Reliability Society

C O N T E N T S

President's Message

The IEEE Environment

IEEE has been pursuing three important initiatives that will alter the internal IEEE environment and the external appearance of IEEE: branding, a new financial model, and decision streamlining. In this column, I'll acquaint you with these initiatives.

Branding

In corporate communications, "branding" is an accepted methodology to carefully research, identify and organize into a "brand" the values, beliefs, aspirations, personality and reputation of an organization. These organizational qualities are then used to develop a communications platform for shaping operating standards (including, but not limited to, corporate identity) and the leadership's future aspirations for the organization. Because branding is based on credible research conducted among an organization's important constituencies, the information obtained from the research can be used to define what the organization should do to help achieve its future success. Branding helps establish a corporate identity and image for the organization. This is reflected partly in the graphics or logos of the organization. In 1998, IEEE employed a consultant to examine IEEE branding. The consultant proposed changing the IEEE logo and other changes. The consultant's recommendations are still being discussed within IEEE.

New Financial Model

Although IEEE is financially strong, it has been decided to improve the IEEE financial management process in certain areas. Therefore, a committee has been established to develop a new financial model for IEEE. The focus of the effort is to improve the way IEEE infrastructure expenses are handled and to improve business practices in a manner that increases revenues and reduces expenses. The committee will present recommended improvements in the form of alternative financial models to the Technical Activities Board and to the IEEE Board of Directors, which then will select one of the alternatives.

Decision Streamlining

A committee has been formed, to explore ways in which the IEEE can more efficiently conduct its business and respond to members' needs in a timely manner. The committee is reviewing the IEEE policies and the entity decision-making process. One observation has been

Editor's Column ■■■■■■■■■■■■■■■■

In Memoriam

David F. Barber
Sept 12 1922 - June 28, 1999

The reliability community mourns the loss of David F. Barber, who died of a heart attack on June 28, 1999. From 1962 to his retirement in 1979, Dave was Chief of the Reliability Branch for the Rome Air Development Center (now the Information Directorate of the Air Force Research Laboratory), where he directed the leading DoD research and development activity in reliability and maintainability.

He served on various high level government committees, such as the Weapons Systems Effectiveness Industry Advisory Committee, and was long involved in reliability conferences such as the Reliability Physics Symposium and the Annual Reliability and Maintainability Symposium. Over the years, he was involved in virtually every conference management position, including General Chairman of both symposiums.

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Reliability Society Newsletter Inputs

All RS newsletter inputs should be sent to:

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The schedule for submittals is:

Newsletter	Due Date
January	October 8
April	January 8
July	April 8
October	July 8

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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Seeking Nominations for the Annual Reliability Award

The Reliability Society is seeking nominations for the Annual Reliability Society award. It is to be given at the 2000 Annual Reliability and Maintainability Symposium being held in Los Angeles in January. The award is to recognize outstanding contributions to the Reliability discipline. The basis for judging will be, primarily, the impact of contributions on the advancement of reliability theory, education, engineering or its management.

Nominations can be submitted to Loretta Arellano, P.O Box 92426, RE/R7/P514, Los Angeles, CA 90009, or via email at l.arellano@ieee.org, no later than Nov 15, 1999. All candidates are to provide a brief description of their accomplishments for consideration of this award.

Chapter Activities ■■■■■■■■■■■■■■■■■■■■

Boston Chapter

Hello All,

I would like to inform you that Mr. Jim Fahy was elected as Chair of the Boston Chapter effective July 1, 1999. Jim's phones, E-mail and addresses and at work are below. He would prefer to receive correspondence (hard copies) to his home address and not to work.

I would appreciate it if the appropriate records are updated with his detail and future correspondences are directed to him. I will continue to serve on the Boston Chapter's AdCom as Secretary and will do my best to help Jim to continue serving our people and advancing the reliability profession.

Giora_Kedem@ne.3com.com

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Cleveland Chapter

The Cleveland Chapter had a meeting and a conference in this period.

Our April meeting was about the Cleveland Hopkins Airport Expansion Planning Activities. Mark Perryman, Federal Aviation Administration (FAA) EIS (Engineering Information System) Manager, explained the future airport layout plan that has been approved by the FAA, the Cleveland Airport Authority, and NASA Senior Management. Many presentations have been made at town meetings, public hearings, and resident groups to discuss issues and concerns. Two new runways will be added, Runways 5L-23R, 9000' x 150' and 5R-23L, 11,250' x 150' needed for future international high-speed transport vehicles. Approval of this plan represents acceptance of the general location of future facilities needed. The FAA's concerns were about obstructions. Other concerns were about the impact on electronic aids, adverse effect on controller view of aircraft approaches and ground movements. Our attendance at this meeting was unusually high. Many of our members wanted to know how the airport expansion would affect the surrounding Cleveland, Fairview, and NASA areas. We thank Joseph E. Morris, NASA Relocation Project Manager, for arranging an excellent meeting.

Our May conference on Assurance Technology was held at NASA Glenn Research Center Lewis Field. Michael A. Greenfield, Deputy Associate Administrator in OSMA, gave the keynote address, "Safety and Mission Assurance Roll in Acquisition." He explained four main points in his talk: (1) a structured risk-based acquisition management (R-BAM) approach is critical for a successful project; (2) teaming with procurement is the key; (3) risks must be identified and managed throughout the acquisition cycle; and (4) the SMA community can provide valuable support as risk management consultants. He challenged the Safety and Mission Assurance (SMA) community to recognize that many opportunities await us. As we continue as consultants to our projects, we should focus on the following: seek additional ideas to help support early acquisition involvement; get to know our procurement people; meet with them and discuss R-BAM; sponsor joint risk management training for project and procurement staffs; and develop the application of Risk-Based Acquisition Management at our centers. The following 28 presentations at the conference explained the need to share concepts, ideas, and best practices on technical advances in Mission Assurance. A copy of the presentations and the video record was sent to each center. The participation and attendance were up from last year. We look forward to our third annual conference next year.

The '99 Reliability Availability Maintainability Symposium (RAMS) was a big success. We plan to support the '00 RAMS on the Management Committee with papers and tutorial suggestions.

All in all here in Cleveland, we are having fun staying active and serving the needs of our members.

Regards,

Vincent Lalli, Chair
Vincent.R.Lalli@lerc.nasa.gov

Dallas Chapter

Best Regards,

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Los Angeles Chapter

David L Franklin
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d.l.franklin@ieee.org

Minnesota Chapter

The Minnesota (Twin Cities) IEEE Reliability Society held meetings in March, April and May 1999. The following is a summary of these meetings.

The **March 16 meeting** covered the topic of destructive testing reliability measures. The speaker, Jon Kim of Medtronic gave examples of how the destructive sample testing of a medical product is correlated with the ultimate user reliability. The destructive sample testing permits assurance of continued product reliability by the manufacturing process. Twenty-two people attended this meeting.

The **April 20 meeting** was a presentation by John Berner of Applied Research on the topic of Weibull Analysis, a technique employed for analyzing accelerated life test data or field data. The 22 attendees provided an enthusiastic audience asking many questions about the technique and it's applications.

The **May 18 meeting** covered a variety of software tools for aid in reliability work. Five different speakers showed a number of different standard programs to the 14 attendees. They showed how better data analysis and more efficient calculations may be performed through these standard programs. The speakers were all chapters members, two of whom had developed their own software. This completed the second year of the chapter existence.

The Minnesota chapter will hold it next meeting in September.

James McLinn
Chapter chair
JMREL@AOL.com

Philadelphia Chapter

16 March 1999

Advanced Developments In Wirebonding For Fine Pitch Applications -
Mr.Lee Levine

Through continuous improvements, wirebonding continues to be the dominant interconnection method. As die size has been reduced to conserve valuable silicon real estate, and the number of interconnects has risen because of increased functionality requirements, the decrease in the pitch and size of interconnects has accelerated. Today's leading edge production devices are gold ball bonded with 60 microns (bond pad) pitch and wedge bonded with 50 microns pitch. In the future, gold ball bonding will approach 40 microns pitch and wedge bonding will approach 30 microns. This talk focused on new developments of machines, bonding tools, and materials.

20 April 1999

How Engineers Fare Throughout The World: Highlights Of Second World Conference Of Engineers And Managers, 22-25 March 1999 In Melbourne, Australia - Mr. Harold J. Ammond

How do your everyday duties, goals, and aspirations compare with those of engineers in Europe, Africa, Asia, and Australia? Teleworking, international mobility, and engineering unions are more prevalent there. The present status and future expectations of their salaries and benefits as reported at the Conference was discussed.

GNETIC SPIN ENGINEERING AND ITS APPLICATIONS IN INFORMATION STORAGE -Dr. John Q. Xiao

In the past decade, the interaction between electron charges and their spins has been intensively studied ue to the striking phenomena exhibited in magnetic nanostructures. These phenomena include giant magnetoresistance in multilayers, spin valves and granular materials, spin accumulation on ferromagnetic/paramagnetic interfaces, and spin polarized tunneling in magnetic tunneling junctions. These new phenomena have also led to the initial successful device applications, commonly called "spin electronics" or "magnetoelectronics", for information storage. The fabrication of these nanostructures, the mechanism for giant magnetoresistance, and their applications as magnetic recording heads and magnetic non-volatile memories was discussed.

8 May 1999

Dical Devices And The Year 2000 -
Mr. Kenneth 01brish

Extra caution is needed in addressing Y2K problems in healthcare. This presentation was focused on the current Y2K status of healthcare facilities, the steps they have taken to minimize Y2K risks, and the steps that still need to be addressed. The presentation also focused on the most serious Y2K issues facing the healthcare industry: remediation and contingency planning.

Automotive Electromagnetic Compatibility Testing - Dr. Charles E. Goldblum

Automobile manufacturers in the United States and abroad have unique Electromagnetic Compatibility (EMC) requirements for the electrical and electronic subsystems integrated into the modem automotive platform. Even though each new automobile is tested as a complete platform with respect to EMC, failures at this state of the design and production process can be very costly to the automobile manufacturer. This presentation focused on the general subsystem EMC requirements and test methods, with an emphasis on testing required by DaimlerChrysler.

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Tokyo Chapter

We are very proud to say that Professor Koichi Inoue, Department of Aeronautics and Astronautics, Graduate School of Engineering, University of Kyoto was elected as a new AdCom Member for 1999-2001 and with the kindly support from AdCom Members, the next AdCom meeting will be held for the first time in Asia on Saturday, Oct.2 in the beautiful and traditional city of Kyoto, followed by the Workshop "Reliability Engineering in the 21st Centuries" which will be held in Tokyo on Monday, Oct.4. Our President Dr.Ken LaSala will give a special lecture both in Kyoto and in Tokyo on "Human Performance Reliability". We will give a detailed report in the next issue.

New officers took over from January 1, 1999 to Februay, 2001. They are Prof. Shuichi Fukuda, Department of Production, Information and Systems Engineering, Tokyo Metropolitan Institute of Technology (Chair), Prof.Yoshinobu Sato, Tokyo University of Mercantile Marine (Vice Chair), Prof.Toshiyuki Inagaki, Institute of Information Sciences and Electronics, University of Tsukuba (Secretary) and Dr.Tohru Tsujiide, Director, Device Evaluation Technology Laboratory, NEC (Treasurer). They would like to explore the new frontiers in reliability for the coming century.

It also must be added that ITSC 99 (International Conference on Intelligent Transportation System 99) will be held in Tokyo, Oct.5-8, just after the above mentioned Workshop and that SMC99 (International Conference on Systems, Man and Cybernetics 99) will be held in Tokyo, Oct.12-15. Although we are officially not sponsors, but we did substantial contributions to these conferences.

Shuichi Fukuda, Chair
fukuda@tmit.ac.jp

AdCom Meeting Minutes ■■■■■■■■■■

July 31, 1999
Denver West Marriott, Golden, Colorado

Attendees: J. Voas, S. Keene, W. Tonti, D. Doyle, D. Franklin, D. Hoffman, W. Kuo, J. Adams, R. Evans, B. Trapp, K. LaSala,, J. Rupe, L. Arellano, P. Hetherington, R. Kowalski, M. Roush, B. Gauger, T. Basso, A. Campbell, M. Abramo, J. Dugan, K. Inoue, T. Basso, Kirk Gray.

K. LaSala called the meeting to order at 8 a.m. and the March AdCom minutes were approved.It was decided to send $100.00 to the charity requested by the family of Henry Malec as well as $100.00 to the charity requested by the family of Dave Barber, Sr.

M. Roush presented a proposal titled: "Would a manpower study be beneficial?" He proposed an "Informal National Workshop – Develop Longer Range Program Plan" The AdCom agreed to write a letter to M. Roush supporting the need for a workshop to study the state of the need for reliability engineers and reliability engineering. John Adams volunteered to look for a need for reliability engineers within medical companies.

Dick Kowalski projects a small RS budget surplus for 1999.

The RS will provide technical sponsorship to the 2nd Annual Microelectronics Reliability and Qualification Workshop. Bob Gauger took an action to put together for the next AdCom meeting a list of what the different levels of conference sponsorship mean.

Membership, Marsha Abramo will find out who dropped out of the RS that did not also drop out of IEEE, whether it is possible to join the RS and not join the IEEE, and how the Computer Society is able to have people join it but not join the IEEE.

The AdCom accepted, in spirit, the proposal to have the RS jointly sponsor with EDS the electronic journal *provided* that they could agree to a title modification. Also, the AdCom reserved the right to continually review this decision as the proposal for this electronic journal continues to be "fleshed out.". AdCom opted to not commit any funds at this time. D. Kowalski will be the Point of Contact for the RS.

The Reliability Society will use IEEE HQ for AdCom balloting for the upcoming election. Loretta was authorized to buy pins for chapter chairs from IEEE HQ as a token of appreciation.Phil Tsung will be invited to chair an *ad hoc* publicity committee to increase publicity for the RS. All executive officers should look over the current bylaws and see how they apply to the current AdCom job positions and eport back to Loretta on how the current bylaws are related to these positions.

IEEE Educational Activities office will send RS promotional brochures on all RS videos that are currently for sale.

AdCom adjourned at 4:45 p.m.

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IEEE/ABET Seek Evaluators for Accreditation Programs

The IEEE Educational Activities Board seeks engineering professionals from industrial, government, and academic sectors to serve as program evaluators for accrediting engineering and engineering technology programs at U.S. universities. Nominations will be accepted through 1 November 1999.

The IEEE members selected will attend a one-day training seminar on the IEEE/ABET accreditation process, the first of which to take place at the June 2000 ASEE convention in Saint Louis. The IEEE and ABET, through their pool of trained program evaluators, will be able to visit engineering and engineering technology departments across the country. Evaluation sessions take place each fall and generally run for two to three days. "Participation in the accreditation process for IEEE/ABET engineering programs is a major responsibility," said Rae Toscano, manager of IEEE EAB Administration. "Service as a program evaluator provides IEEE members with the opportunity to contribute to the achievement of high quality educational standards in engineering programs."

Nomination packages are available from: Accreditation Administrator, IEEE Educational Activities, 445 Hoes Lane, Piscataway, NJ. 08855-1331; accredita-

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IEEE RELIABILITY SOCIETY

ADCOM Meeting

ADCOM MEETING, Saturday/Sunday January 22/23, 2000, in conjunction with RAMS

ANNUAL RELIABILITY and MAINTAINABILITY SYPOSIUM (RAMS) January 24-27, 2000 Los Angeles Airport Marriott, Los Angeles, CA

ADCOM MEETING, Saturday/Sunday, April 8/9, 2000, in conjunction with IRPS

INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM (IRPS) April, 10-13, 2000, Fairmont Hotel, San Jose, CA

tion@ieee.org (e-mail); or 1.732.562.5484 (phone). Complete information packages, including the application and nomination forms, are available on the WWW at: http://webstage.ieee.org/organizations/eab/accengineer.htm#Engineering (for engineering programs), and http://webstage.ieee.org/organizations/eab/accengtech.htm#Technology (for engineering technology programs

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IEEE Standards Association (IEEE-SA)—Year One

Members of IEEE's Technical Societies rightly have been anxious to know more about the IEEE-SA. We are well into the second year and are better positioned to assess its accomplishments, unresolved issues, and future challenges.

When the SA was launched, our promises to you included: 1) an election of the governing body, 2) expanded opportunities for standards development under the Standards Board, and 3) even further standardization opportunities outside of the Standards Board. How did we do?

We've given IEEE-SA members a voice in the governance. The IEEE-SA Board of Governors (IEEE-SA BOG) developed an election process for its members-at-large and for the IEEE-SA President. This was approved by the IEEE Board of Directors in November 1998. Now members of the IEEE-SA can elect the members-at-large of the IEEE-SA BOG, and members of the IEEE-SA who are also IEEE members may elect the IEEE-SA President. The position of President-Elect was also created to allow for continuity of leadership.

The first elections will be held this year as part of the IEEE annual election process. IEEE-SA members will see their ballots in the fall.

Issues and challenges.

Some volunteer standards developers don't see the value of being part of a constituency with the above-mentioned elec-

Branding and the IEEE: A Concept Whose Time is Here

By David Kemp

The IEEE, which we like to point out is "the largest technical professional society in the world," is under siege. Powerful new forces are undermining the organization's future. They include competitive pressures by aggressive and nimble commercial publishers with very deep pockets, continuing high (and costly) IEEE membership turnover, and lack of a cohesive, consistent IEEE image or brand that weakens the IEEE key constituents' ability to understand the overall value of the organization to them.

To gauge the effect of this lack of a consistent and unifying image, the IEEE conducted research during 1998 and 1999 among key IEEE constituent groups – volunteers, other members, students and recent graduates, and influentials in industry, government and academia.
Here are some of the findings:

The IEEE is not meeting current or evolving member needs well enough.

In recent surveys conducted among the IEEE's global membership, more than 75 percent said they personally value their membership, but only 25 percent perceive it to be of value to their employers.

There is a widespread image void about what the IEEE is – and who it represents, what it stands for, and where it should be headed.

In the same surveys, fewer than half of the members responding said the IEEE is suited to represent information scientists, systems analysts and software engineers.

Alternative sources of technical information are a key competitive threat to the IEEE.

One-third of the members in the surveys affirm the Internet is becoming a better source of technical infor-

mation in their fields than the IEEE. And in a related survey, nearly 63 percent of non-members avow the IEEE is the best source of technical information in their field, but significantly more (86 percent) rely on the Internet.

Does all this disturb you as much as it does me?

Longtime IEEE members who have seen this data are very concerned about it. Since early this year, the Branding Ad Hoc Committee, authorized by the Board of Directors and established by the IEEE President, has been examining IEEE branding issues and is now developing recommendations to provide to the Board in November 1999. With the value of the IEEE name worth literally billions of dollars, the global reach of the organization, and the leadership reputation for its published content, we believe it is possible to refresh and energize the Institute.

To accomplish this, we need a new, motivating positioning to fill the image void. We need a branding and identity system to support that idea and unify our diverse elements. And we must aggressively market our positioning to our key audiences.

In other words, the IEEE must change – how we operate, communicate, and define ourselves. Change is difficult. It is always more comfortable to stay with the familiar. But our technological world is rapidly transforming itself, with industries converging at ever-faster rates, and new fields emerging with jobs that were unimaginable a decade ago. In the face of all this, the IEEE must step up to managing its brand and leveraging its great value.

The management visionary Peter Drucker said, "Whom the gods would destroy, they first give 40 years of success." In three years, 2003, the IEEE will mark its 40th anniversary.

RELEX Center Spread

IEEE Standards

toral privileges. The goal of an election is to bring forward individuals with leadership abilities, industry involvement, and strong interest and experience in the standards activities of the Institute. The more vested the interest, the better for the standards constituency.

IEEE standards developers have new voting options. The Standards Board approved entity balloting (e.g., corporate balloting) as a part of the traditional IEEE standards consensus process. Remember, the IEEE-SA Bylaws include several new membership categories, such as company, government, and organization. Now, an IEEE committee can declare at the outset of its project (PAR) that it will proceed with a corporate-level ballot, as distinct from an individual-based ballot. IEEE hosts a broad range of standards programs, coming from diverse industry sectors. Now we have started to enable IEEE to embrace that diversity with options for proceeding rather than a "one size fits all" policy.

1) There is strong interest in a mixed balloting process, which could include individuals and company representatives, as an example. The Standards Board is working on this during 1999.

2) Some IEEE standards developers have shown resistance to joining the SA (we have approximately 3500 individual members). The requirement for membership is directed toward the consensus ballot privilege. If you want to ballot, you must join the SA. However, if you want to work on the writing of the standard, you have no SA membership requirements. Our balloting statistics show an increase in activity, which indicates that overall, SA membership has not been a deterrent for that level of participation.

A new organization has been formed that allows IEEE to provide a full range of standards services to its members and their industries. Over the last several years, we have been keenly aware of the proliferation of industry groups that have formed for the purpose of developing industry standards and running related programs. These groups formed because they found that the IEEE was not able to respond ade-

quately and quickly enough to the market demands of their technologies. We had to ask ourselves, Why shouldn't this work be done in the IEEE? These are IEEE technologies! And as a result the IEEE-SA developed the IEEE Industry Standards and Technology Organization (IEEE-ISTO), which was approved by the IEEE Board of Directors in November 1998 and launched on 1 January 1999.

The new organization's goals complement the activities of the IEEE-SA. It provides a forum in which development processes and related activities can be tailored to the technology, market, and participants. It also offers support for industry-specific post-development activities, including marketing, certification, branding, and conformity assessment. The Medical Device Communications Industry Group is the first group to organize within the IEEE-ISTO. Several additional programs are expected as 1999 progresses.

Together, the IEEE-SA and the IEEE-ISTO enable the IEEE to offer industry an unprecedented level of choice through a complete menu of standards activities and services.

1) IEEE's ability to change its culture in its standards activities toward one that focuses on identifiably market-relevant initiatives.

2) The IEEE ISTO must provide proof of concept that it is functioning as a supplier to the Societies and the Standards board, not a competitor.

Our goals for this year include an aggressive globalization program, new product and service opportunities, and increased communication and improved relationships with the IEEE Technical Societies. We will keep you informed through this newsletter and other media, and we welcome your thoughts and comments

Judy Gorman
Managing Director
IEEE Standards

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Meeting Notice

Announcing the 2nd Annual Polymeric Materials For Microelectronics & Photonics Applications: Mechanics, Physics, Reliability, Processing

Paris, France, December 12-15, 1999

Sponsored by the IEEE Components, Packaging & Manufacturing Technology Society (IEEE-CPMT); American Society of Mechanical Engineers (ASME International), in Cooperation with the Society of Plastics Engineers (SPE); Materials Research Society (MRS); Society for Optical Engineering (SPIE); Association Francaise de Mecanique (AFM)

Contact
www.asme.org/conf/POLY99/
index.htm

WORKSHOP

Polymeric materials are widely used in engineering, including the areas of microelectronics and photonics. Examples are: plastic packages of integrated circuit (IC) devices, adhesives, various enclosures and plastic parts, polymeric coatings of optical silica fibers, and even polymeric lightguides. There are numerous and rapidly growing opportunities for the application of polymers for diverse functions in the "high-technology"

field. Polymeric materials are inexpensive and lend themselves easily to processing and mass production techniques. The reliability of these materials, however, is usually not as high as the reliability of inorganic materials and is often insufficient for particular applications, thereby limiting the area of the technical use of polymers. We intend to bring together mechanical, electrical, optical, **reliability**, industrial and manufacturing engineers; materials scientists, applied physicists and chemists, to discuss and advance experimental and theoretical methods, techniques and approaches aimed at the prediction and improvement of the short/long-term performance of polymeric materials for different applications, and particularly those used in plastic packages of IC

OBJECTIVE

The objective of the workshop is to address the state-of-the-art knowledge in the field of mechanics, physics and reliability of polymers employed in microelectronics and photonics engineering.

SCOPE

The scope of the workshop includes, but is not limited to, the following major topics:

- Mechanical behavior and short and long-term performance of polymeric materials
- Polymeric materials characterization, Thermal, mechanical, electrical, optical and other properties of polymers
- Fracture mechanics of polymeric materials
- Moisture sensitivity of polymeric materials and plastic packages of IC devices
- Organic microelectronics;
- Polymer lightguides
- Polymers for wireless applications
- Aging and its effects on the long-term reliability of polymeric materials
- Thermal and electric field effects on damage and fracture of polymeric materials
- Accelerated testing of polymeric materials and plastic electronic packages, approaches and techniques

- Mechanics, physics and chemistry of adhesion, adhesives and adhesively bonded joints
- Stress concentration effects in polymeric materials and plastic electronic packages
- Performance of polymeric materials at high/low temperatures and in harsh environments;
- Role of fillers in the mechanical behavior and performance of polymeric materials;
- Thermal management of systems employing polymeric materials (including electronic components and photonic devices)
- Interfacial phenomena affecting the polymeric materials reliability
- Response of polymeric materials to dynamic and thermal loading
- Manufacturing processes in plastics engineering
- Reliability problems associated with manufacturing, testing, surface-mounting and operation of plastic electronic packages.
- New and emerging technologies for future electronic and photonic systems.
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SPEAKERS(Preliminary and Partial List):

D. Agonafer, IBM, USA; A. Chudnovsky, University of Illinois at Chicago, USA; L. Dhar, Lucent Technologies, USA; R. Dudek, Fraunhofer Institute, Germany; C. Feger, IBM, USA; G. Harman, NIST, USA; Z. Illyefalvi-Vit=E9z, Technical University of Budapest, Hungary; K. Kishimoto, Tokyo Institute of Technology, Japan;D. Ingman, Technion, Israel; T. Ishigure, Keio University, Yokohama, Japan; L. Keer, Northwestern University, USA; Y. Koike, Keio University, Japan; A. Lin, PackTech, Taiwan; J. Liu, Institute for Production Engineering Research, Sweden; J. Lu, Universite de Technologie de Troyes, France; B-J. Lwo, Chung-Cheng Institute of Technology, Taiwan; S. Matsuoka, Brooklyn Polytechnic University, USA; J. Morris, Binghamton University, USA; B. Michel, Fraunhofer Institute, Germany; O. Nalamasu, Lucent Technologies; M. Pecht, University of Maryland, USA; X. Quan, Lucent Technologies, USA; E.E.Rohlfs, Lucent

Technologies, Germany; J. Stafford, Motorola,USA; E. Suhir, Lucent Technologies, USA; A.Tay, National University of Singapore, Singapore; M.Taya, Washington University, USA; B. Thakkar, Lucent, USA; P.Wiltzius, Lucent Technologies, USA; C.P. Wong, Georgia Institute of Technology, USA; R. Wool, University of Delaware, USA; R. Wyndrum AT&T Laboratories, USA, S. Yi, Nanyang Technological University, Singapore; G. Zaikov, Russian Academy of Sciences, Russia.

TUTORIALS

The program of the workshop will include tutorials (short courses) on various aspects of the reliability of polymeric materials for microelectronics and photonics applications. The (partial) list of tutorials includes:

- Failures in Plastic Packages of IC Devices: Understanding, Prediction and Prevention / Instructor: Ephraim Suhir, Lucent Technologies, USA
- Polymers for Electronic Packaging: Materials, Processes and Reliability / Instructors: C.P. Wong, Georgia Tech, E.Suhir, Lucent Technologies, USA
- Adhesives in Electronic Packaging/ Instructors: J.Morris, SUNY-Binghamton, USA, J. Liu, IVF, Sweden
- Application of Computational Heat Transfer to Thermal Management of Plastic Packages of IC Devices/Instructor: Dereje Agonafer, IBM, USA
- Reliability and Lifetime Assessments for Polymeric Materials/Instructor: A. Chudnovsky, University of Illinois at Chicago, USA

Visit the ASME/POLY'99 web site for hotel information; program announcements, updates and abstract submission guidelines.
Www.asme.org/conf/POLY99/
index.htm
or contact:
Brian Bigalke,
Meetings & Conferences,
ASME International
Tel: 212.591.7057
Fax: 212.591.7856
Email: bigalkeb@asme.org

Call for Papers

ANNOUNCEMENT AND CALL FOR PAPERS

Third International Conference on Modeling and Simulation of Microsystems

MSM 2000
US Grant hotel, San Diego
California, USA
March 27-29, 2000

Abstract Deadline: December 15, 1999

http://www.cr.org/MSM2000

The largest gathering in the field worldwide, MSM is the premier technical forum for presenting the latest research and development in modeling and simulation tools and applications in the micro-system, microelectronic, semiconductor, sensor, materials and biotechnology fields.

The symposium is sponsored by: IEEE Electron Devices Society, Applied Computational Research Society, CFD Research Corporation, MemsCap, S.A., Microcosm Technologies, Inc., Molecular Simulation, Inc., Motorola, Swiss Federal Institute of Technology of Lausanne, TIMA-CMP Laboratory, France, Ibero-American Science and Technology Education Consortium, International Association of Mathematical and Computer Modeling

MSM 2000 will be held at the U.S. Grant hotel, located in the heart of downtown San Diego's business and cultural district, across from the Gas Lamp Quarter, and the world famous Horton Plaza, walking distance to Theaters, Restaurants and Harbor, and minutes from the famed San Diego Zoo, Balboa Park and Seaworld.

The conference will start Sunday late afternoon with registration and reception, and adjourn Wednesday afternoon. The Technical Sessions, and vendor exhibition run Monday through Wednesday. Conference registration and housing will officially open October 15, 1999. Required forms and instructions are posted on the conference web site.

The conference Technical Proceedings, consisting of articles submitted by authors of both oral and poster presentations will be distributed to participants at registration. In addition to the Technical Program, an exciting series of Social Events are being prepared to allow attendees ample opportunity to interact socially and enjoy the sights and sounds of San Diego.

Visit the WWW-site for information about registration, lodging, abstract submission, deadlines.

http://www.cr.org/MSM2000

Exhibitor space is available. Please address all inquiries to wenning@dnai.com.

CITEXPO-99
Conference on Information Technology (CIT99),

Bhubaneswar, India,

December 20-22 , 1999.

Organized by Orissa Information Technology Society (OITS) in cooperation with Information Technology Association of Orissa (ITAO).
For information contact
http://www.oits.org/icit99

Theme

The Conference on Information Technology (CIT) provides a high quality forum for scientists and engineers to present their latest research findings in this rapidly changing field. The first conference CIT'98 was held in Bhubaneswar, December 21-23, 1998 with active participation of academia as well IT industries. The details of this conference may be found in www.oits. org/~cit98. For CIT'99 authors are invited to submit their original and unpublished work on all aspects of Information Technology. Topics of interest include but are not limited to:

- Soft Computing
- AI, robotics and computer vision
- Software engineering
- Strategic Impact of Information Technology
- Parallel and Distributed Computing
- Networking and Ubiquitous Computing
- Multi-Agent Systems
- Object Oriented Programming
- Graphics and Human-Computer Interactions
- E-commerce and data mining
- Design and Architecture of IT Chips

Conference proceedings will be published and available before the conference.

Tutorials

CIT '98 organized tutorials on different areas like mobile data and transaction management, electronic data security, de-

signing applications with objects, Internet protocol (version 6), web warehouse design, etc.

The EXPO99 is being organized to showcase latest IT products and services. All IT companies have been invited to participate in this. Along with exhibition and Technology Seminar is being organised which will include talks on various emerging technologies and/or product presentation by different IT companies.

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Mexican International Conference on Artificial Intelligence 2000

MICAI-2000

Call for Participation
http://www-cia.mty.itesm.mx/micai2000/
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Mexico D.F. Mexico

Travel & Local Arrangements

Leticia Rodriguez, Local Arrangement Chair
Centro de Inteligencia Artificial, ITESM-Mty
Phone (52-8) 328-4377
Fax: (52-8) 328-4189
E-mail: lrodrig@campus.mty.itesm.mx

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New IEEE Video Teaches Best Ways To Test Software

PISCATAWAY, NJ, 2 June 1999 – Just released from the IEEE is Software Testing: Building Infrastructure, Due Diligence, and OO Software, a video tutorial in which industry experts discuss why software testing often fails to discover software defects. Sponsored by the IEEE Reliability Society and IEEE Educational Activities, this tutorial is ideal for QA managers, testers, and corporate lawyers interested in guiding engineers toward effective software testing.

Viewers will learn:
- How industry giant Microsoft continually refines its testing processes;
- Practical techniques for testing object-oriented systems;
- The differences between testing Java and another OO-language like C++;
- What legal issues may arise for software developers;

- The minimum testing required to avoid punitive damages in court;
- What court cases have defined as "good enough testing" to date, and much more!

Included in this tutorial are hardcopies of the presentation notes, the book Bad Software (John Wiley & Sons, 1998), and a final exam. Those who successfully complete the exam may obtain 0.25 Continuing Education Units (CEUs) from the IEEE.

3 Hrs. 30 Min./ 2 Video Tapes
List Price: $750.00 IEEE Member Price: $650.00
IEEE Order # (for NTSC version): HV7041-QVE
IEEE Order # (for PAL version): HV7042-QVE

Order from the IEEE Customer Service Department, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331, USA; e-mail: customer-service@ieee.org; phone: 1.800.678.4333; Web: http://www.ieee.org/eab

The Institute of Electrical and Electronics Engineers, Inc. (IEEE) is the world's largest technical professional society, serving the interests of more than 330,000 members in the information and electrotechnology communities in approximately 150 countries. In keeping with its "Networking the World" slogan, the IEEE helps to foster technological innovation, enable members' careers, and promote worldwide professional community. The Educational Activities Board (EAB) of the IEEE recommends educational policy to the IEEE Board of Directors, and coordinates the Institute's educational activities, programs, and products.

From the Editor

Born in Utica, NY, in 1922, Dave earned a BA in mathematics from Hamilton college and a MS in meteorology from MIT. He served as an air force weather officer from 1942 to 1947. He was an Atmospheric Research Scientist at the Air Force Cambridge Research Laboratories from 1958 to 1951, a Research and Development Meteorologist at RADC from 1951to 1953, then director of various classified programs until 1962, when he was selected as Chief of the Reliability Branch.

Always a strong supporter of his community, Dave served 12 years on the Adirondack Central School Board. He was a past President of the Oneida-Madison-Herkimer Counties School Board Association, and a past Director of the New York State School Boards Association. He was a member of the Rome, NY, Rotary Club for 15 years.

On his retirement, Dave used his experience in organizing and managing conferences to create his own consulting company, Scien-Tech Associates, which has continued to serve the reliability community, helping stage both the Reliability Physics Symposium and the Annual Reliability and Maintainability Symposium, among others.

Dave was an accomplished golfer. Beside playing, he sometimes reported on major area tournaments for local radio, and, once, as a substitute announcer for CBS sports. He was playing golf when he was stricken.

Dave was gregarious and friendly, always willing to help. His contributions will be greatly missed by all. Those who knew him will miss his camaraderie even more.

In Memoriam
Henry A. Malec

We regret to inform you that Mr. Hank Malec passed away in July. His career was in reliability and Quality. Hank was active in promoting international reliability and quality initiatives. Hank will be sorely missed by those who knew and worked with him. Our condolences go out to his family.

"Hank" was the chairman of the 3Com corporate-wide International Reliability Council, and a chief editor for *Quality and Reliability International Journal*. He made reliability and quality contributions for over 30 years in both software and hardware to GTE, ITT, Siemens and DEC. He was chairman of the IEEE Communications Society Quality Assurance Management Committee for 1986-1988, and served

three terms on the IEEE Reliability Society ADCOM. He was the Deputy Technical Advisor for the US IEC TC56 Dependability Standards Group, and a member of the Board of Examiners for the Malcolm Baldrige National Quality Award. He published over 60 technical papers, including a historical perspective on communications reliability for the recent IEEE Transactions on Reliability Special 50th Anniversary Publication. He was a Registered Professional Engineer in the State of Illinois.

Hank was a distinguished colleague and a good friend of the Reliability Society.

President's Message

that parts of the IEEE decision making process are quite laborious. The committee is reviewing the IEEE Constitution, bylaws, policies, and procedures manual and entity operations manuals for all the IEEE entities in order to develop useful recommendations to the Board of Directors later this year.

Councils and More Councils

Occasionally, a topic appears that spans the fields of interest of several IEEE societies. When this occurs, IEEE forms a council that consists of member societies who have an interest in the topic. Several councils already have been established; e.g. Intelligent Transportation Systems. More recently, councils for Sensors and Superconductivity have been established with the Reliability Society as a member of each. There has been some very preliminary discussion about a "Systems on a Chip" council. The primary function of these councils is to coordinate activities in the member societies with respect to the council topic. Each council appears to be focusing on conferences and publications. The generation of standards is being considered by some of them.

Call for Papers - Transactions on Reliability

The Reliability Society actively is soliciting papers for inclusion in its Transactions on Reliability. We're requesting that you either submit papers yourself or encourage your associates to submit papers for publications. As in the past, we're encouraging the submission of practical papers or papers that describe the application of reliability principles. Papers on reliability theory are welcomed also, but there never seems to be a short-

age of those. If you know people who are performing particularly interesting or innovative reliability-oriented research, please send their names to Way Kuo (way@tamu.edu), our Transactions Editor, so he can invite them personally to submit papers.

There are many new technologies that are emerging without specific attention to reliability. Consequently, I believe that any well-written paper that discusses the reliability aspects of an emerging technology or provides some guidelines on how to make an emerging technology re-

liable would be a good candidate for publication. These papers would help make the Transactions on Reliability a desk-top essential for engineers and managers.

Your Society as a Resource

With technology evolving so rapidly these days, it is almost impossible for individual reliability engineers to keep up with all of the latest developments. Contacting other members of the Reliability Society and participating in society projects are good ways to stay current. If you

have only a limited amount of time and have some useful information, include it in a short presentation to your chapter and send a short article to Dave Franklin (d.l.franklin@ieee.org) for inclusion in this newsletter.

Reliability Society President
Ken
Kenneth P. LaSala, Ph.D.
President, IEEE Reliability Society
k.lasala@ieee.org

The Transactions on Reliability Needs You

A major purpose of the society is the dissemination of technical information. The broader the spectrum of practitioners and researchers submitting papers the more effective the society becomes. We will also publish letters bringing to light technical issues and concerns in the newsletter. Papers of high technical content should be submitted to the transactions, see Information for Readers and Authors in the Transactions. Letters for publication in this newsletter will not be refereed and should be submitted to myself (preferably by email) to one of the addresses inside the front cover.

Dave Franklin
Editor

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New Book Announcement:

Software Safety and Reliability: Techniques, Approaches and Standards of Key Industrial Sectors

by Debra S. Herrmann
IEEE Computer Society Press,
Item # BP00299
500 pages, 1999, ISBN 0-7695-0299-7

This book introduces the concepts, techniques, and approaches used to achieve and assess software safety and reliability. Next, current software safety and reliability standards from multiple industrial sectors (transportation, aerospace, defense, nuclear power, biomedical) are examined in terms of:
- implementation strategies,
- context relative to system safety and general purpose software engineering standards,
- strengths,
- areas for improvement, and

- results observed to date from performing the recommended and required practices.

Standards which are not specific to an industrial sector are examined in this manner as well. Lastly, observations, conclusions, and recommendations are derived from: similarities and differences in the standards; and the current practice of software safety and reliability engineering. Two annexes provide contact information for: 1) organizations involved in the development of software safety and reliability standards; and 2) commercial products available to assist in performing software safety and reliability analyses. The book is written for engineers, scientists, managers, regulators, and policy makers involved in

the design, development, acquisition, and certification of safety-critical systems.

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INTRODUCTION TO SOFTWARE
SAFETY AND RELIABILITY
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TO SOFTWARE SAFETY AND
RELIABILITY
3 Transportation Industry
   3.1 EN 50128: Software for Railway
     Control and Protection Systems

Book Announcement

3.2 MISRA™Development Guidelines for Vehicle Based Software

3.3 Society of Automotive Engineers JA 1002 Software Reliability Program Standard

4 Aerospace Industry

4.1 Commercial Aircraft, RTCA/DO-178B

4.2 European Space Agency (ESA)

4.3 National Aeronautics and Space Administration (NASA)

5. Defense Industry

5.1 US DOD MIL-STD 882D, Mishap Risk Management

5.2 UK MOD DEF STAN 00-55, Requirements for Safety Related Software in Defence Equipment

5.3 NATO COTS Software Acquisition Guidelines

6 Nuclear Power Industry

6.1 IEC 60880, Software for Computers in Safety Systems of Nuclear Power Stations

6.2 CE-1001-STD Rev. 1, Standard for Software Engineering of Safety-Critical Software

7 Biomedical Industry

IEC 601-1-4, Requirements for Safety, Programmable Electrical Medical Systems

APPROACHES PROMOTED BY NON-INDUSTRY SPECIFIC SOFTWARE SAFETY AND RELIABILITY STANDARDS

8 IEC Dependability Standards

8.1 IEC 61508-3:1998, Functional Safety of Electrical/Electronic/ Programmable Electronic Safety-Related Systems

8.2 IEC 300-3-9:1995, Risk Analysis of Technological Systems

8.3 ISO/IEC 15026:1998, System and Software Integrity Levels

9 IEE SEMSPLC Guidelines, Safety-Related Application Software for Programmable Logic Controllers

10 ANSI/IEEE Std. 982.1 and 982.2, Measures to Produce Reliable Software

11 IEEE Std. 1228-1994, Standard for Software Safety Plans

OBSERVATIONS AND CONCLUSIONS

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Annex A - Organizations Involved in Software Safety and Reliability Standards

Annex B - Commercial Products Available to Assist in Performing Software Safety and Reliability Analyses