
sljeng@mail.thu.edu.tw

Send questions or comments to [Webmaster](#), IEEE Reliability Society.
© Copyright 2005-2010, IEEE | [Nondiscrimination Policy](#)

ARC05

Asian Reliability Conference
2005

Saturday, November 19, Tokyo

Shuichi Fukuda

Getting to your Hotel from the Airport

- Best way (by airport bus)

<http://www.limousinebus.co.jp/e/>

(door to door) Around US \$30

- Second Best (by airport passenger train)

<http://www.jreast.co.jp/e/nex/>

(Airport to Shinjuku Station. Then take a cab to the Hotel (5 minutes).

Shinjuku Station is such a hustle and bustle station. It is not easy to carry your luggage through the crowd: 2 million passengers a day!)

Hotel and its Area

- Shinjuku Area Guide

<http://www.japan-guide.com/e/e3011.html>

<http://www.tokyoessentials.com/shinjuku.html>

- Hotel

Shinjuku Washington Hotel

<http://www.shinjyuku-wh.com/index2.html>

Shinjuku

24 hour city. Does not sleep

Many hotels, department stores, souvenir shops, restaurants (all kinds), Tokyo Government Office, Japanese Garden, If you name it, it is probably there.

Can go to any place in Tokyo or around Tokyo from there by trains, by subways (I I don't know how many trains and subways)

You don't have to rush back after the meeting to buy things to bring home.

You would realize what Japan is really producing is people. People, people everywhere. You have to learn how to "navigate" through people. It is a hustle and bustle city.

Don't be the first to get on the train. You will be carried to the end of the line. If you would like to get off where you would like to, be polite and be the last to get on. Then you can get off at your station. You may learn why Japanese are so polite.



Shinjuku Washington Hotel

**Next to Tokyo Government
Office**

Direct Airport Bus

(2 hours from Narita)

**Direct Narita Express Train
(NEX) to Shinjuku Station**

(1 hour and a half)

**(5 minutes by cab from
Shinjuku Station to the Hotel)**

Shinjuku is a 24 hour city.

**Shops, Restaurants, etc within
walking distance**



Single Room US \$70-80
Shinjuku Washington Hotel

Conference Site:

The University of Electro- Communications

- Getting There from the Hotel
by commuter train (Keio, private line)
<http://www.keio.co.jp/english/index.html>
15 minutes by special express or express
(no additional charges) from Shinjuku
Station to Chofu Station
5 minute walk from Chofu Station



The University of Electro- Communications



Morning Program

- Date: Saturday, November 19, 2005
Morning: 9:30 am to 12:30 pm
- 3 Parallel Sessions
Software, System, Device
Registration fee: about US \$ 100
Students free
- Invited Speeches
- 45 minutes x 4 speakers
- (2 US and 2 JP speakers)

Afternoon Program

- Date Saturday, November 19,
Afternoon: 2pm to 5pm
Registration fee: about US \$100
- 3 (or 6) Tutorials
Software, System, Device
Registration fee: about US \$100

Program

Japanese speakers

- **Prof. Kazuyuki Suzuki, Chair, IEEE JP Chap on Risk**
- **Prof. Toshiyuki Inagaki, Immediate Past Chair, IEEE JP Chap on Risk**
- **Prof. Hideo Nakamura, President of REAJ, Reliability Society of Japan (on Railroad Reliability)**
- **Prof. Akihiko Masuda, Immediate Past Chair, IEICE Reliability Committee on Service Reliability)**
- **Prof. Koichi Suyama, Immediate Past Secretary, IEICE Reliability Committee on System Reliability)**
- **Looking for speakers in device area**

Rooms : Reserved and For Free

2 rooms (with 100 capacity)

with projector, video and mike

1 room (70) with 70 PCs, projector and mike

1 room (70) with projector and mike

1 room (50) , conference style, projector

1 room (30) conference style, projector

1 room for secretariat

1 room for serving coffee and tea

Supporting Staff

- 3 Young Associate Professors (fluent in English)
- 30 students
Volunteers

They work for free

Supporting Societies

Financial Support (Organizer)

- IEEE RS Japan Chapter
 US \$ 2000 for 6 US speakers
 accommodation for one night, other
 arrangements

Technical Support

- Institute of Electronics, Information and
 Communication Engineers, ESS Society
- Reliability Society of Japan

US speakers' accommodations

Partly paid by IEEE RS Japan Chapter
(one night)

Other nights will be covered by the registration fees of ARC05 meeting
and tutorials

Note: It would be difficult to cover air fares of US speakers.

But other tutorials can be arranged either on Friday or on Monday for
you to get money for the air fare

Presumably, it would cost something around US \$1000 round trip
(economy class)

in November from the West Coast to Japan. November is a slack time
for airline business in Japan. But it is close to Thanksgiving, so I
would recommend you book early.

Friday, Nov. 18

Lecture: Security by Jeff Voas

- Place: Institute of Information Security,
Next door to Yokohama Station
(City of Seaport)
- Dean Prof. Hidehiko Tanaka
Immediate Past Chair of Graduate School of
Information Science, University of Tokyo be the
host.
- (President) Prof. Shigeo Tsujii (Authority on
Cryptography)

Friday, Nov.18

Other tutorials

(to raise money for travel and accommodation expenses)

may be arranged in Tokyo or Yokohama

(If Yokohama, we could arrange a dinner cruise around Port of Yokohama. If we can make money from tutorials,

all expenses will be covered. If not, this will be on your own, if held.)

Dick Doyle (interested in holding tutorial either on Friday, Saturday or Monday)

Sam Keene (interested in holding tutorial either on Friday, Saturday or Monday)

Jeff Voas (Friday afternoon. Institute of Information Security Meeting. Prof. Tanaka will be the host)

Sightseeing

- **Sunday One Day Trip**
Bus to Nikko
(Nikko is
Kekko (Japanese word Excellent))
to Hakone (near Mt.Fuji)
for sightseeing Tokyo
Departs from Keio Plaza Hotel
(Luxurious Hotel next door: US \$ 300)

Tips for Your Travel

US flights arrive in the afternoon or late evening

You leave US in the afternoon (ex. CA) and you will arrive the next day in the afternoon or late evening

US flights leave in the afternoon or late evening and arrive on the same day in the morning (ex. CA)

Travel Planner

- Lv. US Wednesday PM (Afternoon)
- Ar. JP Thursday PM
- Tutorial or Sightseeing Friday
- Speech and Tutorial (ARC05) Saturday
- Sightseeing Sunday
- Lv. JP Monday PM
- Ar. US Monday AM (Back to work)

Travel Expenses

US \$1000 (air) and US \$80 X 4 nights (US \$ 320) =>

Minimum US \$ 1500 (airport bus, etc included, Sightseeing and dinners excluded.)

US \$2000 will be reasonable even if you go the budget way

Addition 1

Hopefully ATR last year is completed by mid-August and distributed at the meeting

Request Chairs of Technical Committees to prepare flyers and distribute it at the meeting to promote their activities.

The flyer is requested to submit in e-form so that we can distribute them before and after the meeting



- Useful Information
- Transactions on Reliability
- Reliability Training
- Discussion Forum
- Job Postings & Resumes
- What is Reliability?
- Bylaws & Constitution ▶
- Chapters, Committees & Officers ▶
- Annual Technology Report
- Reliability Society Newsletter
- RS Blog
- RS LinkedIn
- Site Map
- E-mail IEEE RS Web Master
- JOIN NOW!**

2005 Integrated Reliability Workshop

IEEE Integrated Reliability Workshop 2005 to be held during Oct 17-20, 2005 at Stanford Sierra Camp, Fallen Leaf Lake, CA.

The Integrated Reliability Workshop focuses on ensuring semiconductor reliability through fabrication, design, testing, characterization, and simulation, as well as identification of the root cause defects and physical mechanisms responsible for reliability problems. It provides a unique environment for understanding, developing, and sharing reliability technology for present and future semiconductor applications as well as ample opportunity for discussions and interactions with colleagues.

Hot reliability topics for the workshop include: high-k and nitrided SiO₂ gate dielectrics, product reliability and burn-in, NBTI, Cu interconnects and low-k dielectrics, reliability modeling and simulation, SiGe and strained Si, III-V, SOI, optoelectronics, single event upsets, and reliability assessment of novel devices and future "nano"-technologies

Sincerely,

krish

Krish Mani
Chief Technology Officer
C M Innovations Inc.,
1800 Wyatt Dr Suite 8 & 9
Santa Clara CA 95054

Phone: 408 333 9222
Fax: 408 988 4100



2005 IEEE EMERGING TECHNOLOGIES CONFERENCE (ETC 2005)

September 9-10, 2005

Holiday Inn Select, Richardson, TX

1655 North Central Expressway, Richardson, TX 75080. Tel: (972) 238-1900

www.ieee-etc.org

Chairman

John South, CISSP
Alcatel North America
John.south@alcatel.com
(972)519-2442

Technical Committee Co-Chairs

Y. Alp Aslandogan
University of Texas - Arlington
alp@cse.uta.edu

Rujing Tang, Motorola
rtang1@motorola.com

Business Committee Chair

Jeff Van Cura, Alcatel
Jeff.Vancura@alcatel.com

Security Chair

Kris Herrin, CISSP, Intervoice
Kris.Herrin@intervoice.com

Secretary

Comelius Van Rensburg, Samsung
cadvanren@ieee.org

Finance

Alan Davis, UT Arlington
adavis@uta.edu

Publicity & Exhibitor Chair

Valerie Pelan, Integrated Focus
valerie@integratedfocus.com

Local Arrangements

Paul Lakhanpal, Telecomm Planning
Group (972)387-9243
npaullak@att.net

Registration

Jerry M. Grimm, (972) 423-5480
jgrimm@geo-marine.com
Ken Tallent, Raytheon
registration@ieee-etc.org

Web Masters

Ken Tallent, Raytheon
Anoop Viswanath, Cingular
Anoop.Viswanath@cingular.com

Publications

Mike Eberly, Raytheon

At Large Members

Dr. Don Butler (past Chair)
UT Arlington
Vasant Prabhu, UT Arlington

Website

www.ieee-etc.org

Request for Information

info@ieee-etc.org

In cooperation
with



From the heart of the Telecom Corridor® area, the Dallas Section of IEEE brings together international experts, educators, and colleagues for a two-day symposium of workshops and technical sessions to address emerging technologies and their applications. This year's focus areas include security, nanotechnology, mobility and electronics in biomedicine.



Roman Kikta

Keynote Speaker to ETC 2005

Roman Kikta is the Managing Partner and cofounder of Genesis Campus, an early stage venture capital fund, incubator and accelerator based in Dallas Texas. A wireless industry visionary, Roman has held key management positions in product planning & development, marketing, strategic planning and business & market development with leading wireless industry companies: Nokia, Panasonic, GoldStar, and OKI Telecom. He is also a co-founder of SpeedLink, and Global Wireless Holdings (GWH). Roman is an acknowledged expert on market trends and on the role of technologies on society. As a product planner, he is credited with developing several wireless industry "firsts" and is regarded as a wireless industry pioneer. The cellular industry firsts included: pay-phone, cellular PBX and voice recognition dialer, in addition to several generations of mobile, transportable, and portable phone designs. He also led the initial product launch of PCS in the US. Roman is the co-author of four books published by McGraw Hill including "Wireless Internet Crash Course," "3G for Wireless Demystified," and "Delivering xDSL." In 2000, he was honored with the prestigious Fellow award by the Radio Club of America for his contributions to the wireless industry and was named a 2001 High Tech All-Star by DFW Tech Biz. Roman is a frequently invited speaker on future wireless technologies, innovation, entrepreneurship and venture capital issues in the United States and internationally.



Prof. Corey Carbonara's Tutorial on Immersive Environments, Gaming, Fluid Learning, Fluid Advertising, and the Digital Home.

The Emerging Technology conference is more than just an opportunity to be exposed to a number of exciting new technologies. It is also an educational experience that is worth far more than the registration fee. The Friday tutorial will bring the future of immersive environments and gaming to light with Dr. Carbonara from Baylor University, discussing integration with wireless sensor networks, fluid learning, fluid advertising, and interfaces for health and entertainment in the digital home. Additional highlight topics of the conference include wireless security, nanotechnology and electronics in biomedicine and environment. (Tutorial: Friday 1-4pm.)

Early Registration: \$65 (By Sep. 7th). At the door: \$85

Students & IEEE Lifetime Members: \$35 (*) Fee includes the Tutorial

Technical Sessions

- Sensor Networks, Airborne Networks, Wireless Security, Dependable Networks, Cell Phone Viruses, Channel Access, Novel Network Protocols, 3G/4G Systems, Fixed Broadband Wireless Access, Internetworking.

- Nanotechnology, Nanoelectronics, Universal Memory, Electronic Prosthetics, Biomechanics, Silicon Photonics.

- Channel Access, Identity Management
- Ultra Low Power Processors, Power System Engineering, System Performance Engineering.

- Mobility, Context Awareness, Location Management, Multimedia QoS

Business Sessions

Voice Identification Applications: Hear from Intervoice on the latest applications and technology for using voice identification.

Nanotechnology: Industry leader Jim Von Ehr explains how these miniature marvels will fundamentally change everyday life.

3D Imaging: As seen on WFAA - Michael Huebschman and Harold Garner of UT Southwestern will demo and discuss the emerging technology behind 3D Imaging and how it can be used in soon to come "futuristic" applications.

Emerging Network Solutions: 2 local success stories (Covaro and WhiteRock) explain their solutions and demonstrate why investment and innovation are alive and well in Telecom Corridor.

Special Panel: Investing in Technology Industry Experts from UTD, Genesis Campus, Incucomm, and STARTech Early Ventures share their thoughts on the health of technology investing today.

EXHIBITS

Exhibitor Tables are available. Please contact Exhibitor Chair Valerie Pelan at 972-818-6165 or

valerie@integratedfocus.com