

Reliability Society

NEWSLETTER

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IEEE

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Editor:
Bruce Bream

President's Report

The July Reliability Society Administrative Council (AdCom) meeting was held at IEEE Headquarters in Piscataway, New Jersey. A few of the highlights of the meeting on Friday were a lecture and tour of the headquarters facility conducted by Dr. Irv Engelson. We had the opportunity to meet three IEEE presidents during the tour — Dr. Martha Sloan, Dr. Troy Nagle, and Dr. Thomas Cain.

On Saturday, Dr. Troy Nagle, President of IEEE and Dr. Bruce Eisenstein, Director of Division IV attended our meeting and made presentations to the AdCom. The Reliability Society signed a contract with the IEEE Educational Activities Department (EAD), to sponsor a videoconference in 1995. The Reliability Society will advance \$30,000 to cover costs such as studio production and marketing. The initial \$30,000 in revenue will be returned to the Reliability Society and additional revenue will be split 50/50 with IEEE EAB.

The IEEE Technical Activities Board (TAB) has a TAB Society Review Committee which reviews all societies every 5 years (approximately 37 reviews in each 5-year period). The Reliability Society is scheduled for review this year. The initial material for this presentation was reviewed at our July meeting. I expect to have the TAB societies critique of our Society to present to you in the next newsletter.

Our next AdCom meeting is scheduled for the University of Maryland on October 1, 1994. A video tape of the 1996 IEEE Presidential Candidates Debate which was held in Denver, Colorado during June 1994 will be shown to assist AdCom members and other attendees in casting informed votes.

I know you have all received your ballots for the Reliability Society Administrative Committee candidates. I hope you have all taken the time to vote for your leadership.

W. Thomas Weir
President, IEEE Reliability Society



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Editor's Column

I regularly get notices of conferences that unfortunately are not timely to our members. Many of them may miss appearing in our call for papers section. This is due to our quarterly publication schedule as well as late notice from the conferences. If you have a conference, please let me know about it early. I can easily publish a short notice with the dates, location and phone number for more information if the full conference notice is not prepared. Remember to notify the newsletter editor, I'm here to help but I need timely information.

The information superhighway is here and ready for use. I encourage all of you to take advantage of it by at least finding out your Internet Email address, if you have one, and let others know. I would like to be able to show an email address for anyone who's name appears in the newsletter. Any comments or input to the newsletter can be sent to my Email address shown on this page. Email facilitates the flow of information and it also makes it a lot easier for me to put the newsletter together (my fingers only go so fast). You should also be able to take advantage of the many services offered by IEEE over the Internet.

Bruce Bream
Editor, Reliability Society Newsletter

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Chapter Activities

Boston Chapter

Greetings from the Boston Chapter! We are coming off of a very successful season. Among the highlights was the 32nd annual Spring Symposium, which featured Mr. Kenneth Olsen, former CEO of Digital Equipment Corporation, as the keynote speaker. The theme for the symposium was "Reliability - It's Not Just Hardware Anymore".

Our elected officers for 1994-1995 season are as follows:

Chair: Brian McQuillan
Vice Chair: Keith Burger
Treasurer: Donald Markuson
Secretary: Philip Tsung

Additional AdCom positions are as follows:

Monthly Programs: Harvey Bloom
Publicity: Ruth Evans
Arrangements: Giora Kedem-Kuller
Steering Committee Chair:

Anita Cederholm
Lecture Series Chair: Keith Burger
Symposium Chair: Jim Fahy
Symposium Program: Warren Snow
Technology Development Chair:
Gene Bridgers

We are proud to observe that product reliability has steadily improved over recent years. However, we recognize that our profession is changing. There continues to be a shift in emphasis regarding the traditional reliability tasks, especially in the DOD arena. These changes have directly affected much of our membership. Many companies have replaced traditional methods with new approaches to achieve their reliability goals. Therefore, the focus for this year's AdCom is *change*. Appropriately, Mr. Harvey Bloom will kick off this season's monthly meeting line-up by presenting "Reliability in the '90s - Doing More With Less" on September 21st.

Our Fall Lecture Series, "Reliability Analysis and Testing", will present a primer on R&M objectives, methods, and implementation, using the Rome Laboratory Reliability Engineer's Toolkit as a guide. It is intended to educate as well as identify topics of interest for future events.

Looking into 1995, next April's Spring Symposium theme is "Application of Reliability Tools".

All in all, we are looking forward to another good year!

Brian McQuillan
Boston Chapter Chair

Los Angeles Chapter

On June 30th, Larry Stern, IEEE Congressional Fellow, briefed us on his experience on Capitol Hill. He presented his forecast of where Aerospace will be in the next 5 years.

On July 28th, we heard Charles Finnila discuss combining data compression and encryption to increase data storage, speed data transmission, and provide data security. Charles, retired from Hughes Aircraft, will be presenting this topic at Wescon in September.

Meetings in planning: September 7th - We are having a joint meeting with the Los Angeles Chapter of ACM on Visual Programming for test and measurement by Edmund C. Baroth, of Jet Propulsion Laboratory. Later in September, Marco Garcia, of Hughes Aircraft, is speaking on

"Commercial Components in Military - Are We Ready?" In October, another joint ACM meeting will be held on Artificial Intelligence by Mr. Peter Coffee. Later in October, Dan Erwin of the University of Southern California will present Neural Network Tools and Applications.

Winnfort Myles, Chapter Vice Chair and also current LA Council PACE Chair, is organizing an Exhibit and Presentations at the Del Amo Mall during the 1995 National Engineers week. He, along with other LAC and Reliability Society Chapter members, are working to obtain presentations and exhibits from local companies.

Our Bulletin Board is very active with over 400 subscribed members. Membership is free. We offer meeting information, Jobline, E-Mail, Video Tape Exchange information, Shareware and Demos. The BBS number is (818)768-7644, 300-2400 baud.

Our Videotape Exchange program currently has over 150 videotapes available. The latest information can be read and downloaded through the BBS.

Loretta Arellano
Los Angeles Chapter

Reliability Society Newsletter Inputs

All RS newsletter inputs should be sent to:	The schedule for submittals is:
Mr. Bruce Bream	Newsletter Due Date
NASA Lewis Research Center, M.S. 501-4	January November 19
21000 Brookpark Road	April February 26
Cleveland, OH 44135	July May 28
Tel: (216) 433-6532 Fax: (216) 433-5270	October August 27
Email: scbream@lims02.lerc.nasa.gov	

ADVERTISING RATES

All copy that contains graphics or special fonts must be camera-ready or delivered on computer disk and be received by the due dates indicated.

Ad Size	One Time	2-3	4+
Full Page	\$400	375	350
Half Page	\$300	280	260
Third Page (vertical)	\$240	225	210
Quarter Page	\$205	190	180
Eighth Page	\$120	110	100

Discounted per issue rates are shown for ads run in more than one issue.

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IEEE members and volunteers can request a personal e-mail name (alias) from the IEEE. An alias of the form "*i.name@ieee.org*", where "*i*" is the first initial, and "*name*" is the last name will be designated to each member. Messages addressed to "*i.name@ieee.org*" will automatically be forwarded to the actual Internet address, whether it be at the IEEE Service Center or around the other side of the world. This forwarding service is provided for IEEE members and staff in order to simplify the myriad of computer mailbox addresses. The intent is to assist members to use their most convenient local electronic mail capability and, as simply as possible, exchange messages with any other member of staff person, or request services electronically. These aliases are usually much easier to remember and simpler to use than the real address.

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- Your e-mail address
- Your Last Name
- Your First Name
- Your day-time phone number
- Your FAX number, if available
- Your IEEE member number (if you are a non-member volunteer, e.g. working on a Standards group - please ask your group chair who will be an IEEE member to process your request)
- Your current major IEEE volunteer activity involvement, if applicable

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IEEE (Leesburg) CAE Workshop at RAMS

The IEEE (Leesburg) Computer Aided Engineering (CAE) Workshop on Concurrent Engineering (CE) for Integrated Product Development (IPD) joined forces with RAMS at the 1994 RAMS Symposium. The Workshop will be held in conjunction with RAMS again, in January 1995, with the Workshop starting on Monday morning. Now you can attend both for the price of one. If you are responsible for implementing design automation within your company, or are a CAE Developer/Supplier of IPD or R&M tools, or are an IPD Team member (such as Reliability or Maintainability Engineering), then this Workshop is for you! Attend, learn, make contacts, participate, and help influence the CAE direction in its support of IPD Teams within our Industries.

Register for RAMS and attend the 1995 Symposium in Washington, D.C. If you have Workshop questions or want more information, please contact Dennis Hoffman (214)480-1000 or Don Nilson (817)763-3439. See you at the Workshop at RAMS.

National Engineers Week 1995 Will Highlight Engineering in Everyday Life

The National Engineers Week Committee has announced that next year's celebration will emphasize the engineering of everyday life. The 45th annual National Engineers Week, scheduled for February 19-25, 1995, will feature a variety of national and local programs designed to increase public appreciation of the engineering profession by highlighting engineers' contributions to American life. Through its United States Activities division, The Institute of Electrical and Electronics Engineers Inc. joins 16 other engineering societies and several major corporations as sponsors.

National Engineers Week 1995 is chaired by the American Institute of Chemical Engineers (AIChE). Leslie G. McCraw, chairman and CEO of Fluor Daniel Inc., will serve as honorary chairman. The theme for the week is "Engineers: Turning Ideas into Reality," while the Discover "E" classroom program will

inspire students to "Discover Engineering Every Day."

Discover "E" involves many thousands of engineer volunteers who motivate students to pursue math and science studies. Other national programs for the week include: technology fairs in shopping malls, science centers and local libraries; and the third annual Future City Competition, with engineers helping teams of middle-school students design cities of the 21st century.

Planning kits for National Engineers Week 1995 contain everything needed for individuals, Sections or companies to participate in the week's activities, and will be available in October. For free kits, contact National Engineers Week, P.O. Box 1270, Evans City, PA 16033, Tel: (412)772-0950. For more information on National Engineers Week, call National Engineers Week Headquarters at (703)684-2852, or IEEE Public Relations in Washington at (202)785-0017.

FREE PROCEEDINGS

The Reliability Society has surplus copies of the 1992 and 1994 IRPS Proceedings and of the 1993 and 1994 RAMS Proceedings. Free copies will be sent on request, so long as supplies last, to:

- Reliability Society members
- Instructors in reliability (The society will be happy to supply a copy for every member of a class on reliability.)

- Technical Libraries
- Those interested should indicate how many copies are desired and which proceedings are wanted. We have only those listed above. Send requests to Anthony Coppola, IITRI, 201 Mill St., Rome NY 13340. Tel: (315) 339-7075 (prefer fax or e-mail). Fax: (315) 337-9932. E-mail: acoppola@mail.iitri.com

Electronic Bulletin Boards

Los Angeles IEEE Chapter

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Free Membership — (400+ members)
Meeting information, Jobline, Email, Video Tape Exchange
Information, Shareware and Demos

Statistics Bulletin Board System

(316) 265-3036 1200-2400 Baud (8N1)
Free Membership
Statistics, Reliability

Computer Aided Logistics System (CAL)

(703) 321-8020 300-9600 baud 8N1
The CALS BBS is reached through this number to the National Technical Information Service (NTIS) BBS. Membership is free.

JPL/NASA Radiation Effects Data Bank

Test data on Single Event Effects and total-dose for electronic parts
BBS: (818) 393-4156, 1200 baud, 8N1
(818) 306-6920, 1200 baud, 8N1
FTP: radata.jpl.nasa.gov (137.79.11.2), Enter userid 'radata' & password 'guest'.
Sysop: Keyvan Eslami, (818)354-1715, email: keyvan_eslami@jpl.nasa.gov
After logon hit return and type RADATA in response username, no password required.

DOD Field Failure Return Program (FFRP) Reliability Bulletin Board

This Bulletin Board provides information concerning the DOD FFRP program as well as providing a vehicle for both commercial and government users to exchange ideas and information on component and system problems.
1200 baud or less
8 Data bits, no parity, 1 stop bit
(315) 339-7120, Access
(315) 339-7043, Questions

ADCOM Meeting Summary

16 July 94 AdCom Meeting – Piscataway, NJ

Dick Kowalski presented the budget and informed us that our net worth had increased 50% (\$155.8k). He projects another \$50k surplus this year.

Meeting News:

The next AdCom meeting is scheduled for October 1st at the University of Maryland. Dick Doyle will hold his tech ops meeting on September 30 (Friday preceding the AdCom meeting). RAMS attendance was down resulting in a potential loss. This loss is shared by the 9 sponsors, therefore we may lose our seed money. IRPS had 1000 in attendance, the best ever. This was due to the location being in the Silicon Valley location. There was a discussion of whether we prefer AdCom meetings on Saturdays. The survey that Henry Hartt sent out shows that it doesn't make a difference. Those who pay their own way get better rates if they travel on weekends (but Monday meetings are just as good).

Transaction News:

Hank Malec presented the status of the committee formed at the January AdCom

to review the criteria for the Transactions. This committee is trying to make editing more efficient. Hank also presented a Transaction composite for Baselining. He suggested benchmarking it to SAE Communications in RMS Journal. Hank to report at the January AdCom meeting. He recommended having a separate morning meeting on this issue in January.

Tom read a letter from the U.S. Army praising the editor of the Transactions.

A motion was presented whereby at the end of 1994, at the expiration of the existing contract, we should replace the existing paid managing editor with 3 volunteers. Discussions followed including cost comparisons. The issue was raised regarding whether we could do the Managing Editor's job ourselves. A vote was taken and the motion lost.

Tech Ops News:

Loretta Arellano, for Irv Doshay, announced the course on Software Reliability that is being offered by California State University at Dominguez Hills is being taught by Myron Lipow.

Mr. Roger Lockwood has been working on a Software Safety Systems Document originally for the U.S. Air Force, but

now to be channeled through an industry handbook. He is seeking support of the Society to develop this handbook under the auspices of IEEE. Loretta will ask Roger for a formal plan by the next AdCom meeting at which we can decide on a position.

Dennis Hoffman reported that the CAE Workshop has been integrated into RAMS. He also reported on Project Aires.

Mike Cushing reported on the results of the questionnaire appearing in the April Newsletter. A summary of the results will be submitted to the Newsletter.

Other News:

Marvin Roush reported that there has been a decrease in periodical subscriptions and membership. Total membership is down 6% from last year.

Hank Malec presented charts showing the number of people who only belong to the Reliability Society (R-07) and those who belong to 2 or 3 other societies. This could be used as a marketing tool to get those of the other societies to join the Reliability Society.

Joe Gruessing reported that he received one call from a member who received the wrong proceedings. Last year many calls were received from members who were mailed the RAMS proceedings instead of the IRPS and vice-versa. Joe reported that he has been receiving great support from Headquarters in sending material to members.

Bruce Bream is looking for support on the Newsletter. Bruce has asked Tom to appoint an associate editor.

Dick Doyle reported that Dev Reheja will be giving a presentation on Maintainability at the October AdCom meeting.

Sam Keene reported that we are on schedule for the video conference. Presenters are Ted Keller, John Musa, and Sam Keene. The motion to authorize \$30,000 for the course was approved.

Tom Weir reported that each Society periodically gives reports of their activities to the IEEE Technical Activities Board (TAB). It is our turn and in August he must provide input to TAB.

Loretta Arellano
Secretary, Reliability Society

Reliability ADCOM Meeting Schedule

IEEE RELIABILITY SOCIETY ADCOM MEETING University of Maryland September 30 - October 1, 1994

Friday, September 30, 1994		
The Inn and Conference Center (1-800-727-8622) University Blvd. at Adelphi Road, College Park		
1:00-4:00	Technical Operations Committee	R. Doyle
6:30-???	Dinner at the Chef's Secret	
Saturday, October 1, 1994		
Univ of MD, Engineering Classroom Bldg, Room (TBA)		
8:00-8:10	Call to Order	T. Weir
8:10-9:30	Vice Presidents' Reports	
	Meetings	H. Hartt
	Membership	M. Roush
	Publications	J. Gruessing
	Technical Operations	R. Doyle
	Junior Past President's Report	S. Keene
	Video Conference Program Discussion	
9:30-11:00	Position Guides Revisited (Continued from July Meeting)	L. Arellano, B. Bang, R. Doyle, J. Gruessing, H. Hartt, S. Keene, R. Kowalski, M. Roush
11:00-11:30	R&M Council	A. Plait
11:30-12:00	Reliability Society Audit Debrief	T. Weir
12:00-1:00	Lunch	
1:15-1:30	Funding for Eastern European Libraries	J. Gruessing
1:30-2:00	Maintainability Discussion	D. Raheja
2:00-2:15	IRPS & RAMS Proceedings Orders	A. Coppola
2:15-2:30	Constitution Revision (Introduction)	T. Weir
2:30-3:00	Reliability Society BOD Proposal & Chapters for China and India	B. Bang
3:00-3:30	Old & New Business	T. Weir
3:30 —	IEEE Presidential Candidate Debate Video or Adjourn	T. Weir

Future meetings will be announced in the newsletter. The first two ADCOM meetings held each year are held concurrently with the RAMS and IRPS conferences. The IRPS is scheduled for Las Vegas in 1995. A conference may be more justifiable for you to attend, so please start your paperwork associated with a conference and plan on attending an ADCOM meeting in the same trip. Unfortunately the Reliability Society is unable to provide any monetary support to our meetings, but you can count on us buying you a "Free Lunch or Dinner". You might even want to volunteer for some future activity or join a committee.

Technology Policy Council Representatives

I am pleased to announce that the IEEE RELIABILITY SOCIETY has nominated for the second year 7 members to the IEEE United States Activity Board (USAB), Technology Policy Council. The representatives are shown along with their telephone numbers and field that they support. Most of these representatives have been active council members for one or more years.

Any Reliability Society member wishing to find out more about any of these USAB activities or desiring to attend a meeting is cordially invited as a guest. However, please notify either myself or one of the Technology Policy Council representatives if you plan to attend.

As you might know, our members are very active with the Technology Policy Council Committees in addition to their support of the Technical Operations Activities or other Reliability Society Activities. They are all extremely knowledgeable as well as energetic.

We try to keep active with other groups and to share the knowledge that is available. In an attempt to build on this sharing, we invite you to contact these representatives and ask for information to be mailed to you. This information typically would be recent meeting minutes and special white papers. If you would like to be considered for one of these mailing lists, please let me know so that I can coordinate it. In the future we intend to have a column for articles about each of the Technical Operations Activities.

If you have any questions or need further information, please do not hesitate to call me, or write to my address listed below.

Richard L. Doyle
Registered C.E. & E.E. (CA)
REE No. 8795, RCE 22955

IEEE RELIABILITY SOCIETY NOMINEES FOR TECH. POLICY COUNCIL - AUGUST 1994

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- DEFENSE R&D POLICY:** Mr. Joe Gruessing, Westinghouse Electric, P. O. Box 746, M/S 1675, Baltimore, MD 21203, 410-765-7070 (W), 410-461-2234 (H)
- ENERGY POLICY:** Mr. Jerry Fussell, JBF Associates, Inc., 1000 Technology Park Center, Knoxville, TN 37923, 615-966-5232
- HEALTH CARE ENGR. POLICY:** Mr. John Adams, Valley Lab Inc., 5920 Longbow Drive, Boulder, CO 80301, 303-530-6503 (W), 303-443-8973 (H)
- COMR (Man and Radiation):** Mr. Richard L. Doyle, Doyle and Associates, 5677 Soledad Rd., La Jolla, CA 92037-7050, 619-454-3454 (W), 619-459-6504 (H), r.doyle@ieee.org
- AEROSPACE R&D POLICY:** Mr. Puran Luthra, 14510 Oceanside Dr., St. Louis, MO 63034, 314-553-4210 (W), 314-355-4824 (H), 314-553-4114 (F)

IEEE-USA Government Relations Information on the Internet

IEEE-USA government relations information is available by electronic mail through the Internet. Information currently available includes a copy of IEEE-USA's Federal Legislative Agenda (info.ieeeusa.agenda@ieee.org), a list of current IEEE-USA position statements (info.ieeeusa.pos@ieee.org), a chronological log of IEEE-USA testimonies, comments, and communications with public policy-makers (info.ieeeusa.policy@iee.org), the IEEE-USA Legislative Report newsletter (info.ieeeusa.legrpt@ieee.org), and information on the IEEE-USA pensions reform efforts (info.ieeeusa.pension@ieee.org). To obtain these documents, send an email request via Internet to the indicated address (no subject line or text message required). An autoresponse text file will be automatically returned to your email address. For more information, contact Chris Brantley (c.brantley@ieee.org). IEEE-USA promotes the professional careers and technology policy interests of the IEEE members in the United States.

- Engineering Design Optimization
- Quality Engineering
- Total Quality Management Techniques

For information contact: Program Chairman Dr. Hoang Pham, Dept. of Industrial Engineering, Rutgers University, P.O. Box 909, Piscataway, NJ 08855 U.S.A., Tel: (908) 445-5471, Fax: (908) 445-5467, e-mail: hopham@princess.rutgers.edu

13-16 March 1995 **15th Capacitor and Resistor Technology Symposium**
Hyatt Islandia Hotel
San Diego, CA

The symposium is an annual forum for the presentation of information on new components, improved applications and solutions to current problems. The Conference is designed to exchange information between users, manufacturers and academia on the following components:

- Capacitors
- Magnetics
- Filters
- Resistors

This year there will be the usual technical and product session with a special session on High Temperature Components and Applications. Technical sessions are planned on the following topics:

- Application Experience
- Screening Methods
- Problems and Solutions
- Quality Assessment
- Failure Experience
- Failure Analysis Procedures
- Reliability Performance
- Test Techniques
- Derating Practices
- High Reliability Practices
- Materials
- Performance Data
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3-6 April 1995 **International Reliability Physics Symposium**
Riviera Hotel
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USA

The 1995 Symposium will continue emphasizing building-in reliability for VLSI devices and hybrid components during their design, manufacture and test. Papers illustrate the incorporation of reliability physics, reliability engineering, out-of-spec design tolerance, fabrication, assembly, and manufacturing process control to improve system reliability.

TOPICS:

- BUILDING-IN RELIABILITY:
 - Integration of reliability engineering with all elements of design
 - Establishing effects of input parameters on product reliability & control
 - Physical basis for design rules & concepts for minimizing jeopardy with experimental validation

- Particulate control and its effects on reliability
- Improved manufacturing techniques for wafer fabrication and assembly
- TESTING METHODOLOGIES FOR RELIABILITY, including:
 - In-process wafer fabrication control and assembly, monitors, and sensors
 - Novel test structures and materials
 - Evaluation at wafer level or after full or partial processing
 - Reliability modeling & field failure rate prediction
- ANALYZING FOR RELIABILITY:
 - VLSI failure mechanisms and models applied to: dielectric integrity; electromigration; hot-carriers; low power/low voltage issues; corrosion; latchup/ESD/EOS
 - Optoelectronic failure mechanisms and models applied to: LED/laser degradation; lithographic wave guide; burn-in/aging/wearout; passive element degradation; optical fiber issues; ESD/EOS
 - Assembly related failure mechanisms and models applied to: bonding; surface mount issues; multichip packages; package integrity; thermomechanical stress; die overcoats
 - System related failure mechanisms, including: automotive; consumer; military & aerospace
 - Failure analysis techniques: new, advanced, & simplified
 - Analytical instruments & techniques
 - Computer-Aided Reliability (CAR) applications & simulation with experimental validation

For more information contact: Ajit K. Goel, Technical Program Chairman, 1995 IRPS, Oneida Research Services, Inc., 540 Weddell Drive, Suite 7, Sunnyvale, CA 94089 USA, Tel: 408-734-2987, Fax: 408-734-2984, e-mail: AjitG@AOL.com

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COMPASS '95 10th Annual Conference on COMPuter ASSurance

26-30 June 1995
Gaithersburg, MD

The purpose of COMPASS is to bring together researchers, developers, integrators, and evaluators who work on problems related to specifying, building, and certifying high-assurance, high-consequence computer systems. What distinguishes COMPASS from similar conferences is its emphasis on bridging the gap between research and practice. For researchers this provides an opportunity to present new results, theories, and techniques both to other researchers, and to practitioners who can put them to use. They can also learn from practitioners of issues and problems encountered in building real systems. Practitioners have an opportunity to share lessons learned, to hear of new research, and to influence future research directions.

COMPASS '95 will be held at the National Institute of Standards and Technology in Gaithersburg, MD, a suburb of Washington, DC.

Papers should present advances in the theory, design, implementation, evaluation, or application of high-assurance systems, or report on experiments, evaluations, and open problems in the use of new technologies for computer assurance. Special consideration will be given to presentations (either single papers or paper pairs) by practitioners and researchers who have teamed-up to work on the same problem. The conference will be preceded by one or two days of tutorials. There will also be a tools fair.

Relevant Subjects for papers, and also for proposals for panel session, tutorials, and the tools fair are solicited include the following:

Software Reliability
Human-Computer Interfaces
Real-Time Systems
Embedded Systems
Measurements and Metrics

Software Safety
Tools
Networks
Certification
Standards

Computer Security
Formal Methods
V&V Practices
Organization Theory
Life Cycle Processes

Representative **Application Areas of Interest** include but are not limited to:

Road and Rail Transport Systems
Plant and Process Control Systems
Nuclear and Conventional Power Generation

Communications
Avionics

Military Systems
Medical Systems
Space Systems

Instructions to Authors:

Send five copies of your paper (not to exceed 7500 words), panel session proposals, tutorial proposals, or tools fair proposals to John Rushby, Program Chair, at the address given below. Abstracts, electronic submissions, late submissions, overlength papers, papers previously published or currently submitted for publication elsewhere, and papers that cannot be published in the proceedings will not be considered. Papers submitted from outside North America should be sent via overnight courier service or express mail. Exceptionally, authors in countries where copying or printing facilities are limited may submit a single copy in any form available to them (including electronic mail). Authors are responsible for obtaining, prior to acceptance, any and all necessary permissions and clearances for publication, and are expected to present their paper in person if it is accepted. Limited financial assistance will be available for student authors.

PAPER SUBMISSION DEADLINE: January 17, 1995
NOTIFICATION OF ACCEPTANCE: March 14, 1995
CAMERA-READY COPIES DUE: April 17, 1995

The proceedings will be published by the IEEE. Papers that describe use of technology presented at a previous COMPASS conference are eligible for a special award. Papers of exceptional quality and appropriate subject matter are eligible for inclusion in a special issue of the Journal of High Integrity Systems or the Journal of Computer Security.

FOR ADDITIONAL INFORMATION CONCERNING COMPASS '95 CONTACT:

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1995 ANNUAL INTERNATIONAL RELIABILITY AND MAINTAINABILITY SYMPOSIUM AND EXHIBITS PROGRAM

The International Symposium on Product Quality & Integrity
Sponsored by IEEE/RS in cooperation with 9 other Technical Societies

16-19 January 1995

Washington Hilton Hotel & Towers

Washington, D.C. USA

Reliability and Maintainability — The Next Generation

Tutorial Sessions

Monday, January 16 is devoted entirely to Tutorial Sessions. Additional Tutorials will also be held parallel to the Technical and Panel sessions throughout the Symposium. The Tutorial faculty is comprised of expert practitioners in their fields. Tutorial topics will fill needs from basic theory to advanced material, and will include: Reliability; Maintainability; Practical R&M Management; Taguchi Experiments; Markov Modeling; Understanding Part Failure Mechanisms; Software Reliability; Fault Tolerant Computing; Concurrent Engineering; and others.



Panel Sessions

In addition to the Technical Sessions, the Symposium will include a number of Panel Sessions, ranging from the Advisory Board to Invited Sessions, covering current controversial topics. At press time, the Panel Sessions planned include: Influence of Systems Engineering & Operations Methods on Product Quality; Virtual Reality Applications; Design & Verification of Safe, Reliable, and Robust Airplane Systems; Automotive Applications; Use and Misuse of Reliability Predictions

Technical Paper Sessions

Tuesday through Thursday, January 17 - 19, will include a topical range of Technical Sessions comprised of the best papers submitted in response to the Call For Papers. These sessions will include:

Space Programs Reliability
Fuzzy Logic
R&M Testing
Fault Trees
BIT/BITE

Practical Aerospace Applications of Reliability
Concurrent Engineering Enabling Technologies
Automated Modeling and Simulation Tools
Safety & Quality Management Systems
CALs Applications to R&M

R&M Requirements
System Modeling
R&M Growth
Machine Tool R&M
RAM/CAE Tools

Leesburg Conference

Once again, the IEEE, Leesburg CAE Workshop on Concurrent Engineering for Integrated Product Development (IPD) is teaming up with RAMS. The workshop will be held on Monday, and is a must if IPD Teams are part of your work.

Exhibits Program

For the 11th year in a row, the Symposium will include Exhibits in key technical areas such as Supportability, CAD/CAM/CAE/CAT, Failure Analysis, R&M Software, ESS and Logistics. Efforts are underway to expand the coverage to new technology areas to parallel some of the new sessions this year, such as Virtual Reality Applications.

The single, low registration fee includes admission to all five of these programs, a full set of Tutorial Notes, and a bound copy of the Symposium Proceedings, with the full text of all technical papers. (Together nearly 1000 pages of top-level technical material). With proper planning by you or your company, this exceptional value can be utilized as training for new or experienced professionals, as well as the opportunity to keep abreast of the latest technical developments. **PLAN TO ATTEND THIS SYMPOSIUM!!!** The fee is appreciably less than half the usual cost of four day tutorials presented by any other forum. This is possible because of the not-for-profit structure of the RAMS, major industry support, and the volunteer contribution of the Management Committee and Board of Directors.

For more information contact:

Alfred M. Stevens
Lockheed Space Op. Co.
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(407) 861-0745 FAX (407) 861-5922

For exhibit information contact:

Dave Barber
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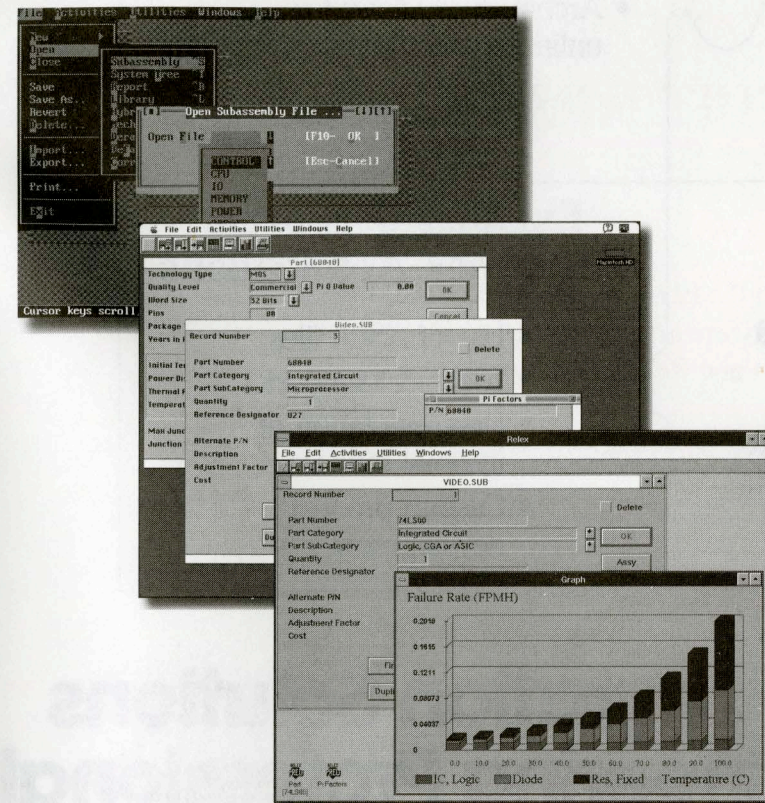
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