IEEE Reliability Society Newsletters Vol. 50, No. 1, January 2004

President's Message

Dear Reliability Society Member:

I opted to delay writing my first message of 2004 for the e-*Newsletter* until the Society Administrative Committee (ADCOM) held it's first 2004 meeting at the annual Reliability, Availability, and maintainability Symposium (which this year was held in Los Angeles in late January). That meeting has just occurred and I now wish to inform you as to where the Society stands on a variety of issues.

First, as you know, the Institute and its Societies have had a rough financial ride over the past 2-3 years. The Institute's surpluses dissolved, and the Societies were forced to make up the difference, thus diminishing their reserves.The problems of the stock markets were highly to blame for this situation.

At the beginning of 2003, I was called before the Technical Advisory Board Financial Committee (TAB FINCOM) to present an outlook for the Society's 2003 financials. That presentation showed an expected loss of nearly $190k for our Society.I informed the TAB FINCOM that I believed that we could cut that loss down to somewhere around $150k, with additional savings throughout the year that could drive it even lower, but not much under $120k.
The news that I have now to report is that 2003 will likely be a surplus year. The final numbers for 2003 are still being tabulated and the amount of surplus is TBD, but it could be substantial.The reasons for this are two-fold:
(1) The Institute made a net gain of nearly $20M in 2003, and that money must be dispersed back to the Societies (we own between ½ and 1 percent of that $20M), and
(2) your ADCOM continued to cut costs throughout 2003 to drive spending down on every item in the Society's budget no matter what the budget said was allowable.

Finally, while on the topic of finances, 2004 looks extremely solid given that we are not expecting any 2004 infrastructure charges from the Institute. We could be looking at surplus of $100k or more. I cannot predict the eventual outcome, but that is a possibility. And that is a far cry from the approximately $250k loss we incurred in 2002.

Secondly, and as I mentioned last year, the Society was hoping to get the Institute to fund new initiatives within our Society. A new initiative is simply a project that has a product deliverable that the Society can then sell. The Institute puts up all of the seed money, i.e., they take all the risk, and if the new product sells, the Society reaps all profits after the seed money is returned. Matt Loeb, Staff Director for Corporate Strategy and Communications of the Institute, attended our LA meeting and presented the Society with the opportunity to be the recipient of two new initiative awards for 2004.

One deals with e-online education/learning in the area of reliability technology, and the other is to develop a Society cyber-security product. That product should be attractive to organizations that are experiencing cyber-trust concerns.Both of these options are very exciting, and the fact that the Institute brought them to us shows the willingness of the Institute to: (1) work with smaller societies, and (2) allow smaller societies to move into new areas of interest which, in our case, is cyber-security.That second option opens up a completely new market for the Society, and it provides new technologies for our current members that may be experiencing security-related problems in their jobs.

In terms of our seizing these new opportunities, the ADCOM is quickly looking into what we need to do to proceed with the first initiative concerning e-online education/learning in reliability technology. We are also determining how best to spearhead the cyber-security opportunity. That latter opportunity is new for us, and we must find the correct people to participate if we do opt to go for it.In my next e-*Newsletter*, I'll let you know what we were able to accomplish on these new opportunities.

Third, Matt Loeb also has offered free help from his staff in Piscataway to revamp our website. Matt has offered free usage of an existing template that the Power Society employed. Our role is to provide his personnel with our information content.His personnel will make an initial pass at putting our information into that template. From there, it is our responsibility to take control of the site but, again, this was a terrific offer that we cannot afford to pass up.

Fourth, as most of you probably know, your 2004 IEEE renewal packet did not mention that you would receive the RAMS and IRPS proceedings for 2004 as part of your membership benefits.What was supposed to be mentioned in that renewal packet was that those two products were options, each of which had differing costs. I am pleased to announce that the Reliability Society and the Institute have come to a deal for 2004. Those two products will be uploaded to the *IEEE Xplore* system (which, by the way, is not intended to host proceedings) and you will be able to access those two proceedings at no-cost in 2004 because of this mix-up.In 2005, these two products will be offered as purchasable options.

In closing, I hope this gives you all some information concerning the changes that have rapidly occurred over the past 12 months. The Society is gaining momentum due to a terrific set of ADCOM volunteers and other volunteers, Society cost-savings, a healthier stock market, and cost-savings at the Institute. All four of these events that came together have greatly improved our future.And finally, I look forward to creating new, timely products that the Society can be proud to market to members and non-members alike.We know you look to the Institute and its societies for the best technical information available, and we hope you believe that we are doing our best.

Happy New Year!

Jeffrey Voas

2004 IEEE Reliability Society President

Top

From the Editor

Welcome to the first IEEE Reliability Society e-Newsletter. As in the past with the hardcopy 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 l.chase@ieee.org.

Newsletter due dates:

Issue:	**Input Due Date:**
January	December 1
April	March 1
July	June 1

October September 1

Lon Chase
Editor
l.chase@ieee.org.

Top

Reliability Society Award Announcements

The Reliability Society is proud to announce the awardees of our two most distinguished awards. These awards were announced and presented at our AdCom banquet, held at the Los Angeles Airport Marriott, on January 24, 2004, prior to the start of RAMS symposium.

IEEE Reliability Society Lifetime Achievement Award -- Dr. Ralph A. Evans

Dr. Ralph A. Evans

The 2004 IEEE Reliability Society Lifetime Achievement Award is presented to Dr. Ralph A. Evans. He embodies the principles and goals of the Reliability Society. Dr. Evans is an icon within the reliability community and has been an essential member of the Reliability Society for well over 30 years.
Among the many accomplishments of Dr. Evans:

* Fellow of both the IEEE and ASQ.
* Recipient of the initial Ralph A. Evans Award from ASQ-ED
* Managing Editor, IEEE Transactions on Reliability; 1986 to 2003
* Editor, IEEE Transactions on Reliability; 1967 to 1985
* Editor, Proceedings of the Annual Reliability and Maintainability Symposium, 1974-2001
* Founding Editor; ASQC Reliability Review
* Receipt of the Best Tutorial Award from RAMS
* Registered Professional Engineer

Dr. Evans has made so many accomplishments and contributions to the reliability field, they are just too numerous to list completely. There is no individual who has contributed more to the Reliability Engineering discipline over his lifetime than Dr. Evans.

Read more on Dr. Ralph Evans award from the RAMS Banquet including remarks by Ralph's daughter Ann Evans - Award Write-up.

IEEE Reliability Society Engineer of the Year Award -- Dr. John D. Musa

The 2004 IEEE Reliability Society Engineer of the Year Award is presented to Dr. John D. Musa. A creator of Software Reliability Engineering (SRE), Dr. Musa is recognized as the leader in reducing SRE to practice. He provided the foundation for CASRE, a software reliability engineering program that estimates failure intensity from failure data. He was a major participant in the production of the most successful of RS videos: "Developing Reliable Software in Shortest Cycle Time".

Dr. Musa pictured with Jeff Voas, Dennis Hoffman, and Tom Fagan

Dr. Musa exerts influence in the software reliability field through his seminars, training videos, and conference contributions. Dr. Musa has the experience as a software development practitioner and manager on which to base this influence. He is the principal author of the pioneering book, "Software Reliability: Measurement, Prediction, Application", and the author of "Software Reliability Engineering". Dr. Musa is the co-developer of the Musa-Okumoto model. He is a founder of the IEEE Technical Committee on SRE. Dr. Musa was elected an IEEE Fellow in 1986, and was recognized in 1992 as a leading contributor to the software testing technology. His leadership has been noted by each edition of Who's Who in America since 1990 and by the American Men and Women of Science.

Top

Chapter Activities

Baltimore

Cleveland

Dallas

Denver

Japan

Santa Clara Valley

Singapore

United Kingdom

Top

Adcom Activities

January Meeting Summary

The annual awards banquet was held January 24th in Los Angeles. Awards were presented and new members of the AdCom were welcomed.

Dave Franklin is presented a service appreciation plaque (for service as the Newsletter Editor for many years) by Tom Fagan while Jeff Voas looks on.

Newly elected AdCom members Ted Freeman, Lou Gullo, Judy Koslov, Jim McLinn, and Bob Stoddard.

Society Officers Ann Miller, Sam Keene, Marsha Abramo, Jeff Voas, Bill Tonti, Christrian Hansen, and Richard Kowalski.

Top

Technical Operations

News from Technical Operations (HTML version)
News from Technical Operations (Microsoft Word Version)

Software Reliability and 6 Sigma Technology Report

Top

Announcements

Top

The Reliability Society►►s Lifetime Achievement Award►►

Re-Presented At RAMS Banquet

Our RS Lifetime Achievement Award was re-presented at the RAMS Banquet as Ann Evans, one of Ralph Evans daughters, was present to receive a RAMS Honorary Past General Chairman plaque as well as our Society Award.

Tom Fagan, RS RAMS BOD Representative and a Past President of RS, introduced the RS Lifetime Achievement Award and its recipient with these words:"Dr. Ralph A. Evans is a legend in his own time.A true Icon in the field of Reliability, Ralph has been a major factor for well over 30 years (32) in the evolution of reliability technology.Many of you have read the recent reprints of his Editor's columns in the IEEE RS Transactions and his insights, perceptions, and observations are every bit as valid today as when he first wrote them in the 60' and 70's.His list of accomplishments is far too long to list all of them but some key ones are as follows:

- Fellow of both the IEEE and ASQ.
- Recipient of the***initial*** Ralph A. Evans Award from ASQ-ED
- Managing Editor, *IEEE Transactions on Reliability*; 1967 to 2003
- Editor, *Proceedings of the Annual Reliability and Maintainability Symposium*, 1974-2001
- Founding Editor; ASQC Reliability Review
- Receipt of the Best Tutorial Award from RAMS

As a fitting wind up to a great career of support to the IEEE RS, Dr Evans is presented the Reliability Society Lifetime Achievement Award and he was made an Honorary Past General Chairman (a Past Great) of the Annual Reliability and Maintainability Symposium (RAMS).Honors which he truly deserves."Tom. Fagan and Dennis Hoffman, Jr. Past President, presented Ralph's Lifetime Achievement Award plaque to his daughter.Norman Butler, 2004 RAMS General Chair, presented the Honorary Past General Chairman plaque.

Remarks for Ralph A. Evans by one of his daughters, Ann M. Evans:
"Thank you for honoring my father.I'm honored to represent him.Although he is physically not able to be with us tonight, he is here in spirit.I don't want to give you the wrong impression about his health; however, he still walks Cindy, their Border Terrier, daily.In fact, the veterinarian just told him to stop walking the dog so darn much.Her arthritis can't take it, but then my Dad's a former long distance runner.I certainly think he ran the distance with RAMS.
Most of you who know my dad know that he's a character.In fact some have called him a curmudgeon.What you may not know is how hard he worked, and how much of himself, he put into both RAMS and Transactions.He would never tell you that.

When I asked him what to say to you tonight, he said "thank them.Tell them I enjoyed the people with whom I worked.Tell them I did like to talk about reliability in the real world, that's what the editorials I wrote were all about -- the rest was what I call correct but irrelevant arithmetic.""I wouldn't say much of anything," he added."A lot of other people helped on the stuff I did, and besides, not more than ten percent of the people there know who I am."He said, "I appreciate the award so very much."There was silence for a moment."You know," he said, "I used to give a tutorial at the Symposium about the real world and behaving in it.I used to ask people, 'how many of you have ever hit your thumb with a hammer?'"

My Dad and his wife Catherine, who also sends her greetings, live in Durham, North

Carolina, not far from my step sister, Mary Wynne.Mary worked with my Dad for the past 15 years.When I asked her for her reflections, she laughed and said in her Southern drawl, “Oh, you mean the things Ralph wouldn’t talk about?”“He’s been corporate memory for the Reliability and Maintainability Symposium (RAMS) he’s been there so many years.He’s the only person who never rotated around through all of the committees with an eye toward being the general chair.”She said, “What Ralph did with Transactions is like following technology from the days author’s had typewriters, compositor’s did the footers, and the printer shrunk copy to the appropriate size.”

I don’t think my Dad would mind if I told you, since it’s so close, February 2nd, he will be 80 years old.

In the years when PC’s were being developed my Dad bought a machine that was the “front end” of a printer’s compositor that allowed him to control things like column and print sizes.Now mind you, he also understood the content of the papers and edited them thoroughly, but I focus now on the process of production to give you a sense of how much he put into this work.Imagine this large, oyster gray machine which took up half of a room -- my bedroom -- where I spent some long hot summers.

After my Dad left Research Triangle Institute, he set up shop in their two-story, four bedroom house, in the stairwell, on a 50-year old card table and a desk he rigged up out of a wooden board, which sits on boxes of 1987 RAMS proceedings.Eventually the file cabinets and boxes took over the house.From his perch under the stairwell, he began experimenting with electronic files for the prose of the papers.The software conversions were less than perfect, so my Dad ended up re-keying much if not all of the papers himself.The formula’s looked neat on the final page because my Dad rewrote them to fit into the two column format.

Years ago when he needed to write in FORTRAN he got a book and a copy of the program and taught himself FORTRAN.But he loved it.He also loved the international aspect of the journal.He was very aware of the difficulties that people have who write in a second language and live in a developing country, have.No one, except Catherine, will ever know how many hours he spent on these papers.

Behind his tough exterior, his “LITAO” approach – which is Ralph Evans for “life is tough all over,” lies a very caring man.Dad’s goal for the journal was to be clear, concise and correct.These were the words he used.I hope my words tonight have given you a feeling for the man behind Transactions and the RAMS Proceedings.You know, RAMS and Transactions were things my Dad stayed on with long after he dropped everything else.Your acknowledgement of his contributions, therefore, are especially meaningful to him, and to our family.Thank you.”

back

Baltimore Chapter

By Walt Willing, Chapter Chairman

Baltimore Chapter, IEEE Reliability Society, 2003 Activities

The Baltimore Chapter of the IEEE Reliability Society had an interesting year in 2003.Three technical meetings were held, summarized below.Unfortunately (for us) our newly appointed vice chairman, Howard Katz, has decided to retire and will be moving to Florida later this year.We have enjoyed Howard's active participation in the past and he will be sorely missed, but our best wishes go out to him.Our Chairman, Walt Willing, is now on the RAMS Symposium Management Committee, as a Vice Chairman on the Programs Committee.Walt encourages everyone to attend RAMS if you can, if not this year in LA, next year in Washington DC.Walt also attended the July Reliability Society Chapter Chairman's Congress in Manchester NH.

Our technical meetings covered several interesting topics:

On June 13, 2003 we held a Plant Tour of Ohmeda Medical Inc. in Laurel, Md.Ohmeda is one of the principal suppliers of hospital infant warming beds.Howard Katz sponsored the tour, which included a comprehensive product reliability testing facility.The tour was attended by seven members and two guests.

On September 17, 2003 Richard Youngk of the Naval Sea Systems Command (Washington Navy Yard) gave a talk on Automobile Engine Lubrication, discussing the advances in lubrication chemistry throughout the years.Eight members and eight guests attended.The discussion included a lot of questions and discussions with the attendees.

On November 13, 2003, we co-sponsored a meeting with the Washington Area Society of Reliability Engineers and the Washington Chapter of the IEEE Reliability Society.The topic of the meeting was the NASA/NAVY Benchmarking Exchange Program.The speakers wereJim Lawrence and Al Ford of the NAVSEA Submarine Program Office and Dr. Steve Newman, Steve Wander and John Castellano of the NASA Safety and Mission office. Six members and ten guests attended.We hope to sponsor more joint meetings in the future.

The meeting discussion centered on the results of the benchmarking exchange program findings.This exchange program was initiated in 2001 to allow comparison of two similar systems, the space shuttle and the US Navy Submarines.Both of these systems operate in hazardous environments, use complex and dangerous components and perform missions of critical national significance.These systems are also similar since both are mature operating systems and require extensive maintenance to maintain system safety and reliability.

The emphasis of the discussion was on the important concept of safety and the need to create a culture of safety at both the NASA and Navy Submarine organizations.The efforts of NASA on shuttle control are instrumental in helping the Navy to transition safety and reliability management from the old mechanical submarine steering and diving systems to the newer computer (fly-by-wire) systems.NASA benefits from the closed-loop problem solution culture used by the NAVY Submarine programs to improve system reliability and safety.

This NASA/NAVY benchmarking team also played a major part in the Columbia Accident Investigation Board (CAIB) report.It was noted that the CAIB report is available on the web at http://www.caib.us/.

The Baltimore Chapter welcomes participation from its members.If you have any questions or would otherwise like to contact us, please call Walt Willing at 410-765-7372 (waltwilling@ieee.org).We hope to have an exciting year in 2004!

back

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!

Cleveland Chapter

By Vince Lalli, Chair

The Cleveland Chapter had two meetings in the previous period.

PAST MEETINGS

For the March meeting, Clarence Shaw, Senior Chemist, Cleveland Division of Water, gave a talk on “Cleveland Water.” Water samples are collected through out the complete Water System for Chlorine Levels and Bacteria to comply with the Ohio EPA Requirements. The Garrett Morgan Water Plant constructed in the early 1900s and its Remodeling Project were explained. The Water Inlet is located 5 miles out in an orange Intake Crib to avoid pollution near the shore. The other Pumping Stations have their Inlets under water. Clarence has been with the Water Department 32 years. In August 2003, he was elected the Employee of the Month for quality of his work and pride in the job. His talk helped us appreciate the fine quality of Cleveland water.

Our April meeting presentation, “Centennial Update,” was given by Bonnie Smith, Archivist and Historian for Indyne Corporation. Bonnie reported on the activities of the History Office.The office function is to preserve and promote the history of Glenn and preserve historical documentation within the newly established archives. This year is the 100th Anniversary of Wilbur and Orville Wright’s first flight at Kitty Hawk, N.C.The History Office has an active role in the planning and celebrations.A special web site and History Timeline has been built to celebrate the Centennial, and draw attention to the Center’s achievements.Bonnie highlighted upcoming Centennial Celebration events.

CHAPTER ACTIVITIES

We are supporting ’05 RAMS on the Management Committee, with papers, tutorials, and session suggestions. The Chapter Officers are all working to make it a big success.

We are working to get support for AUTOTESTCON in Cleveland. An effective Technical Committee is being organized to get this going. The Chapter would like to bring a major Conference to Cleveland. The City is ready, willing, and able to do the job.

The Assurance Technology Symposium will be held at the Ohio Aerospace Institute in June 2004. There will be presentations, exhibits, and splinter meetings in the two and one half day symposium. An award for the best presentation and exhibit will be given.This symposium provides the Safety and Mission Assurance (SMA) community and Project personnel with a unique opportunity for interchange and interaction on innovative assurance technologies and tools. It promotes dialog and cooperation with the Projects, Centers, and the SMA community.
Overall, here in Cleveland we are having fun staying active and trying to serve the needs of our members.

back

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!

Dallas Chapter

By Greg Breiland, Chapter Staff

Dallas Reliability Chapter activities have been centered around its monthly meetings.At the November meeting, Bill Sterchak, Applications Engineer with Raytheon Network Centric Systems, Texas presented "Tin Whiskers: The Threat, the Risks and Mitigation".Bill presented a history of the problem, industry trends and the approach Raytheon was taking to mitigate its risks.The presentation included a look at collaborative tools that were being used to assess the application specific threat level.

At the December meeting, John Rodriguez, Ph.D. Member, Group Technical Staff-Component Reliability, Silicon Technology Development at Texas Instruments, Texas, presented "Reliability Aspects of Ferroelectric Memories".High-density ferroelectric memory (FRAM) is a candidate technology for applications requiring low power consumption, high cycling endurance and non-volatile data storage.Dr. Rodriguez presented a brief overview of FRAM operation, its reliability challenges and the progress that has been achieved in improving the reliability of these films.

No meeting was held in January of this year, however, a meeting in February is planned with a presentation on "Counterfeit Parts.""Counterfeit" devices have become common in the industry with some estimates ranging as high at 10%.How to identify counterfeit parts, examples of probable counterfeit devices, what to look for and lastly recommended actions to ensure you don't use counterfeit parts will be discussed. General awareness on the part of the Reliability and engineering community should help us minimize the counterfeit related issues.

Back

Denver Chapter

By Sam Keene, Chapter Chairman

In November, John Musa spoke to the Denver Chapter on "Delivering Reliable Software in the Shortest Duty Cycle" in conjunction with the International Software Reliability Engineering Symposium, held in Denver.Dr. Ram Chillarege also spoke on "Orthogonal Defect Classification".Both presentations were very professional and well received.

Back

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!

Japan Chapter

By Toshiyuki Inagak,, Chapter Chairman

The Japan Chapter has been operated by the following officers since January 2003:
T. Inagaki, Professor, University of Tsukuba (Chair)
K. Suzuki, Professor, University of Electro-Communications (Vice Chair)
K. Suyama, Associate Professor, Tokyo Univ. of Mercantile Marine (Secretary)
T. Shimokawa, Professor, Tokyo Metropolitan Institute of Technology (Treasurer)

As Chair, I would like to give you a brief report on our chapter activities in recent years. I have a keen interest in reliability and safety of human-machine systems. It is ironical that high reliability of smart machines can sometimes degrade safety of human-machine systems. For instance, an operator may place too much trust in their smart and “reliable” machines. In such a case, operator’s situation awareness may not be precise enough to cope with dynamic situational changes. There are various factors that may lead to inappropriate trust in machines. Designing safety of human-machine systems is thus challenging in “the age of smart machines.”
I tried to introduce safety related aspects into activities of this Chapter. The following symposia were some of such results:

(a) “Human Intelligence and Machine Intelligence – Their Confrontations and Collaborations in an Emergency” (December 13, 2001):By taking a near-miss incident occurred over Yaizu, Japan in 2001, we discussed aviation safety issues. Dr. Ozeki, researcher of TCAS (Traffic alert and Collision Avoidance System) at the Electronic Navigation Research Institute, Mr. Tsukahara, Captain of Airbus A300-600 at the Japan Air System, and Mr. Kawano, a former air traffic controller, delivered lectures from their viewpoints, and a panel discussion followed. More than 70 people, including airline pilots, aircraft accident investigators, and aviation researchers attended the symposium, as well as reliability and safety engineers in industries. The discussion session with audience came finally to an end an hour later than the originally scheduled closing time.

(b) “Risk Perception and Legal Responsibilities” (December 20, 2002): We had three lectures. Dr. Mikami, Professor of psychology at Toho University talked about difficulties and biases in human risk perception in disastrous situations. Mr. Nishimura, Captain of the All Nippon Airways, described risk-based decision-making and safety control maneuver in critical situations. Dr. Ikeda, Professor of criminal law at Tokai University, explained the fault liability principle and the principle of liability without fault. Researchers and engineers in various industries, including airlines, automobile and nuclear power plants, attended the symposium. The symposium seemed to be successful in demonstrating the need for a new legal system that can take into account psychological aspects and functional limitations of human, characteristics of large technological systems, and their complex interactions.

(c) “Risk Engineering and Security” (October 31, 2003): We had twolectures in this symposium. Mr. Satori, Senior Manager at the Secom Technical Center delivered a lecture on societal changes and security systems. Japan has been recognized as one of the safest countries in the world, which may not be true any more, according to the statistics shown in his talk. Mr. Nakazawa, Chief of the Tokyo Metropolitan Fire Department gave his post-accident analysis of a Korean subway fire. One of his most remarkable contributions was the detailed fault-tree on subway fire. More than 60 people attended to the symposium, and exchanged their views and opinions on risk perception and safety management.

The Japan Chapter established its own web site in 2003 June. The URL of the site is http://www.risk.sie.tsukuba.ac.jp/~inagaki/ieee-reliability/.Both English and Japanese versions are available, though the latter includes a bit more information than the former, such as announcements on seminar lectures, symposia, and conferences organized or

(co-) sponsored by the Japan Chapter. The Chapter web site is also accessible from the Reliability Society's web page.
Our Chapter has newly established the Chapter Awards Program in 2003. The following three categories are available: (a) Best Paper Award, (b) Outstanding Young Researcher Award, and (c) Reliability Engineering Award. The aims of the first and the second categories would be obvious. The third is to promote proper appreciations to contributions in development of devices or systems in attaining high reliability of technological systems.

I am grateful to Miss Megumi Komata at the Secretariat of the IEEE Tokyo Section and Japan Council for her enormous support and advices. Without her help, it would be hard for me to manage our chapter so that it may be beneficial and enjoyable for the members.

Toshiyuki Inagaki, Chair
Japan Chapter
inagaki@is.tsukuba.ac.jp
Back

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!

Santa Clara Valley Chapter

By Alan Wood, Chapter Secretary

The Santa Clara Valley Chapter had an exciting set of meetings during the fall of 2003. Alan Wood made a presentation on “How to Make a CFO Care About Reliability – Life Cycle Cost Models” demonstrating how to show that reliability activities will save money. In September Mike Silverman presented “To CRE or Not CRE?” that explained the Certified Reliability Engineer certification program offered through ASQ. October saw a joint meeting with the Power Electronics Society on “Power Supply Reliability – an Oxymoron?”.Dave Christiansen and Brooks Leman described the important considerations in obtaining a high reliability power supply and how to avoid potential pitfalls. (picture below shows Alan Wood introducing Dave Christiansen and Brooks Leman)

Our 2004 meetings began with our traditional panel discussions on conference papers. In January we had a panel discussion of papers from the 29thInternational Symposium for Testing and Failure Analysis (ISTFA) led by Art Rawers. In February Fred Schenkelberg

coordinated a panel discussion of papers from RAMS. We have scheduled future meetings on moving from ORT (on-going reliability testing) to HASA (highly accelerated stress auditing), lead-free solder reliability, soft errors, and burn-in screening for wearout mechanisms.

For more information on Santa Clara Valley Chapter activities, please visit our web page at http://www.ewh.ieee.org/r6/scv/rs/index.html.

Back

Singapore Chapter

Singapore Chapter

Soon Huat Ong,
Chair, IEEE Reliability/CPMT/ED Singapore Chapter 2003

Below are The Singapore Chapter activities for 2003.

1. Conferences

· IPFA 2003 – Conference scheduled for 7-11 July 2003, was cancelled due to SARS epidemic, but the proceedings published as per IEEE book broker program.

·The Chapter had successfully organized the 5th Electronics Packaging Technology Conference (EPTC 2003) 10-12 December 2003, Singapore. The conference had 150 selected technical papers presented in 28 sessions with 4 parallel tracks. 250 participants attended the conference.

· Looking forward, The Chapter has made all the arrangements to organize the IPFA 04 in July 2004. This will be organized at Hsinchu, Taiwan along with the EDS Taipei Chapter.

2. Technical Seminars

The 3rd Workshop and IEEE EDS Mini-colloquia on Nanometer CMOS Technology (WIMNACT-Singapore) was held on Oct. 15, 2003 in Singapore, organized and sponsored by the IEEE Rel/CPMT/ED Singapore Chapter, and sponsored by the EDS Asia-Pacific Subcommittee of Regions/Chapters and the EDS Headquarters.The Workshop was conducted by Prof. Steve Chung, Dr. Zhou Xing, Dr. KL Pey, and Dr. MK Radkrishanan, Dr. Mitiko Miura and Dr Mansun Chan at Nanyang Technological University (NTU). About 100 participants attended the seminar.

3. Technical Talks

Date	Presenter	Title
4 Feb 2003	Prof Arun N. Chandorkar	MOS dielectrics growth and properties
7 Feb 2003	Dr. Luc Tielemans	How reliable are the results of reliability tests performed at wafer Fabs
21 May 2003	Dr Gan Chee Lip	What is different about the circuit-level reliability of copper based interconnects?
9 Jun 2003	Dr Charles Baeur	Packaging materials, processes & structure for future devices and systems
16 Jul 2003	Dr Mahesh Patil	The super junction power MOS transistor
12 Aug 2003	Dr John H. Lau	Impacts of Lead-Free Solder on Wafer-Level Chip Scale Package (WLCSP)
17 Sep 2003	Prof Albert Chin	RF passive devices on Si with excellent performance close to ideal devices designed by electro-magnetic simulation up to 100 GHz
18 Nov 2003	Mr. Chih-Hang Tung	ULSI Semiconductor Technology – A Microscopic Tour through TEM

4. Educational Activities for Students

Chapter supported IEEE Student Branch, NTU Chapter and contributed S$1000 for SPAR 2003 (Students Professional Awareness Conference)

Instituted a Student Book Prize at School of EEE, Nanyang Technological University, Singapore for the Best Student in Microelectronics in 2003.

· Student Book Prize for the best Microelectronics student from Temasek Polytechnic, Singapore instituted in 2001 and is continuing.

· Student Book Prize for the Microelectronics specialization in National University of Singapore (Endowment Fund instituted in 1999, and continuing).

5. Others

· A/P Zhou Xing, a chapter committee member, has been elected as an ED Adcom member in Dec 2003.

· Mr. Charles Lee, a chapter committee member, has been elected as one of the IEEE CPMT Society Board of Governors in Dec 2003.

· Dr. Kin Leong Pey has been elected as the Chair, Reliability/CPMT/ED Singapore Chapter for 2004.

Back

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!

UK Chapter

By Prof. Nihal Sinnadurai
Chairman CPMT & Reliability Chapter

In the UK, we have a joint Reliability and CPMT Chapter.

Special Announcement:
In order to serve the technical community served by the Reliability Society, the UKRI Reliability & CPMT Chapter has recognised the benefits of working with kindred societies to ensure we do not act in a divisive manner in planning and delivering our technical programme. Accordingly, we have reached agreement with the International Microelectronics and Packaging Society (IMAPS) UK Chapter, that we will aim to work together and to co-sponsor technical conferences and seminars serving the same interests. Additionally, the international IMAPS body arrived at the same decision at a meeting at the major Conference in Boston in November 2003.

We are pleased to announce that two such collaborative events were held in the UK in 2003.
The first was the Ceramics Interconnection Initiative Conference - with papers on Reliability and Technology, held earlier in the year at the Novotel at Heathrow, London. A number on eminent ceramics technology experts from the USA, Nordic countries and the UK presented leading edge papers to an international audience comprising over 70 IEEE members, IMAPS members and non-members.
The second event held at the Hayley Conference Centre at Startford-upon-Avon during 1-2 October 2003 also attracted over 70 international and national delegates and speakers. The conference themes were "Microelectronics in Medicine - the Convergence of Bioscience and Microsystems Technology", "Polymers for Advanced Microelectronics Fabrication & Structure" and a "Market Watch" session. There was very active participation in the Market Watch session, which will be a feature at future events.

Planning is well advanced for a co-sponsored Conference on "Packaging & Reliability for Optoelectronics" to be held in early March 2004 at the Moller Centre of Cambridge University, Cambridge,UK.

Back

ADCOM Summary

ADCOM Summary

January 24, 2004

LAX Marriott

Meeting Objectives
(1) Welcome New ADCOM members and get them up to speed on the state of the Society and the ADCOM
(2) Discuss how the current membership numbers for 2004 affect the 2004 budget (fixed costs)
(3) Determine number and type of remaining meetings for 2004
(4) Develop plan(s) for marketing the Society early in 2004 to boost 2004 membership
(5) Decide what new products, if any, we are going to create in 2004, and who is going to do it?
(6) Allow the VPs to introduce their responsibilities and organization
(7) Match new ADCOM member's interests with new and old positions that need volunteers

---

President's Overview (J. Voas)

Introduce ADCOM person changes

November FINCOM results

Highlights from Winter 2003 EXCOM

New France Chapter

Name Change opportunity along with field of interest specification

Society Historian needed: IEEE has archival capability(Dave Franklin volunteered)

Update to the RS Email List (Ted Freeman volunteered)

Report from Matt Loeb, IEEE HQ

RS Initiatives Opportunities

IEEE will help develop the RS web site.Christian is the POC and will be the webmaster with help from a volunteer.Matt said IEEE personnel could help to bring our web site up to IEEE standards.

Interactive on-line instruction.Want to develop interactive tutorials, using our experts, all compensated appropriately. Sam will collect inputs from our experts, in terms of a one page description of a topic that IEEE can review for possible development.

Experts are needed to support security infrastructure development (leveraging membership talent).Jeff will take lead in organizing RS resources

Suggested that RS transform itself to an IEEE Council serving 360,000 members Lose member cost and member revenue - Matt will let us know the $ impact.

VP Publications Report (C. Hansen)

Status of Newsletter, *Transactions*, and website **This is the last planned meeting of associate editors meeting (at RAMS)**

TDMR is spin off from IRPS. It needs another year of support

VP TechOps Report(W. Tonti)

ATR, updates on committee chairs or new committees
Volunteers:
Assurance: Bret Michael Warranty: Judy Koslov
Six Sigma and SW: Bob Stoddard will affiliate with committee under Sam
VP Meetings (and conferences) Report(A. Miller)Sam, Norm, Jeff, and Ann will put together a package to hold a 3-city seminar for a SW tutorial.

2004 meetings

April 24, Phoenix

July 24, Burlington Vt 3rd Adcom meeting

Excom meeting in October DC
Jr. Past President's Report(D. Hoffman)

Proposed change to award structure to make it consistent across our major awards **Approved electronic voting for the AdCom** Sr. Past President's Report(K. LaSala, Sr.) **Put forth a revenue generating proposal for white papers** VP Membership Report(A. Campbell and M. Abramo) **Current numbers New Initiatives to bring in more members** Other Business(All)

Web site: Transform web site to IEEE format.Christian will ask IEEE (Matt) to put a template in place for RS to make the RS web page.Christian will seek a person to maintain the web and add content.

E-education interactive, on line: Tom Fagan and Bill Tonti will survey industry experts at RAMS and IRPS.

Cyber security development, **performance support tool, score card, check list, subject matter experts: committee:** Ann Miller, Jeff Voas, Norm Schneidewind,Bob Stoddard, Sam Keene, Brett Michael: SW tech ops.Sam will formulate a tech ops response to Matt's proposal for cyber security.

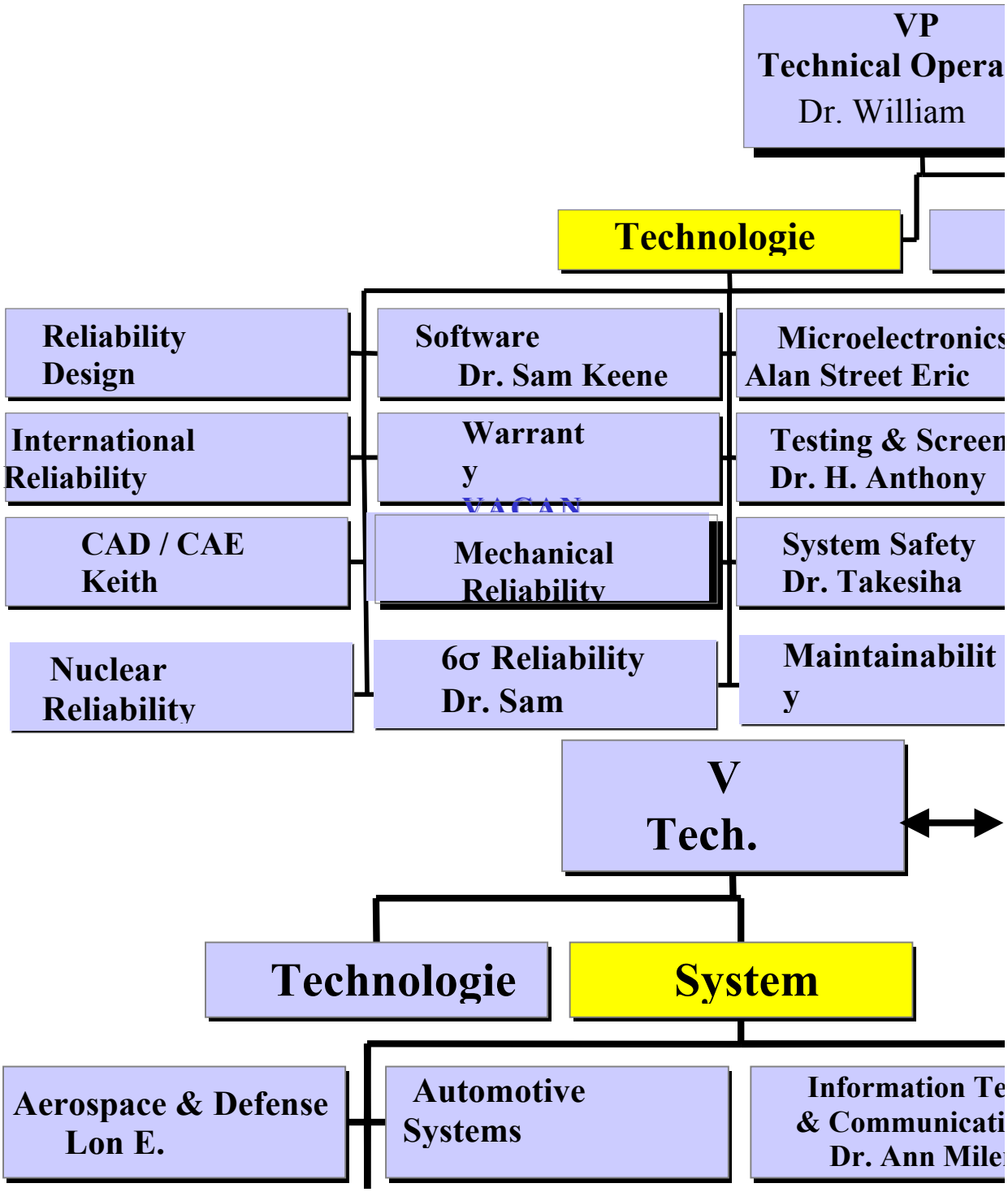
President and past presidents will consider going from a **Society to a council**.Status at next AdCom

Jim McLinn offered to help **contact local areas to establish new** chapters.

Back

Technical Operations

Technical Arm of the Society



Technical Committee Cooperation

Council Participation

Sensors

Nanotechnology

Joint Societies Endeavors

With Electron Devices, Computer, and CPMT Societies

Conferences: RAMS, IRPS, ISSRE, IRW, CRAMS, ESREF

Publications:

- **Transactions on Semiconductor Manufacturing**
- **Transactions on Material and Device Reliability**

Videos

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 the following page: http://www.ewh.ieee.org/soc/rs/. 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.

William R. Tonti
VP Technical Operations
Tel: (802) 769-6561
E-mail: wtonti@ieee.org

Technical Committee

Activities Focus Spot

Software Reliability and 6 Sigma Technologies: **Dr. Sam Keene (*s.keene@ieee.org*)**

Provide a focus area for development and advancement of the respective disciplines of Software Reliability and Six Sigma. Particularly to merge these two interests to help develop and support trustworthy systems through the Design for Six Sigma for Software. This would also be a beacon for industry professionals to gather around to focus and collaborate on developing trustworthy systems.

Tutorials offered:
- Six Sigma Contributions to Reliability

Conferences and journals committee is active in:
- International Software Reliability Engineering Symposium.

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!

Technical Operations

Technical Operations
Technologies

Aerospace & Defense

Lon E. Chase

Automotive Systems

Dr. Guangbin Yang

Information Tech

& Communications

Dr. Ann Miler

Medical

Dr. Patrick Corcoran

Consumer Electronics

Fred Schenkelberg

Sensors

Dr. Ken P. Lasala

Industrial Systems

Dr. Hiroshi Yajima

Systems

VP

Tech. Ops.

Mark Lively

Tech Ops Editor

VACANT

Technical Arm of the Society

Reliability Design

VACANT

Software Reliability

Dr. Sam Keene

Microelectronics

Alan Street Eric Snyder

Human Interface

Dr. Ken P. Lasala

International Reliability

Dr. Joseph Fragola

Warranty

VACANT

Testing & Screening

Dr. H. Anthony Chan

Standards & Definitions

Yvonne Lord Thomas Brogan

CAD / CAE

Keith Janasak

Mechanical Reliability

Dick Doyle

System Safety

Dr. Takesiha Khoda

Technologies

Systems

VP

Technical Operations

Dr. William Tonti

Assurance

VACANT

Nuclear Reliability

VACANT

6s Reliability

Dr. Sam Keene

Maintainability

Stefan Mozar

Emerging (New) Technologies **VACANT**

Technical Committee Cooperation

Council Participation

Sensors

Nanotechnology

Joint Societies Endeavors

With Electron Devices, Computer, and CPMT Societies

Conferences: RAMS, IRPS, ISSRE, IRW, CRAMS, ESREF

Publications:

§ Transactions on Semiconductor Manufacturing

§ Transactions on Material and Device Reliability

Videos

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 the following page: http://www.ewh.ieee.org/soc/rs/. 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.

William R. Tonti

VP Technical Operations

Tel: (802) 769-6561

E-mail: wtonti@ieee.org

Technical Committee Activities Focus Spot

Software Reliability and 6 Sigma Technologies: Dr. Sam Keene (s.keene@ieee.org)

Provide a focus area for development and advancement of the respective disciplines of Software Reliability and Six Sigma. Particularly to merge these two interests to help develop and support trustworthy systems through the Design for Six Sigma for Software. This would also be a beacon for industry professionals to gather around to focus and collaborate on developing trustworthy systems.

Tutorials offered:

- Six Sigma Contributions to Reliability

Conferences and journals committee is active in:

- International Software Reliability Engineering Symposium.

Six??s and Software Reliability Technical Report

Dr. Samuel Keene
Chair of the Six Sigma and Software Reliability Tech Ops Committee

Applying Design for Six Sigma (DFSS) to Developing World Class Software:

Six Sigma targets improving product reliability, as well as the reliability of the development process that produces the product.Software reliability is directly proportional to the quality of the underlying development process.This is the foundation of the Keene Software process-maturity reliability model(Samuel Keene, “Distributed Software System Code Reliability Estimating”, ASQ Reliability Review, September 2001, pp 9-27.Thus,Six Sigma practices fit well with improving the reliability of software.

Six Sigma was first developed to solve factory associated problems.It worked well in this environment. Presently the concept is migrating upstream in the development process under the so-called Design for Six Sigma (DFSS) initiative.DFSS focuses on problem avoidance rather than only problem correction.DFSS emphasizes requirements capture, mapping the requirements to the implementation, tolerance allocation, and flow down. Figure 1 represents the author’s view of how Six Sigma principles and tools can augment software development practices.A few of the terms are software centric but are readably extendable to system or hardware development.

System Management:
Murphy has shown that most field problems on large systems result from design deficiencies in system requirements or system interfaces (B. Murphy, and T. Gent, “Measuring System and Software Reliability Using an Automated Data Collection Process”, Quality and Reliability Engineering International, CCC 0748-8017/95/050341-13pp., 1995).These result from a lack of situational awareness, on the part of the customer and/or the developer.This is further exasperated by internal or external communication breakdowns.These potential gaps can be addressed using Quality Functional Deployment (QFD) or the Kano requirements classification process to capture the Voice of the Customer (VOC).In developing software requirements, we typically use “needs cases’, for those explicitly stated customer requirements.The needs cases can beneficially be augmented by capturing the customers’ “context” data.The customer’s context data comes from the customer’s observations or aspirations that give insight about the new system.For Example, context data can be derived from “help desk” calls.This is a fruitful mind field to harvest unstated customer requirements, which can lead to providing customer delighters.

The operational profile clarifies how the customer will actually deploy the new product. It will detail the modes of system operation and the proportion of the time the system will spend in the different modes.This data can be used to optimize system performance and to properly test the system.Systems will learn to pass the testing and verification efforts.So the deployed system will please the customer if the system testing properly reflects the field usage.

Key Process Input (KPIV) Variability:
Variability of the process inputs is the enemy to process stability and reliability.It must be recognized and managed in Designing for Six Sigma (DFSS).For example, software always passes its main line testing.Even the worst performing software has successfully passed its main path testing; otherwise the system would never have been released.Software always fails in handling off-nominal conditions or anomalous input conditions.The best designs must recognize and manage these situations.

The most fundamental variability is revealed in the measurement system analysis (MSA).This is accomplished using a Gage Repeatability and Reproducibility (GR&R) analysis to demonstrate the measurement system adequacy.This is a major challenge and

underpins all the data analysis and data management by the system.The author has found many measurement systems to be incapable from a MSA standpoint - - and the measurement systems are being used without awareness of its limitations or inaccuracies.This is a major Six Sigma improvement opportunity.

The software has to properly manage the hardware variability.This variability is typically stated in terms of its “short term capability” or Cpk.Where capability is defined asCpk = the distance (separation) of the process mean from its closest specified operating limit divided by 3 sigma.

So a Six Sigma process would be 6 sigma from its binding limit, divided by 3 sigma.Its corresponding short-term capability, Cpk,would be 2.That would be termed a 6-Sigma capable process.

Development Process Capability

The Software Engineering Institute’s Capability Maturity Model is the best commonly available measure of process capability.They rank the developer’s capability from a low ranking of 1 (chaos) to a level of 5 (optimizing).Figure 1 shows a Six Sigma perspective of development process capability.The less common process factors are described below:

- Collaborative (graphical) tools such as process flow, swim lane, entity relationship, and “cause and effect” diagram promote common Requirements understanding and communications. “Every picture is worth a 1,000 words.”
- Six Sigma vocabulary fosters common process understanding that spans organizations and cultures across our mobile society and global economy.
- Cross functional development teams (CFDT) or core teams help break down functional organizational barriers and promote common understanding across organizations
- Goal-Question-Metric (GQM) is a good brainstorming process to define the development challenges and identify questions that need to be answered during product development.The answers are stepping stones in the design process.
- Design documentation includes common collaboration tools: Process Flow Charts,Control Flows, Entity Relationship Diagrams.These tools promote program understandability and should be maintained and kept current with the code.This aids in any design analysis and code maintenance.
- Six Sigma has the goal of improving the process as well as improving the product.Thus, collecting and analyzing in-process metrics enables improving the development process.One of the simple, but effective, examples of this is to maintain a profile of discovered defects, showing at what process step a defect was discovered versus the process step the defect was induced into the design.Reducing the latency of the time the defect was in the system has a high payoff because the cost of correcting defects rises exponentially over the process phases. e.g. removing a requirements “bug” in the field might cost 1,000 times or more what it would have cost to have corrected it at defect conception.

Lastly, Six Sigma provides a plethora of tools, affording a total design perspective: enabling systematic capture of requirements, proper chartering of the design team, analysis and documentation of the design capability and the design trades, as well as verifying the product performance.This amounts to a fullness of design.As Paul Harvey would say, “this is the rest of the story”.So Six Sigma provides a new paradigm to promote software reliability through better development processes.Six Sigma accomplishes this through using more disciplined processes, better metrics, and a richer tool set.

Figure 1.World Class Development Model

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!

42nd Annual International Reliability Physics Symposium

Set For April 25-30, 2004 in Phoenix, Arizona

The 42nd Annual International Reliability Physics Symposium will be held at the Hyatt Regency Phoenix Civic Plaza in Phoenix, Arizona from April 25 to April 30, 2004. IRPS is the principal symposium dealing with the physical mechanisms that influence the performance or affect the reliability of integrated circuits and microelectronic devices in the users' environment.

The Symposium has its roots in the early 1960's when a forum for interchange of information on the physical processes that caused electronic components to fail was established. Sponsorship was largely from the military, most notably from the U. S. Air Force Rome Air Development Center. In 1967 sponsorship moved to the Institute of Electrical and Electronic Engineers, with the Reliability Society and the Electron Devices Society agreeing to jointly sponsor the Symposium.

The conference aims to stimulate progress in these broad areas:

- Reliability Implications of Transistor Scaling
- Modeling, Simulation, and Understanding of Failure Mechanisms and Circuit Reliability
- Correlation of Reliability to the Physical and Electrical Properties of Microelectronic Materials
- Reliability-Driven Circuit Design and Wafer Processing

IRPS affords attendees the opportunity to hear technical presentations on the latest developments in the rapidly changing field of semiconductor/microelectronic reliability in a relaxed professional environment. Scheduled activities also allow time for social contact so that attendees can network with other participants who share common interests.

Technical Program

The conference is a forum for presenting original work that identifies new microelectronic failure or degradation mechanisms; describes how fabrication processes influence the susceptibility of products to particular failure mechanisms; demonstrates new, improved, or innovative analytical techniques; or demonstrates techniques to build-in or extend reliability while meeting performance goals, especially as technologies are scaled.

On the product side, specific areas addressed at the symposium are Product Reliability and Burn-In, which covers chip-level reliability issues, burn-in elimination strategies, and correlation between yield, infant mortality, and burn-in fallout; Non-Volatile Memory, which addresses unique reliability phenomena and failure mechanisms in non-volatile memories; Qualification Strategies, which describes new techniques/test structures/vehicles for product qualification along with best practices to reduce cost and time to market.
The product sessions will also cover Assembly and Packaging (Cu and low-K issues, chip scale integration, stress modeling) Failure Analysis (evidence of new mechanisms, new techniques, case histories), MEMS (reliability of new structures sensors, and actuators) and Circuits (soft error upsets, analog circuit reliability issues).

Process issues scheduled to be discussed are Device Dielectrics, which addresses oxide breakdown mechanisms and models and the effects of processing on MOS gate reliability; Transistor Reliability, which covers new hot carrier phenomena, NBTI, material degradation mechanisms, and impact of alternative gate dielectrics; Interconnects will include defect and wearout phenomena in Cu and Al systems, low-K/oxide inter/intra-level reliability, mechanical stress issues, and joule heating effects. Electrostatic Discharge and Latch-up will cover novel structures including SOI and bipolar, damage interpretation, scaling issues, and RF CMOS.

Sessions on Device and Process, which addresses reliability-driven process interactions, new process related reliability issues, and Process-Induced Damage, which will describe reliability degradation associated with damage and early non-destructive in-line detection of process-induced damage complete the program.

Tutorials/Workshops

IRPS's two day Tutorial Program features two sets of bound notes from all of the tutorials presented at the symposium. Seasoned attendees have the opportunity to learn new, challenging areas of interest during the Advanced Reliability session on Monday, while new participants can gain familiarity in classic reliability methodologies during the Reliability Fundamentals session on Sunday. Past tutorial sessions have covered a wide variety of topics such as Electromigration, Insulators, Defects, Testing, Noise, Electrostatic Discharge Damage, Reliability Tools and Modeling, Hot Carriers, and Surface Mount Technology.

The IRPS Workshops enhance the synergy of the Symposium by affording the attendees an opportunity to meet in informal groups to discuss key reliability physics topics with the guidance of experienced moderators. Some of the workshop topics are directly coupled to the Tutorial Program. This allows each attendee to learn more about a particular topic or field of interest in a Tutorial session during the day on Monday and then exchange ideas with other attendees having similar interests in an open moderated forum on Wednesday evening. Workshop topics will deal with electromigration, dielectrics, hot carriers, and several specialized sessions covering wafer-level reliability, ESD/Latch-up, and micro-electro-mechanical systems.

Equipment Demonstrations

A unique aspect of the Symposium is the Equipment Demonstration program held throughout the week. Manufacturers of state-of-the-art analytical and test equipment are on hand to demonstrate their products and systems to individuals and small groups. Some demonstrators will analyze attendees' samples by appointment. Equipment to be demonstrated includes acoustic imaging, burn-in/device stressing, computer-aided navigation, confocal laser scanning microscopy, emission microscopy, and ESD testing. Demonstrations of focused ion beam and SEM systems, functional/parametric test equipment, IR imaging/thermal analysis, probing systems (including laser cutters) reliability simulation tools, and wafer-level reliability assessment systems are also planned.

Reliability Year In Review

The Reliability Year in Review is a new session added in 2003 that will be offered again in 2004 due to its popularity and innovative format. Reliability experts in selected fields will offer their assessment of current and recent publications in their areas of expertise in a forum that allows for maximum interaction. The session is slated for Friday morning, April 30, and should again attract a strong turnout.

Further Information

The 2004 IRPS will be held at the Hyatt Regency Phoenix Civic Plaza in Phoenix, Arizona from April 25 to April 30, 2004. The hotel is located adjacent to the Phoenix Civic Plaza where the technical sessions will take place. Social events currently being planned are the Monday evening reception in the Equipment Demonstration area, and the Tuesday evening poster reception. For further 2004 IRPS information, contact:

Bernie Pietrucha, IRPS General Chair
Rowan University
(856) 256-5338
fax (856) 256-5241
email:pietrucha@rowan.edu

Information is also available on the IRPS Web Page at: http://www.irps.org/

back

2004 IEEE INTERNATIONAL SYMPOSIUM on SOFTWARE RELIABILITY ENGINEERING (ISSRE)

Call for Papers, Tutorials, Presentations on industry best practices, Workshops, Student papers

November 2-5, 2004, Saint-Malo, FRANCE
http://www.issre.org/2004/

This event includes: Technical paper tracks, Tutorials, Industry best practice presentations, Workshops, and more!

ISSRE focuses on the theory and practice of Software Reliability Engineering. The conference scope includes techniques and practices to (1) verify and validate software, (2) estimate and predict its dependability, and (3) make it more tolerant/robust to faults. Over the years, the conference has grown steadily attracting about 200 participants on a regular basis. The conference is big enough to represent all the key topics in software reliability engineering, but small enough to provide an in-depth representation of theory or practice in these areas. Industry participation has also increased over time, leading to a healthy mixture of theory and practice. This year's theme is on the use of model-driven software development and its implications on software dependability.

ISSRE 2004 will be held in Rennes (Nov. 2) and Saint-Malo (Nov. 3-5). Both towns are medieval cities. Saint-Malo is a corsair (a corsair is a kind of official "pirate," hired by the king) city located on the north coast of Brittany, close to the Mont Saint-Michel and to Rennes. Every street corner, every shore recalls the city's legendary past, along the innumerable walks and seafront promenades. Close to Saint-Malo, the Mont Saint-Michel is one of Brittany's best-known attractions.

Deadlines
Regular papers: April 18, 2004
Call for Workshops: February 5, 2004
Call for Tutorials: June 1, 2004
Call for Industry Practice: July 1, 2004
Call for Student Papers: July 10, 2004
Call for Fast Abstracts: July 10, 2004

General Chair
Yves Le Traon, University of Rennes I; IRISA research institute, France
yletraon@irisa.fr mailto:yletraon@irisa.fr

Program Chairs
Lionel Briand, Department of Systems and Computer Engineering, Carleton University, Canada
Software Quality Engineering Lab (SQUALL)
briand@sce.carleton.ca
Jeffrey Voas, Cigital, Inc., USA
jmvoas@cigital.com

Back

The Integrated Reliability Workshop

The Integrated Reliability Workshop focuses on ensuring semiconductor reliability through component fabrication, design, characterization, and analysis tools, as well as identification of 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.

Last years 2003 IRW discussed all aspects of technology reliability and many aspects of product reliability in an informal workshop atmosphere through platform paper presentations, in-depth tutorials, poster sessions, early evening workshops, and the very popular late evening special interest groups. CMOS and BIPOLAR device reliability was discussed both in bulk and SOI. In the ever challenging quest to shrink gate dielectric thicknesses both conventional SiO2 and high-K dielectric gates were contrasted. A high-K tutorial as well as a discussion group on this topic ensures it again will be hot in 2004. CMOS device topics included both negative and positive bias temperature instabilities (NBTI, PBTI). An entire session was devoted to BIPOLAR issues which included state of the art bandgap engineered Si-Ge BiCMOS. Interconnect, fuse and MIMCAP issues were also covered in the course of the papers. Non contact measurement techniques were presented in a tutorial and discussed further by additional authors in the course of the paper presentations. Two other tutorials included a comprehensive discussion of fast wafer level monitoring for product wafers in manufacturing and a forward looking tutorial giving an update on the status of Magnetic RAMs and their reliability issues.

In 2004 IRW plans to build upon last years success.

Our Keynote speaker is already chosen, and he will both inspire and challenge us with his opening address. Here is the information about this talk:

Keynote Speaker: Timothy Forhan, Senior VP Corporate Reliability, AMI Semiconductor.

“Managing Tomorrow's Reliability Risks Today”

“In today's world, semiconductor ICs control mission critical functions in airplanes and pacemakers to nuclear reactors and ABS brakes. Big customers use multiple millions of a single part number and easily differentiate 3 ppm performance from .7ppm performance. So, the importance of quality and reliability in our products has never been higher….. I hope to share some of our thinking, strategy and results in this area and hopefully set the stage for a healthy exchange on managing tomorrow's risks today. “

In Addition, we have planned an exciting venue of Tutorials. They are:

Gate Dielectric Reliability

Device Reliability

Interconnect Reliability

Negative Bias Temperature Instability (NBTI)

Cu-Metallization Reliability

Product Reliability

The Technical Program is accepting papers for this years platform and poster presentation sessions.

Here are the submission details

Abstract Submission deadline is June 18, 2004

Send your submissions to:

Rolf-Peter Vollertsen, Rolf.Vollertsen@infineon.com,

IRW 2004 Technical Program Chair.

The Categories of submission are:

Wafer level reliability tests and test approaches

· Identification of new reliability effects & characterization

· Reliability models and simulations

· Reliability test structures

Customer product reliability requirements/ manufacturer reliability tasks

· Designing-in reliability (circuits, processes, products)

For the interested reader, or first time participant please go to the IRW website and download the full call for papers: http://www.irps/irw

Finally, a brief checklist for your consideration and investigating IRW 2004 further

ð When: October 18-21 2004

ð Where: Stanford Sierra Camp, South Lake Tahoe, CA

ð Technical Program Chair: Rolf-Peter Vollertsen, Infineon Technologies, Rolf.Vollertsen@infineon.com

§ Abstract submission deadline: June 18,2004

ð General Chair: Al Strong, IBM Technology Reliability astrong@us.ibm.com

ð Web Site: http://www.irps.org

Whether you are interested in presenting a paper, or interested in sharpening your skills through the wonderful interaction that takes place at IRW, we are looking forward to meeting you at the conference!

Regards, Bill Tonti

IRW 2004 Communications Chair.

wtonti@ieee.org

APASES Founded

The Asia Pacific Association of Safety Engineering Societies (APASES), an association of scientific and technical societies in Asia and Pacific Rim concerned with safety engineering and science, has been founded on October 2, 2003 and its first Steering Committee meeting was held on November 18, 2003 in Taipei, Chinese Taipei. The founding societies of the organization are Korea Institute for Industrial Safety (KIIS, Korea), Japan Society for Safety Engineering (JSSE, Japan), Center for Environmental, Safety & Health Technology Development, Industrial Technology Research Institute (CESH-ITRI, Chinese Taipei), China Society of Science and Technology of Labor Protection (China), and Society of Loss Prevention in the Oil, Chemical and Process Industries (SLP, Singapore). At the first Steering Committee meeting in Taipei, the representatives from the founding societies signed the Constitution, which was reviewed and commented by Dr. Ken LaSala, the past President of IEEE Reliability Society, at its draft version.

The objectives of APASES are (1) to promote the international exchange of scientific and technical information that relate to safety engineering and science in the broadest sense, and to serve all those concerned with theory and application of them, and (2) to provide a framework for collaboration between those working in safety engineering and science, irrespective of race, creed, color or political orientation, or of graphical location and to promote free exchange of ideas and experts within its professional field. The activities of APASES is to promote the safety engineering and science, in cooperation with regional and other international organizations, by (1) organizing and sponsoring the Asia Pacific Symposium on Safety (APSS) every two years, and (2) establishing other meetings or technical committees as considered desirable to achieve the objectives of APASES.

For each country or region in Asia and Pacific Rim, one scientific or engineering organization, having strong interest in safety engineering and science and a sound professional background, will be welcomed to APASES as a Member Organization.
For further information, please be in contact with,
Dr. Koichi Inoue
Secretary, APASES
inoue@cottus.mech.osaka-sandai.ac.jp
(Senior member and Past VP of Technical Operations, IEEE Reliability Society)

back

Reliability Society AdCom Candidates Sought for 2005/2006/2007 Term

The IEEE Reliability Society is seeking candidates for serving on its Administrative Committee (AdCom) for the three-year term that spans 2005/2006/2007.For clarification, the AdCom manages the operation of the Reliability Society.The candidates need to be a member of the IEEE Reliability Society and should have both technical and managerial experience.Serving on the AdCom requires attending periodic AdCom meetings (max of quarterly) and participating in one or more of the following areas of Reliability Society committee activities:Technical Operations, Meetings, Membership, and / or Publications.More about these areas of activity can be found within the Reliability Society Constitution and By Laws on our Society web site at http://www.ewh.ieee.org/soc/rs/

If you are interested in running for election to become an AdCom member, please send the following information to Dennis Hoffman, your Society's Junior Past President, at d.hoffman@ieee.org by not later than 1 July 2004:

- Your full contact information:name, mailing address, telephone number, FAX number, and e-mail address.
- A concise professional biography that summarizes your technical and management experience and your educational background.The biography needs to be 350 words or less.
- A short statement describing why you want to be an AdCom member and what you can contribute to the Reliability Society through being an AdCom member.
- A short statement that identifies in which Reliability Society activity area you would like to participate.
- Please include an endorsement from your supervisor / manager if possible.If that is not possible, please have a Reliability Society AdCom member, Chapter Officer, or member endorse your candidacy.In addition, please provide assurance, either personal or from your employing organization, that you will have adequate support to attend and participate in the scheduled AdCom meetings (usually held on Saturdays at different city locations) each year of your elected term.
- Statement that you are a current IEEE member with Reliability Society membership.

Your information will be forwarded to our Nominations Committee for their review and inclusion in our AdCom ballot in early fall of 2004.To be included in the ballot, all requested information needs to be provided on time.If you have questions, e-mail Dennis Hoffman at d.hoffman@ieee.org or call Dennis at 817-777-3517 (work).

back

Reliability Society Engineer of the Year Award for 2004

The IEEE Reliability Society is soliciting nominations for its Reliability Society Engineer of the Year Award for 2004. 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 last date that nominations may be submitted is 1 October 2004. Send the nominations to Dennis Hoffman, your Society's Jr. Past President, at d.hoffman@ieee.org .

back

Reliability Society Lifetime Achievement Award for 2004

The IEEE Reliability Society is soliciting nominations for its Reliability Society Lifetime Achievement Award for 2004.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 2004.Send the nominations to Dennis Hoffman, your Society's Jr. Past President, at d.hoffman@ieee.org

back