

Reliability Society

N E W S L E T T E R

<http://www.ieee.org/society/rs>



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President's Message

Recognition

The IEEE Reliability Society has a variety of awards that it gives to deserving members. At our January meeting, we gave our annual Engineers of the Year to Jeff Voas and Joanne Bechta Dugan. At our July meeting, we will give out both chapter awards and IEEE Millennium Medals. The chapter awards go to chapters that have exhibited a high degree of activity during the previous year. The Millennium Medals are being given to Reliability Society individuals who have a distinguished record of professional accomplishment and service to the IEEE. I congratulate all of the award recipients and thank them for their contributions to the engineering profession and the Reliability Society. Those chapters and individuals who didn't receive awards should look to the recipients as role models - and look at them especially as those who enjoyed making their contributions. I know most of the recipients personally and can tell you that, despite the work involved, all of the recipients thoroughly enjoyed what they did to eventually receive the awards. I'd also like to take this opportunity to recognize the efforts of Dave Franklin, Newsletter Editor, and Bob Loomis, Newsletter Associate Editor (and VP Publications), in bringing the Reliability Society Newsletter to a new level of excellence. They've created an outstanding balance of technical and non-technical information that makes the Newsletter hard to stop reading. Since this is a summer issue, I want to wish all of you an enjoyable summer season.



Ken

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

Editor:
Dave Franklin
Business Manager:
Bob Gauger

Editor's Column

Request for AdCom Nominations

It is time to consider nominations for the Reliability Society Administrative Committee Members who will serve the Society from 2001 through 2003. There are two ways for a candidate to be placed on the ballot:

1. A nominating petition signed by ten or more Reliability Society Members in good standing (excluding student members),

2. Selection by the Reliability Society's Nominating Committee.

Candidates placed on the ballot are not designated between type 1 and type 2 candidates.

The sponsor of a nominee should secure the candidate's willingness to serve (The AdCom meets four times per year. Partial expenses for attending the meetings are borne by the Reliability Society). A Nominating Petition signed by at least

continued on page 28



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.

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Twin Cities

Minnesota Chapter

The Twin Cities IEEE Reliability Society held a meeting on November 16 1999. The November 16, 1999 meeting covered the "Impact of Safety Regulations to product reliability in the International Market". The speaker, Mike Sherman of FSI, gave examples of how the regulations tie to reliability during the

design process. Fifteen people attended this meeting.

The January 18 meeting was to be a presentation by James Steel of Medtronic, Microrel division of Phoenix. The topic was "Microcircuit Control and Development Protocol" This talk was to cover biomedical applications and other important markets for microcircuits.

The February 15 meeting is scheduled to be "Reliability Predictions, Fact or Fiction" by James McLinn, CRE of Hanover, Minnesota. The meeting will cover the history of the prediction, as well as, the value of prediction for design improvement.

The March 21 meeting is scheduled to be on Markov Models for Reliability Assessment". The speaker, Paul Pukite of United Defense will cover the application of these diagrams to the easy analysis of Fault Trees, Maintainability and Cut Sets.

The April 18 meeting will be a talk on "Design of Experiments" by Mark Anderson of Stat-Ease Corp.

The May 16 meeting will be a plant visit to Twin City Test to review test methods and equipment for Accelerated Life Testing.

Submitted by James McLinn,
Past Chapter chair,
for Norb Santoski Chapter chair
JMREL@AOL.com

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(ED/Reliability/CPMT Joint Chapter)

Report on 1999 Activities - IEEE Singapore, REL/CPMT/ED Chapter

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Dr. Ong Soon Huat,

email:

SOON.HUAT.ONG@NSC.COM

Report by: YC Ng,

Secretary of Singapore
REL/CPMT/ED Chapter.

Switzerland

Mauro Ciappa
Switzerland Chapter Chair
email:

Reliability Society AdCom Meeting

8 April 2000

San Jose, CA

Those in attendance: Alan Street, Loretta Arellano, Bud Trapp, Yvonne Lord, Bill Tonti, Koichi Inoue, Dick Kowalski, Robert Loomis, Ken LaSala, Bob Gauger, Jeff Voas, Patrick Hetherington, Tom Brogan, Dick Doyle, Way Kuo, Jon Klema, Dennis Hoffman, John Healy, Marsha Abramo, Sam Keene, Dave Franklin.

The meeting was called to order at 8:30. A quorum was present. There was an introduction of members, including the newly elected members. The agenda was approved.

Jeff Voas distributed the minutes and they were approved.

- Action: Dennis Hoffman is to put a complete listing of actions in minutes.
- Action: Jeff Voas is to send out an updated roster to AdCom.
- Action: Jeff Voas is to send Dennis Hoffman past final minutes, action item lists, and updated roster.
- Prior Action #5: Affiliate Membership is \$35 – all professional technical Societies qualify. Abramo. Status — Closed.
- Prior Action #6: Marsha Abramo is to review old membership action items to see if any should be carried.

Ken LaSala gave an overview of TAB activities that were covered in the Sentinel — \$100K loan from IEEE to Sensors Council, IEEE spending \$20K in Industrial Relations for an outreach program, and IEEE is forming an Information Technology Committee.

Treasurer's report: Dick Kowalski reported a surplus for 1999. Dick reported that we will be given an assessment by IEEE for Headquarters (infrastructure costs) – \$74.5K in 2000 and \$123.4K in 2001 – which could affect RS financial reserves.

- Action: David Franklin to get with 1998 IRW and push to get the books closed on that Workshop.



- Motion passed to keep non-member Subscription price at \$200.
- Motion passed to remain at 1999 Membership dues rate of \$25.
- Action: David Franklin has the action to develop an unbundled plan. This will be an agenda for the next AdCom meeting.
- Action: VPs to provide Dick Kowalski with changes to their budget for 2000 and 2001. Dick Kowalski will contact VPs. Copy Ken LaSala on inputs.
- Motion passed to move \$50K at next opportunity to long term IEEE fund.
- Action: Ken LaSala to send to AdCom the Society Audit Review material in pdf format and in two views – one for internal use and one for general use.

Meetings: Jeff Voas gave the Meetings report. Jeff covered the Meetings registration web site which provides the RS AdCom an easy way to indicate upcoming meeting attendance as well as meal selections.

Jeff Voas reported on some upcoming conferences, some having potential sponsorship opportunities. Next meeting is planned to be held in Burlington, VT on July 14 – 15, 2000. Tutorials will be given on Friday, July 14, with the AdCom meeting being held on Saturday, July 15. Banquet Saturday evening.

Jeff Voas lead the discussion of various locations to hold our fall international AdCom meeting.

- Motion passed for the October Workshop and AdCom meeting be held in Madrid, Spain, Oct 21-24, 2000..
- Action: Jeff Voas has action to check with his contacts on feasibility of a Madrid meeting.
- Action: Jeff Voas to develop a procedure pertaining to criteria for selecting locations (chapters, potential chapters, increase membership, local assistance, etc) for out of the US AdCom meetings.

Membership: The Main focus needs to be reversing a five year trend of slowly losing US members.

Publications: Bob Loomis gave his Pubs report and distributed to members.

Bob recommends that we do not try to do financial transactions on the RS web site, use the IEEE supported process – recommendation accepted. Bob and Way Kuo indicated that the Transactions would have 128 pages per issue for a total of 512 pages in 2001. Nice increase in page count.

- Action: Bob Loomis to e-mail to John Baillieul, Transactions Committee Chair, a statement concerning the non-availability of proofs to our managing editor on mid-level IEEE editing service.
- Action: Dick Doyle to document facts about APP concerning pricing to Bob Loomis, so Bob can take action with IEEE HQ.
- Action: Jeff Voas to contact IEEE Spectrum to get them to cover VT AdCom meeting with a small article on Society-Industry relations.
- A motion passed approving \$25K to video tape the Accelerated Stress Testing tutorial.
- Alan Street accepted the position of WebMaster for the Society.
- Action: Bob Loomis / Alan Street to update content on the RS web so it will be current.

Special Presentation: P.1413.1. Reliability Prediction Guide Jon Elerath, P.1413.1 Working Group Representative gave an overview of the guide, its intent, their schedule, guide draft outline, and the membership of the WG.

- A motion was made and passed, for the RS to remain a member of the special standards council formed for the development of this guide.
- Action: By May 15, Yvonne Lord is to generate slide by slide comments as well as general comments for feedback on the Rel Prediction guide. Yvonne is to identify new participants with contact info. Next WG meeting is scheduled for May 22 at the U of MD.
- Action: Yvonne Lord has the action to get the AdCom on draft Rel Prediction guide distribution.
- Action: Yvonne Lord is to brief the AdCom on the guide status at the July AdCom meeting.

Tech Ops Report: Koichi Inoue provided the AdCom with a written status report that he distributed to the members.

Koichi outlined his Principles of Tech Ops Management.

- A motion passed for travel reimbursement of up to \$500 per annum for Tech Ops Chairs or their representative to attend Tech Ops VP called Tech Ops meetings, effective immediately.
- Action: Dick Kowalski to send out reimbursement guidelines to new people – Associate Editors, Tech Ops Chairs, and AdCom.
- Action: Dennis Hoffman to send Koichi Inoue Keith Janasak’s contact info. Keith is the new Chair of the CE/CAE Tech Ops Committee. Contact info provided. Status – Closed.

General:

- Action: Alan Street is to take RS’s desire for the IRPS Proceedings to be in CD format (for distribution to RS members as part of membership) vs paper to the next IRPS General Chair and Publication Chair for their consideration / action.
- Action: Ken LaSala to send Pat Hetherington an IEEE ad for sample format.
- Side Line Action: Loretta Arellano to send Dennis Hoffman the IEEE Org Structure.

Jr. Past President’s Report: Loretta Arellano gave her report with copies distributed to the members.

- Loretta Arellano asked for and received approval to have IEEE do the election mechanics.
- Loretta Arellano requested that the IEEE Millennium medallion recipients, not covered by other means, be allowed reasonable expenses up to \$1500 to attend the July AdCom banquet to receive their award – mainly to help two overseas recipients be in attendance. The motion passed.

Senior Past President’s Report: Dick Doyle presented his report.

Meeting adjourned at 5:00PM.

IEEE Reliability Society AdCom Meeting Agenda

15 July 2000

8:30 AM Call to Order, K. LaSala

8:30-8:45 Agenda Approval, K. LaSala

8:45-9:00 Minutes Approval,
D. Hoffman

9:00-9:30 President's Report, K. LaSala

- TAB series report, K. LaSala, L. Arellano

- Review of action items from last meeting, D. Hoffman

- RS nominations for TAB positions

9:30-10:00 Treasurers Report,

R. Kowalski

- Budget report

- FY001 budget development

10:00-10:15 Break

10:15-10:30 Meetings, J. Voas

- Conference close-outs esp IRW - J. Voas, W. Tonti

- IRPS and IRW reports - W. Tonti

- ISRE report - S. Keene

- SOLE display at RAMS, RS display at SOLE

- RS sponsorship of Annual Microelectronics Reliability and Qualification Workshop Oct. 31-Nov. 1, 2000

- Sponsorship of ASQ Six-Sigma Conference

10:30-11:00 Membership, P. Hetherington/M. Abramo

- Membership Report - focus on reversing 5-year trend - P. Hetherington/M. Abramo

- PACE - L. Arellano/M. Abramo

- Chapters - L. Arellano

- Millennium medals - L. Arellano

11:00-11:30 Publications - R. Loomis

- Transactions report including database conversion - W. Kuo

- Newsletter report - D. Franklin

- Web site update - R. Loomis, Alan Street

- Video Program status - S. Keene

- T-DMR status - R. Loomis

- Wireless periodicals - new IEEE publication?

- CAS Society newsletter conversion to IEEE Circuits and Systems Magazine - a long range target for the RS Newsletter?

11:30-12:00 Junior Past President's Report - L. Arellano

- Nominations Committee Report

- Awards and Medals report

- Updated field of interest progress

- By-laws and constitution revision progress

12:00-1:00 Lunch

1:00-1:45 Technical Operations - K. Inoue

- Technical operations chair appointments

- Committee activities

- Standards - T. Brogan/Y. Lord

- Council and liaison news - Sensors, Superconductivity, Nanotechnology, Intelligent

- Transportation Systems - RS representatives

1:45-2:30 Senior Past President's Report

- RS Long-Range Planning - R. Doyle

- IEEE strategic planning conference, -Dallas, TX, Sep 00 - K. LaSala

- IEEE industry relations study project - K. LaSala

2:30-2:45 Break

2:45-3:15 Old business

- www based IEEE RS skill bank

3:15-4:00 New Business

4:00 Adjourn

TechOps Technical Committees Reorganized -Part 2

It is my great pleasure to introduce you the two new TechOps Technical Committee chairpersons: Keith Janasak, Raytheon Electronic Systems, who replaced the former chairperson Dennis Hoffman, and who takes care of Technical Committee on CAD/CAE, and Clement Aladekugbe, Carrier Corporation, who has accepted the responsibility of creating a new Technical Committee on Automotive Systems. Many congratulations to Keith and Clement, and I hope they will contribute to our Society and its members through their volunteer activities. Please see below for their scopes, objectives and planned activities.

In the April issue of this Newsletter (Vol. 46, No. 3, April 2000), I introduced

your reorganized and new Technical Committees under the title "TechOps Technical Committees Reorganized", in which you can see the brief introductions, scopes, planned activities and so on of the 9 Technical Committees. These are

■ **Human Interface Technology** (Chair: Kenneth LaSala)

■ **Mechanical Reliability** (Co-Chairs: R. L. Doyle and P. Hetherington)

■ **Microelectronic Technologies** (Co-Chairs: A. N. Campbell and T. A. Rost)

■ **Reliability Methodology** (Chair: C. K. Hansen)

■ **System Safety** (Chair: Y. Sato)

■ **Software Reliability** (Chair: S. J. Keene, Jr.)

■ **Standards & Definitions** (Co-Chairs: Y. Lord and T. Brogan)

■ **Warranty** (Chair: W. A. Zeller)

■ **Information Technology & Communications** (Chair: H. Wolf).

After that I received information on the additional 4 Technical Committees from respective chairpersons. These are:

■ **CAD/CAE** (Chair: K. Janasak)

■ **International Reliability** (Chair: J. P. Rooney)

■ **Testing & Screening** (Chair: H. A. Chan)

■ **Automotive Systems** (Chair: C. Aladekugbe, Co-Chair: B. Dodson).

The brief descriptions together with the scopes and activity plans for the year 2000 of the above 4 Technical Commit-

tees are to follow. You will notice that every chairperson would invite you to take part in his or her activities. If you are interested in the activities of a specific Technical Committee, I would suggest that you not to hesitate to contact the Chairperson.

Koichi Inoue
VP TechOps
Inoue.k@ieec.org

❖ **Technical Committee on CAD/CAE**

Chair: Keith Janasak (Raytheon Electronic Systems, kjanasak@raytheon.com)

Members: Dennis Hoffman (Lockheed Martin), Ken LaSala (NOAA, DOC), Mike Tortorella (Lucent Technologies) and David Followell (Boeing Company).

The scope, Objectives and Activity Plans:

The CAD/CAE Technical Committee's objective is to stay current on today's R&M CAE tools and tomorrow's emerging R&M CAE direction. Members plan to attend related conferences, work with R&M CAE vendors, and academia to stay on the forefront of this technology domain. Information will be communicated to practicing R&M engineers primarily through the RAMS CAE Track, which includes an Innovative R&M CAE Solutions Session along with vendor tool demos.

Our primary activity for this year will be to focus our attention on planning and supporting the R&M CAE Track at RAMS 2001, which is scheduled for January 22 - 25, 2001 at the Philadelphia Marriott.

❖ **Technical Committee on International Reliability**

Chair: John P. Rooney (The Foxboro Company, jprooney@foxboro.com)

Members: Presently none, but would like to recruit "reporters" in any nation, such as Singapore, Malaysia, Switzerland, and so on. The reporter would write a brief piece on the status of reliability or reliability improvements or reliability activity.

The scope, Objectives and Activity Plans:

Developments in international reliability.

The Expected Results from Activities:

Quarterly reports of international activity.

Volunteers would be definitely welcomed (see the item "members" above).

■ **Technical Committee on Testing & Screening**

Chair: H. Anthony Chan (AT&T Labs, hachan@att.com)

Members: See the item "Activities and Planned activities".

Background and purpose:

Rapid changes in technology accompanied by a desire to fulfill customer satisfaction within an increasingly competitive global marketplace are two important driving forces behind a product reliability improvement initiative. Accelerated stress testing (AST), in conjunction with a good failure tracking and corrective action system, can reduce the incidence of field failures, and hence cost, and be used to improve design and manufacturing processes. AST can be performed at different levels of the product hierarchy, namely the component level, sub-assembly level, unit or shelf level, and the system level. As one moves from component level AST to system level AST the fault coverage improves but the cost increases and the feedback loop to design and manufacturing becomes looser. Thus an integrated approach where the strengths of all levels of AST and failure analysis are utilized, is desired.

This Committee links professionals involved in assuring that their system hardware is robust and meets world-class standards for design quality. Interest is from the chip package level up to fully assembled large systems, with a special emphasis on the use of accelerated stress testing as a means of qualifying and systematically improving product

reliability. Members share techniques for product qualification, simulation, environmental testing, and other aspects of assuring that a product is mature enough for the market.

This Committee collaborates with IEEE/CPMT TC7 in various activities.

Activities and Planned activities:

- > IEEE Workshop on Accelerated Stress Testing. For more information, contact H. Anthony Chan (AT&T Labs, hachan@att.com).
- > Accelerated Stress Testing Discussion group is being set up.
- > Articles/Newsletter/Web Info: articles are welcome. Members of this new group are Jim Reilly (Rome Labs), Edmund Kyser (Tandem Computers), Steve Bryant (TTC), Judith Untiedt (Teradyne, Inc.), Abhijit Dasgupta (Univ. of Maryland), Mike Silverman (QualMark), Gary Hazard (Tellabs), Edward Pohl (AFIT, USAF), Chris Hanse (Hanse Gechnology). The champion of this group is vacant.
- > Standards: volunteers are welcome. Members of this new group are Eric Cheng (Astec, Hong Kong), Jim Reilly (Rome Labs), Gary Hazard (Tellabs), Steve Bryant (TTC), Judith Untiedt (Teradyne, Inc.), Abhijit Dasgupta (Univ. of Maryland). The champion of this group is vacant.

■ **Technical Committee on Automotive Systems**

Chair: Clement Aladekugbe (Carrier Corporation, Clement.Aladekugbe@carrier.utc.com)

Co-chair: Bryan Dodson (Continental Taves, bryan.dodson@contiteves.com)

Members: There would be about six committee members to be selected before the end of June mainly from the automotive companies. The chairperson has selected one to date. The name of the one selected is Rafiu Ajayi (Ford Motor Company).

continued on page 8



Tech-Ops

continued from page 7

The Scope, Objectives and Activity Plans:

- Conduct monthly meetings via teleconference, video conference, and internet
- Conduct projects on automotive technology and produce an annual assessment of reliability in the automotive industries
- Conduct projects on product quality in automotive industries
- Publish committee projects on the Reliability Society web site, Reliability Society newsletter and present committee projects at the International Physics Symposium or at R&M Symposium
- Answers members questions and automotive industries questions

ADVERTISEMENT

New Books on Reliability:

■ The Fault Tree Method

(in the Fields of Reliability and Safety Technology) 1999, 206 pp.

■ Petri Nets for Reliability

Modeling (in the Fields of Engineering Safety and Dependability) 1999, 200 pp.

Each (soft cover) copy costs in total \$21.

The author is Dr. W. Schneeweiss, SM IEEE, Prof. em. of Comp. Engg. at the German Univ. for Distance Studies.

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Designing Systems for Reliable Human Performance Video Tutorial at a Special Discount

PISCATAWAY, NJ, 27 March 2000 — Reliability Society President Dr. Ken LaSala and Dr. Samuel Keene, IEEE Fellow, agree that the many system failures and errors due to humans are far too many. Data show that 70% of failures in use are due to humans, with consequences that range from loss of service to product liability claims.

However, there is no need for product designers to accept this situation. The way to avoid this situation is to be more attentive to the human aspects of the product. IEEE makes it easier for you to develop human-friendly products by offering its “Designing Systems for Reliable Human Performance” videotape tutorial at the discounted price of \$299 IEEE Member/\$399 Non-Member. In less than three hours, an IEEE panel of experts will provide you with an understanding of the following aspects of designing products so humans can use them reliably:

- Consideration of the human in systems analysis and reliability
- Factors affecting reliable human performance
- Models of human performance
- Sources of human performance reliability data

- Methods for designing systems that include humans
- Predicting the reliability of human performance
- Testing methods for systems that include humans

Not only does the tutorial include lectures on the above topics, but it also includes panel discussions about critical topics in designing products for humans.

This videotape, released in 1997, consists of 2 videotapes and presentations notes. The IEEE NTSC product order

number is HV6979-QVE and for the PAL product order number is HV6980-QVE. Order from the IEEE Customer Service Department, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331, USA. For single sales, call 1-800-678-IEEE (1-732-981-0060 outside the USA and Canada); for company or institutional sales, call 1-800-701-IEEE; or fax 732-981-9667. Or order from our convenient Online Store, access from the IEEE homepage: www.ieee.org. Shipping and handling charges apply.



Concurrent Engineering Perspectives: Concepts to Success

Video Tutorial at a Special Discount

PISCATAWAY, NJ, 27 March 2000 — Dr. Samuel Keene, IEEE Fellow, often emphasizes that concurrent engineering simplifies product development and manufacture. This video course shows how to manage product development to be successful in a competitive market place.

The concepts first presented in this 1996 video package are always relevant to the workplace, because “lessons learned” is the basis from which all programs can benefit. Concepts and methods introduced in these videos never become dated because they are not fads. They

help you realize shorter product development cycle times, make speedier program decisions, maintain program focus, and keep diversions at bay. The IEEE is offering the video tutorial, "Concurrent Engineering Perspectives: Concepts to Success," at the special reintroduitory price of \$299.00 IEEE Member/\$399.00 Non-Member.

Concurrent engineering is a synergistic approach to product development in a process-oriented engineering environment. Top experts in concurrent engineering have designed this course to deliver practical information in a way that will enable you to apply these techniques immediately. Avoid pitfalls and speed your robust products to the marketplace. Learn:

- Development tools that save both time and project resources
- How to assure timely consideration of Life Cycle Cost (LCC) factors
- Design for Manufacturability (DFM) and affordability practices
- How to promote state-of-the-art breakthroughs in your products
- Product development "lessons learned" that you can apply immediately

This videotape, released in 1996, consists of 2 videotapes and presentations notes. The IEEE NTSC product order number is HV6965-QVE and for the PAL product order number is HV6966-QVE. Order from the IEEE Customer Service Department, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331, USA.

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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.

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Phone: 1.732.562.6526

2000 Integrated Reliability Workshop

The 2000 Integrated Reliability Workshop (IRW), sponsored by the IEEE Reliability Society and the IEEE Electron Devices Society, will be held at the Stanford Sierra Camp on the shore of Fallen Leaf Lake near South Lake Tahoe, CA from October 23rd to 26th, 2000. This workshop provides a unique forum for open and frank discussions of all areas of reliability research and technology for present and future semiconductor applications.

The technical portion of the 2000 workshop is being organized by Andreas Martin of Infineon Technologies AG and will focus on six main areas:

- Wafer Level Reliability Tests and Test Approaches
- Identification of Reliability Effects
- New or Existing Reliability Characterization and Prediction Models
- Reliability Test Structures
- Customer Product Reliability Requirements/Manufacturer Reliability Tasks
- Designing-in-Reliability (Circuits, Processes, Products)

This year's hot topics include Cu interconnects, reliability of deep sub-micron, high speed, high frequency devices,



new dielectric systems, and reliability modeling and simulation. This year's workshop promises to provide comprehensive coverage of the topics crucial to the reliability engineer.

The IRW is quite a bit different from a typical technical conference. From the moment you arrive, after winding slowly back to the south shore of Fallen Leaf Lake, you realize that you are taking part in something special. Attendees stay in cabins without TVs or phones, dress is casual (suits, ties and high heels are shunned), affiliations are downplayed, and meals are taken at the lodge dining room, family-style. Attendees of the workshop are expected to actively participate. You feel yourself drawn into technical discussions from the start. Every aspect of this conference, from the iso-

lated location to the format of the technical program, is designed to get attendees to interact.

Located just a short drive (less than two hours) from Reno, the Stanford Sierra Camp is situated at 6000 ft in the High Sierra on Fallen Leaf Lake. Attendees stay in cabins nestled amid the pines and cedars along the shoreline. All cabins have decks and breathtaking views of the lake and surrounding peaks (don't worry, the cabins also have warm beds and hot showers; phone booths are available in the lodge). This peaceful setting, free from the distractions and annoyances of modern life, presents a terrific opportunity to really get to know your colleagues, including internationally renowned experts, an opportunity not usually available at bigger, more hectic reliability conferences. Instead of watching TV, participants spend their evenings at poster sessions, discussion groups, and special interest groups (SIGs), all with refreshments provided to stimulate discussions.

One unique aspect of this workshop is the opportunity for every attendee to

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IRW

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present a poster of their own research, no matter what state it is in. Just arrange for space when you register or bring last-minute results in your briefcase or backpack – your ideas will be accommodated. This a great way to share that new project you are working on and get world-class feedback. The poster presentations are even eligible for a two page write up in the conference proceedings. The open poster sessions are but one example of the opportunities for interaction that sets the IRW apart from other conferences.

Another distinction of the IRW is the moderated Discussion Groups that are held every evening of the workshop, always on topics chosen to stimulate lively conversation and debate among participants. Last year's discussion groups were: 1) Fast WLR Monitoring, 2) Burn In, 3) Thin Oxide Limits, 4) Electromigration, and 5) Hot Carriers. The leaders of the discussion groups prepare written summaries, hi-lighting their sessions, which are also included in the workshop proceedings.

For those with the stamina, following the Discussion Groups are the Special Interest Group meetings or SIGs (as attendees refer to them). The SIGs are

composed of small groups of researchers and engineers who continue their conversations and collaborations even after they leave the workshop. Every attendee has the opportunity to become part of an existing SIG or suggest a new topic and start their own. One particularly successful example is the Thin Oxide Integrity SIG which has met for several years and collaborated to produce award winning presentations at other reliability meetings. Be warned, remnants of the SIG discussions sometimes rage on into the wee hours of the morning.

Yet another advantage are the tutorial short courses, presented by world class experts and included at no additional cost. These tutorials review basic topics as well as the latest developments and thus are designed to be beneficial both to newcomers and experienced members of the reliability community. Last year's tutorials were broken into two sessions: *Basic Reliability and Hot Carriers*. The *Basic Reliability Tutorial* included three main topics, 1) "Electromigration," by Tim Sullivan of IBM, 2) "(Ultra)thin Oxide Breakdown(s), An Overview," by Emmanuel Vincent of STMicroelectronics, and "Burn-In," by Rolf Vollertsen of Infineon Technologies. The *Hot Carriers Tutorial* was composed of "Hot Carrier Degradation Evolution in Deep Submicrometer CMOS Technologies," by Alain Bravaix

of ISEM, and "Simulation, Modeling and Lifetime Prediction for HCI," by Bruce McCaughy of BTA Technology.

Last, but certainly not least, attendees have Wednesday afternoon off to enjoy activities such as hiking (with the annual trek to the top of Mt. Tallac as a favorite goal), volleyball, canoeing, biking, walking, or just conversing by the lake, all in the fresh clean mountain air. This free afternoon is a favorite as is a great way not only to network, but to build long-lasting friendships.

Additional information about the workshop is available on the IRW website at www.irps.org/irw, or by contacting SAR Associates at 301 N. Madison Street; Rome, NY 13440, Phone: 315-339-3968; fax: 315-336-9134. Note: If you want to take part in this event, please register early as space at the Stanford Sierra Camp is limited to roughly 120 attendees and the workshop has sold out in the past.

On behalf of the 2000 Integrated Reliability Workshop Committee, we look forward to meeting you in Lake Tahoe!

Dr. John F. Conley, Jr.
Communications Chair, IRW 2000
California Institute of Technology
NASA JPL
Pasadena, CA
john.f.conley@jpl.nasa.gov

IEEE Seeks U. S. University Program Evaluators

PISCATAWAY, NJ, 15 June 2000. The IEEE Educational Activities Board seeks engineering professionals from industry, government, and academe to serve as program evaluators for accrediting engineering and engineering technology programs at U.S. universities. Nominations will be accepted through 31 October 2000.

The Accreditation Board for Engineering and Technology, Inc (ABET) provides a peer review of university programs that is so important to the continuing vitality and quality of the engineering and engineering technology professions. Aside from the professional and public good that evaluators perform, there are

specific benefits to the evaluators and their employers. The evaluators are trained in the Quality Process and are able to hone their decision-making skills. By virtue of being on campus, evaluators can identify potential will be the future innovators and industry leaders.

The IEEE members selected will attend a one-day training seminar on the IEEE/ABET accreditation process, one of which will take place at the June 2001 American Society for Engineering Education convention in Albuquerque, New Mexico. After training, these program evaluators will visit engineering and engineering technology departments across the country on behalf of the IEEE and ABET.

Evaluation sessions take place each fall and generally run for two to three days.

Information packages, including the application and nomination forms, are available on the WWW at: <http://www.ieee.org/organizations/eab/apc/ceaa/engapplication.htm> (engineering programs) and <http://www.ieee.org/organizations/eab/apc/ctaa/techapplication.htm> (engineering technology programs). For more program information, contact eab-accred@ieee.org.

Lynn Murison
Outreach Administrator,
IEEE Educational Activities
ph: 1.732.562.6526
www.ieee.org/organizations/eab/

IEEE Standards Projects by Society Now on Web

To: IEEE-SA Members

To assist you in keeping abreast of IEEE Standards Activities, we have compiled a list of new, revised, and withdrawn standards and standards projects, listed by sponsoring IEEE Society, that have been recently approved by the IEEE-SA Standards Board.

For our returning subscribers, you may notice that the list is not in this letter. Instead, I have placed it up on our web site. Please copy and paste the url,

<http://standards.ieee.org/sa-mem/bdapp.html>, into your browser to view the information.

A more detailed account of the recommendations from the IEEE-SA Standards Board New Standards Committee (NesCom) and Review Committee (RevCom) will be posted shortly to the web site and you may check these urls respectively, <http://standards.ieee.org/board/nes/index.html> or <http://standards.ieee.org/board/rev/index.html>.

As always, please contact me with your questions and comments. Thank you.

Sincerely,
Ronni Rubenstein
IEEE-SA Membership
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Global Course Access and Discounts Too

PISCATAWAY, NJ. April 28, 2000. On June 1 professional development gets easier and more convenient for IEEE members. That date marks the start of full access to the co-sponsored Stevens Institute of Technology Online WebCampus courses and the all-IEEE generated Video-on-Demand tutorials. Either one click off the Educational Activities Board (EAB) homepage for easy access to either or use the discrete sites quoted below.

IEEE members receive a 10% discount on all Stevens WebCampus online courses. The Stevens online courses, currently numbering eleven, are in three hot fields: Wireless Communications, Telecommunications Management, and Technology Applications in Science Education. Our members and their employers appreciate that the same highly respected Stevens faculty teaches both the traditional oncampus courses and the online courses.

EAB Professional Development committee member, Sameer Kalra, while still a graduate student at Stevens, participated in the design of the online Wireless course. To Mr. Kalra "the single most important feature of the online course is that

you can access it anywhere, anytime at your convenience." The busy professional can determine scheduling, course lengths, order of classes, and graduate credit or Continuing Education Unit options, from anywhere in the world. Modest systems requirements make these courses global friendly.

Check registration requirements and sample a class at the Stevens website: http://attila.stevens-tech.edu/gradschool/distance_learning/courses/sample.html

For Video-On-Demand IEEE partnered with Softcom, Inc. to stream videotapes of lectures and tutorials over the web directly to the user's desktop. By using a free Real Networks G2 player, members are able to watch the tutorials from any computer connected to the Internet in any part of the world without a download period.

Fifteen moderately priced tutorials, taught by experts in their fields, are currently being offered in five subject areas including communications, computer engineering and networking, power and energy, and signal and image processing.

All courses feature a five to seven minute preview, so users can browse be-

fore buying. Courses are available as one-month subscriptions from the order date and may be purchased online. Included with the integrated, synchronous audio, video, and slide presentation, is a Frequently Asked Question page, help screens and an interactive table of contents that allows users to go directly to information or presentations of interest.

Systems requirements and previews are explained on the Video-On-Demand webpage <http://ieee.mediaplatform.com/vod/ieee/index.po>.

Stevens and VOD are just a start to a series of innovative partnerships of IEEE Educational Activities with industry and university educational programs and delivery systems. The series will maximize life long learning and professional development opportunities for IEEE members globally.

Lynn Murison
Outreach Administrator,
IEEE Educational Activities
ph: 1.732.562.6526
www.ieee.org/organizations/eab/

Meeting Notice

Final Call For Papers IEEE 2000 International Integrated Reliability Workshop

October 23-26, 2000
<http://www.irps.org/irw/>
Stanford Sierra Camp,
Lake Tahoe, CA

SUBMISSION DEADLINE: JULY 7th, 2000

From the moment you arrive at the south shore of Fallen Leaf Lake, you realize that you are taking part in something special. The IEEE Integrated Reliability Workshop (IRW) is quite a bit different from a typical technical conference. Attendees stay in cabins without TVs or phones, dress is casual (suits, ties, and high heels are shunned), affiliations are downplayed, and meals are served at the lodge dining room, family-style. Attendees of the workshop are expected to actively participate and you feel yourself drawn into technical discussions from the start. This peaceful setting, free from the distractions and annoyances of modern life, presents a terrific opportunity to really get to know your colleagues, including internationally renowned experts, an opportunity not usually available at bigger, more hectic conferences. Every aspect of this conference, from the isolated location, to the format of the technical program, to the Wednesday afternoon off, is designed to get attendees to interact.

The committee of the 2000 IRW invites you to submit an abstract describing your latest reliability work....

CALL FOR PAPERS

The Integrated Reliability Workshop continues to focus on ensuring semiconductor reliability through component fabrication, design, characterization, and analysis tools. It provides a unique environment for envisioning, developing, and sharing reliability technology for present and future semiconductor applications. Hot reliability topics of the workshop are: Cu interconnects, reliability of deep sub-micron, high speed, high frequency devices, new dielectric systems, and reliability modeling & simulation.

We invite you to submit a presentation proposal that addresses one or more of the following topics:

- WAFER LEVEL RELIABILITY TESTS AND TEST APPROACHES
- IDENTIFICATION OF RELIABILITY EFFECTS
- NEW OR EXISTING RELIABILITY CHARACTERIZATION AND PREDICTION MODELS TO SHOW
- RELIABILITY TEST STRUCTURES
- CUSTOMER PRODUCT RELIABILITY REQUIREMENTS / MANUFACTURER RELIABILITY TASKS
- DESIGNING-IN RELIABILITY (CIRCUITS, PROCESSES, PRODUCTS)

SUBMISSION DEADLINE: Received no later than JULY 7th, 2000. (Please note that the deadline has been EXTENDED.)

Your submission should state clearly and concisely the results of your work and why they are significant. Representative data and/or figures that support your proposal are REQUIRED. You can submit your work as a paper or a poster.

Preferably, please e-mail your maximum two-page abstract (incl. figures) or airmail (express mail preferred) it with 15 copies to either the Technical Program Chair or the Vice Technical Program Chair. If you send the proposal by e-mail, please send it as a MS Word document or .pdf file. Your proposal must include the name, affiliation, complete return address, telephone and telefax numbers, and e-mail address for each author.

Telefax submissions will NOT be accepted. All submissions will be acknowledged within three weeks. If you do not receive acknowledgment of your submission, please contact the Technical Program Chair.

Visual aids for the ACCEPTED proposals are required by September 8, 2000

for inclusion in the Presentation Handout available at the workshop.

A written version of your presentation is due at the workshop for inclusion in the Final Report.

MAIL TO: Andreas Martin,
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2000 IRW ADVANCE REGISTRATION

- October 2326, 2000
- Stanford Sierra Lodge

Advance Registration should be made well before September 2000 to insure your space at the Workshop. THE WORKSHOP HAS LIMITED SPACE (for approx. 140 attendees) and YOU ARE ENCOURAGED TO REGISTER EARLY (the conference has sold out in the past).

The Registration fee is US\$925 for IEEE Members and US\$975 for non-members, which includes: meals, lodging, and refreshments at the Stanford Sierra Camp; Presentation View Graphs (provided at the Meet-ing); and the 2000 IRW Final Report (published after the Meeting).

LODGING & FACILITIES

Nestled throughout the pines and cedars along the shoreline of Fallen Leaf

Lake, a few miles from South Lake Tahoe, are clusters of 2 and 3 bedroom cabins furnished in the rustic style of an alpine resort.

Each cabin cluster is equipped with shared bathroom facilities. All rooms have decks with magnificent views of Fallen Leaf Lake and surrounding Sierra peaks.

The physical isolation of the location and the absence of distractions, such as in-room phones and television sets, encourages extensive interaction among the Workshop attendees. Lodging is available for meeting attendees only.

JEDEC JC-14.2 MEETING

The JEDEC JC-14.2 Committee on Wafer Level Reliability meet-ing will be held immediately after the Workshop at the Stanford Sierra Camp on Thursday afternoon and Friday morning. Members, alter-nates, and guests are welcome. The cost for the accommodations is US \$160.00, which includes Thursday night dinner and lodging and Friday breakfast and lunch. All attendees must leave the camp after lunch on Friday. If you have any questions, please call Michael Dion at (407) 724-7067. If you want to become a

member of JC-14.2, please call the JEDEC office at (703) 907-7558.

ADDITIONAL INFORMATION:

Including a complete downloadable version (.pdf) of the Call for Papers/Registration Information is available on the IRW WebSite at www.irps.org/irw.

We look forward to meeting you in Tahoe!

John Conley
Communications Chair,
IRW 2000

Second International Software Assurance Certification Conference (ISACC 2000)

September 24-26, 2000

Hyatt Regency Hotel,
Reston Town Center,
Reston, Virginia
<http://www.isacc.com>

**Theme: Issuing Software
Certificates of Quality**

General Chair:

Dr. Gary McGraw

(gem@rstcorp.com)

Program Chair: Dr. Jeffrey Voas

(jmvoas@rstcorp.com)

Conference Manager:

Jen Norman

(jnorman@rstcorp.com)

ISACC 2000 is the second international conference in an annual series to be devoted exclusively to the topic of software certification. Its predecessor conference, ISACC'99, was held in March of 1999 and was a major success, attracting researchers, academics, practitioners, government officials, and industry executives.

Today, enormous pressure is driving the search for technologies, tools, methodologies, and models that can certify software. Why? Because it is imperative that users know a priori whether de-

ployed software will "behave as advertised." Similar to last year's conference, ISACC 2000 will be the key international forum where software users and publishers can exchange points of view on how best to certify software.

The theme of ISACC 2000 is "Issuing Software Certificates of Quality". ISACC 2000 will focus its attention on the different approaches toward "stamping" software with declarations of quality. As an example of such a declaration, the British Trade Marks and Service Marks Rules defines a "certified trademark" as "a mark adapted in relation to any goods to distinguish in the course of trade goods certified by any person in respect to origin, material, mode of manufacture, quality, accuracy or other characteristic, from goods not so certified." By employing such a definition, a stamp of quality could be devised to differentiate good software from inferior software.

While ISACC 2000's theme is technical, it is equally important to recognize that the near-term prospects for software certification are largely driven by non-technical issues. Software is increasingly used in systems where failure threatens safety, economic loss, loss of privacy or confidentiality, and other injuries. ISACC

2000 is also greatly interested in addressing the legal/liability, social, and political impacts of certification.

ISACC 2000 will again explore the question of whether the government should mandate what the certification requirements are for given species of software systems, or whether "private-sector" developers should self-regulate via a core set of certification technologies. If self-policing is preferred, will it be by an honor system or will software certification laboratories be the means by which software vendors show that their software is of high quality?

In summary, the ISACC conference series seeks practitioners, attorneys, research scientists, industry executives, CIOs, and those that are interested in public policy to discuss ways in which software certification can be transformed from being viewed as a tax on the industry to being viewed as a trophy.

Topics of particular interest to the ISACC 2000 program can be divided into two categories and include:

- Certification Issues:
- Certification Authorities and Laboratories

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RELEX Center Spread

RELEX Center Spread



ITSC

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- Certification Ethics
- Existing Software Standards (ISO, CMM, IEC, USNRC, FDA, NCSA, etc.)
- Government's Role in Software Quality and Consumer Protection Legislation
- Product vs. Process Certification vs. Personnel Licensing
- Software Liability
- Software Engineering Malpractice
- Software Insurance
- Software Warranties (Express and Implied)
- The Roles for Professional Organizations (ACM, IEEE, ASQ, etc.)
- Uniform Commercial Information Transactions Act
- US Congressional Policy and Upcoming Hearings

Technology Advances:

- Commercial-off-the-shelf (COTS) software quality
- Firewall certification
- Independent Verification and Validation
- Software Metrics and Measurement
- Software Validation
- Software Reliability Measurement
- Software Safety Assessment
- Software Security Assessment
- Testing/Verification and Validation

Maastricht, the Netherlands, EU.

September 5th-7th

The symposium on Digital Systems Design addresses both architectures and implementations of embedded digital systems as well as efficient design methods and tools. It is a discussion forum of the state-of-the-art research, development and applications for the research community working on computer system architecture, microprocessor architecture and design, logic design, application specific integrated processors, systems on a chip, hardware/software codesign, and design automation.

Topics include:

- CPU and memory architectures: arithmetic and logic units, co-processors, pipelining, superscalarity, cache, MMU.
- Special architectures: DSP, ASIPs, graphic and image processors, custom computing machines, processing arrays and FPGAs, reconfigurable structures.
- Specification and modeling: (hardware/software) system specification and modeling, system and hardware description languages, component modeling.
- Validation: simulation, emulation, prototyping and testing at the system, RT and logic level, multilevel- and co-simulation, formal verification.
- Synthesis: system on chip design; system, hardware-software, high-level, RT-level and logic synthesis, intellectual property and design reuse; synthesis for low-power, speed and testability; system, hardware/software and logic partitioning.

GENERAL INFORMATION ON EUROMICRO CONFERENCES

<http://www.euromicro.org>



Preliminary Notice

Intelligent Transportation System Council (ITSC)

October 2-3, 2000

and

IEEE Intelligent Vehicles Symposium IV2000

October 4-5, 2000, Dearborn, MI

The following special sessions will be held during the symposium:

- Military Applications and Current Research
- organized by Bruce Brendle, U.S. Army Tank-automotive & Armaments Command organized by

Christoph Stiller, Robert Bosch GmbH, Germany

- Autonomous Driving on Extreme Courses
- User Interfaces for On-Board Systems organized by Mauro Mosconi, University of Pavia, Italy

- Vehicle Motion Control Systems organized by Aurelio Piazzi and Corrado Guarino Lo Bianco, University of Parma, Italy
- Autonomous Vehicles Cooperation and Coordination organized by Giovanni Adorni, University of

Parma, Italy and Hiroaki Kitano,
Sony Computer Science Labs, Japan

IEEE Intelligent Vehicles Symposium

The Ritz-Carlton Hotel,
Dearborn, MI, USA
October 4-5, 2000

The IEEE Intelligent Transportation System Council (ITSC) is sponsoring a professional-level conference on basic research and present and future applications for Intelligent Vehicles and Intelligent Infrastructures. Papers dealing with vehicle-centered intelligent systems will be presented. This symposium is characterized by a single session format so that all the attendees remain in a single room for multilateral communications in an informal atmosphere. As another tradition, the meetings have enthusiastic participation from industry, as well as research centers and universities. The IEEE Conference on Intelligent Transportation Systems (ITS) will be held at the same location on Oct. 2-3, 2000, and a single-reduced rate-registration option will be available for both Conferences, as well as individual registrations.

Topics

- Driver Assistance Systems System Architectures Sensors
- Navigation/Guidance Systems Imaging and Vision Enhancement Vehicle Control
- Information Systems Human-machine Interfaces Active Safety
- Traffic Monitoring and Control Communications and Networks CAN

SPECIAL SESSIONS

Military Applications and Current Research

This session will provide an opportunity to explore research and development activities for autonomous and semi-autonomous ground vehicle systems. It examines the technology requirements and operational capabilities of robotic vehicle programs for military, and commercial applications. The session brings together technologists to discuss needs, opportunities and approaches for adapting commercial automotive intelligent systems to meet military off-road auto-

nous applications. The conference provides a unique opportunity to identify commercial research projects and leverage the results to meet crucial military requirements.

Topics:

- Government and Commercial programs: technical and performance challenges, system performance, test results, lessons learned;
- Machine perception for navigation and mission execution; Vehicle mobility and motion control;
- Operator interface and human-robot interactions.

Autonomous Driving on Extreme Courses

Theme:

Autonomous vehicle guidance in extreme driving environment. Coping with such conditions is a prerequisite for the introduction of advanced driver assistance functions. Hence, a discussion of the requirements and approaches to meet with these challenging conditions is expected to enhance insight into future developments, reveal missing links between current research and realization and provide impetus for new activities. The session will gather experts from various disciplines to shed light on the topic from different views.

Topics:

- System architecture, Multisensor systems, Advanced vehicle control,
- Driving strategy formation, Self-assessment, Reliability and Safety,
- Driving robot.

User Interfaces for On-Board Systems

Theme:

This session will focus on user interfaces issues in vehicle-centered intelligent systems and will feature experiences from the usability engineering perspective. Issues include, for instance, feedback, integration, synchronization, context, and how to make the most value from devices within vehicles: many of these are also issues for stand-alone systems, but mobility adds extra problems and opportunities. Those attending the session will be able to learn from and establish contacts with researchers who are innovators in developing human-computer interfaces.

Topics:

- Feedback, Feedthrough, Integration, Synchronization, Context,
- Multimodality, Design, Prototyping, Evaluation, Empirical studies.

Vehicle Motion Control Systems

Theme:

- This session will focus on control systems for autonomous vehicle motion.
- Longitudinal and lateral control strategies of car-like vehicles will be presented and the tight interplay with sensing systems (vision and non-vision based) will be highlighted.

Topics:

- Automatic steering control, Sensing systems, Visual guidance, Image dynamics estimation,
- Trajectory generation, Supervisory control, Advanced control systems design.

Autonomous Vehicles Cooperation and Coordination

Theme:

Cooperation and coordination of activities and actions are fundamental tasks when more than one agent is involved in accomplishing a complex common goal. During the last few years several projects have been started on such a topic. Among others, the European Handshaking (part of Prometheus Project) subproject where automobiles exchange information to better organize traffic flow; the Japanese rescue project for intervention of autonomous vehicles (robots) during catastrophic events; the international RoboCup initiative where a team of autonomous indoor vehicles (robots) have to coordinate their actions to implement a common strategy to compete against another team according to the soccer rules. The goal of the workshop is to focus on indoor and outdoor autonomous vehicles cooperation and coordination issues and related topics.

Topics:

- Fleets of indoor/outdoor autonomous vehicles,
- Autonomous vehicles cooperation,

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ITSC

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- Team strategies for autonomous vehicles,
- Team coordination in challenging environments,

- Team competitions, Cooperative/competitive behaviors,
- Cooperative distributed perception.

<http://www.ewh.ieee.org/tc/its/cfp-itsc-2000.html>

IEEE ITS Council Home Page:
<http://www.ieee.org/its>

IV-2000 Home Page:
<http://www.ce.unipr.it/iv2000>

TSC-2000 Home Page:

Preliminary Notice

IFIP World Computer Congress '2000

Beijing, China

The Association for Computing Machinery (ACM) and the IEEE Computer Society (IEEE-CS) became full members of IFIP, the International Federation for Information Processing (www.ifip.or.at) in January, 1999.

WCC '2000 will be held August 21-25, 2000 in Beijing, China. It will be hosted by the Chinese Institute of Electronics, the China Computer Federation, and the Chinese Institute of Communication. The theme of the Congress is "Infor-

mation Processing Beyond Year 2000." Together with various keynotes, panels, and workshops, the main technical components of the Congress will consist of eight federated conferences:

- ICCT: International Conference on Communication Technologies
- ICSP: International Conference on Signal Processing
- ICDA: International Conference on Chip Design Automation
- IIP: International Conference on Intelligent Information Processing

- ICEUT: International Conference on Educational Use of Technologies
- ITBM: International Conference on Information Technology for Business Management
- ICS: International Conference on Software — Theory and Practice
- SEC: International Conference on Information Security

More specific information about each conference can be found at www.wcc2000.org.

Preliminary Notice

SBCCI2000 - XIII Symposium on Integrated Circuits and Systems Design CHIP IN THE JUNGLE

Tropical Hotel,
Manaus, Amazonas,
Brazil
September 18-22, 2000
<http://www.sbc.org.br/sbcc>

The SBCCI is a forum dedicated to integrated circuits and systems design, held annually in Brazil. The location of its 2000 edition will be Manaus: gateway to the Amazon Rain Forest, flowers and animals paradise, and a wonderful cuisine

make it a favorite tourists destination and provide a great environment for holding conferences and meetings.

SBCCI2000 will occur in the same venue as SBMICRO2000 - Congress of Brazilian Microelectronics Society. The goal of the symposium is to bring together researchers in the areas of CAD, synthesis, design and test of integrated circuits and systems. The IEEE Computer Society Press publishes the proceedings in time for distribution at the conference. Besides the traditional tutori-

als, regular technical sessions, round tables, working groups and exhibition, several activities are planned this year to encourage high quality contributions and enrich even more the meeting. The author of the best papers presented at the symposium will be invited to resubmit an extended version that will be considered for publication at the IEEE Design and Test of Computers Magazine.

A nice social program is being prepared, including a jungle excursion, with option to stay in a jungle resort (Ariau Hotel).

Topics of interest include, but are not limited to:

- Rapid Prototyping
- Design for Test
- Micro-architectures
- Logic and High Level Synthesis
- Digital, Analog and Mixed-Signal Designs
- Formal Methods
- Micro-Electromechanical Systems
- Hardware-Software Codesign
- Low-Power, Low-Voltage
- Embedded Systems
- Physical Design
- Design Environments
- Test and Testability
- Industrial Applications

General Chair:
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Take a look at:
<http://www.inf.ufrgs.br/gme>

Preliminary Notice

FPL 2000 The 10th International Conference on Field Programmable Logic and Applications

28 - 30 August 2000
Villach, Austria

Future SoC - System on a Chip: impossible without Reconfigurable Subsystems

The conference proceedings will be published by Springer Verlag <http://link.springer.de/series/lncs/>

Topics to be covered include:

- Reconfigurable Hardware and Systems: Fine grain - Coarse grain - Reconfigurable Computing, Adaptive - Customizable - Embedded - fault-tolerant, Architectures - Technologies - Low Power - Dynamically Rec.
- Applications: Routing - Networking - Wireless - Evolvable Real-world - Scientific - Rapid-prototyping - Others
- CAD, Compilation, Testing and Verification: Design Flow - Tools - Higher Level Synthesis, Interconnect - Parameter Estimation -

Benchmarks, Testing and Verification of Dynamically Reconfigurable Apps

- Surveys, Tutorials, Future, History, and Education: Roadmaps to Technology, Application and Design, Teaching Reconfigurables & Evolvables - Curricular Impact, Student Projects - Industry/University Programs - Publicity
- Evolvable Hardware and Evolutionary Compilation Methods: Evolvable Hardware (EH) - Co-Evolution, Tools and methodologies - Genetic Programming
- Emerging and Other RL/RC-related Methodologies: State machines - Cellular Automata, Biologically inspired - Brain inspired, fluidic reconfigurable logic and applications, Molecular Biology Applications

For details on topic areas and conference location see:

http://xputers.informatik.uni-kl.de/FPL/FPL2000/detailed_fpl.html

Download Registration Form:

pdf:

http://xputers.informatik.uni-kl.de/FPL/fpl2000/CfP_FPL2000.pdf

ps:

http://xputers.informatik.uni-kl.de/FPL/fpl2000/CfP_FPL2000.ps

Reiner Hartenstein
Program Chair FPL-2000



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Preliminary Notice International Conference on Communications, Computers and Devices ICCCD-2000

IIT-KHARAGPUR INDIA
Dec. 14-16, 2000
Tutorials: Dec.14, 2000

This Conference is being organized by the Department of Electronics & Electrical Communication Engineering, IIT, Kharagpur on the eve of the Golden Jubilee of the Institute.

The topics of interest include:

- Telecommunications
- Switching and Networking

- Signal Processing
- Computers
- Pattern Recognition & Computer Vision
- Electromagnetics
- Photonics
- Electron Devices & VLSI Circuits
- Emerging & Next Generation Technologies in Communications,
- Computers & Devices

Correspondence:
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Website:
<http://www.iitkgp.ernet.in/ccd2000>

Reconfigurable Technology: FPGAs & Reconfigurable Processors for Computing and Applications

To be held as part of:
SPIE's Photonics East Symposium on Voice Video,
and Data Communications

5-8 November 2000, Boston Massachusetts

The past decade has seen a dramatic increase in the use of reconfigurable logic devices in commercial applications. Among the most significant milestones in this field are the arrival of million plus gate logic devices and the introduction of a series of new reconfigurable processors. These devices are ideal for data-intensive, Internet, DSP, and other high performance embedded telecom and datacom applications.

Many systems engineers are using reconfigurable technologies to overcome computation and product development bottlenecks. The advent of million plus gate counts and advanced manufacturing techniques have made these reconfigurable devices more economical and practical for computing systems.

This conference, in its fifth year, focuses on three areas of reconfigurable technology:

- New devices and systems
- Tools and techniques
- High-performance applications

The conference will present papers that illustrate applications and techniques for using reconfigurable technology in both design and production cycles. The following areas are considered:

- Field programmable devices
- Reconfigurable processors
- Programming tools and methodologies for reconfigurable devices & systems

- Applications and platforms utilizing reconfigurable technology for:
 - > network & data intensive applications
 - > hardware/software codesign
 - > rapid product development
 - > high-performance computing
 - > image, signal, and communication processing
 - > robotics
 - > evolvable algorithms

Internet <http://www.spie.org/info/vv>

If you have any questions regarding the conference contact the Conference Chairman, John Schewel jas@vcc.com (+1 818-342-8294).

Call for Papers

ICSC/NAISO Call For Papers and Conference Calendar (2000 and 2001)

For further reference refer to the ICSC/
NAISO home page at

<http://www.icsc.ab.ca>

Upcoming events:

1. ICSC Congress on INTELLIGENT
SYSTEMS AND APPLICATIONS
(ISA'2000)

University of Wollongong, Australia -
December 12-15, 2000

<http://www.icsc.ab.ca/isa2000.htm>

(submission deadline passed, except for
special events, such as workshops and in-
vited/special sessions)

ISA'2000 consists of:

1.1 Symposium on COMPUTATIONAL
INTELLIGENCE (CI'2000)

<http://www.icsc.ab.ca/151-info.htm>

1.2 Symposium on INTERACTIVE
AND COLLABORATIVE COM-
PUTING (ICC'2000)

<http://www.icsc.ab.ca/152-info.htm>

1.3 Symposium on INDUSTRIAL SYS-
TEMS (IS'2000)

<http://www.icsc.ab.ca/153-info.htm>

1.4 Symposium on BIOLOGICALLY
INSPIRED SYSTEMS (BIS'2000)

<http://www.icsc.ab.ca/154-info.htm>

1.5 Symposium on MULTI-AGENTS
AND MOBILE AGENTS IN VIRTUAL
ORGANIZATIONS AND E-COM-
MERCE (MAMA'2000)

<http://mama-2000.tripod.com/>

<http://www.icsc.ab.ca/150-rel.htm>

(MAMA'2000 has extended deadlines)

1.6 Workshop on MASS CUSTOMIZ-
ATION MANAGEMENT (MCM'2000)

[http://www-wi.cs.uni-magdeburg.de/
mc/mcm2000/](http://www-wi.cs.uni-magdeburg.de/mc/mcm2000/)

1.7 Session/Tutorial on INTELLIGENT
DECISION SUPPORT FOR LEGAL
PRACTICE

<http://www.icsc.ab.ca/150-inv.htm>

2. NAISO Congress on INFORMATION
SCIENCE INNOVATIONS (ISI'2001)

American University in Dubai, U.A.E. -
March 17-21, 2001

<http://www.icsc.ab.ca/isi2001.htm>

ISI'2001 consists of:

2.1 Symposium on CLINICAL TRIALS
(CT'2001)

<http://www.icsc.ab.ca/161-info.htm>

2.2 Symposium on E-BUSINESS AND
BEYOND (EBB'2001)

<http://www.icsc.ab.ca/162-info.htm>

2.3 Symposium on INTELLIGENT AU-
TOMATED MANUFACTURING
(IAM'2001)

<http://www.icsc.ab.ca/163-info.htm>

2.4 Symposium on ENGINEERING OF
NATURAL AND INTELLIGENT SYS-
TEMS (ENAI'S'2001)

<http://www.icsc.ab.ca/164-info.htm>

2.5 Symposium on INTELLIGENT
QUALITY MANAGEMENT AND ME-
TROLOGY (IQQM'2001)

<http://www.icsc.ab.ca/165-info.htm>

2.6 Workshop on INFORMATION SYS-
TEMS FOR MASS CUSTOMIZATION
(ISMC'2001)

[http://www-wi.cs.uni-magdeburg.de/
mc/ismc2001/](http://www-wi.cs.uni-magdeburg.de/mc/ismc2001/)

2.7 Workshop on AUTONOMOUS ARTI-
FICIAL SYSTEMS EXPLORING HOS-
TILE ENVIRONMENTS (AASEHE'2001)

<http://www.gmd.gr.jp/JRL/events.html>

2.8 Workshop on DOCUMENT IMAGE
ANALYSIS AND UNDERSTANDING
(DIAU'2001)

<http://www.icsc.ab.ca/160-work.htm>

2.9 ROBOT SOCCER CHAMPION-
SHIP (FIRA-ISI'2001)

<http://www.icsc.ab.ca/160-fira.htm>

3. ICSC Congress on COMPUTA-
TIONAL INTELLIGENCE-METHODS
AND APPLICATIONS (CIMA'2001)

University of Bangor, Wales, U.K. - June
19-22, 2001

<http://www.icsc.ab.ca/cima2001.htm>

CIMA'2001 consists of:

3.1 Symposium on FUZZY LOGIC
AND APPLICATIONS (FLA'2001)

<http://www.icsc.ab.ca/171-info.htm>

3.2 Symposium on ADVANCES IN IN-
TELLIGENT DATA ANALYSIS
(AIDA'2001)

<http://www.icsc.ab.ca/172-info.htm>

3.3 Symposium on ADVANCED COM-
PUTING IN BIO MEDICINE (ACBM
'2001)

<http://www.icsc.ab.ca/173-info.htm>

3.4 Symposium on ADVANCED COM-
PUTING IN THE FINANCIAL
MARKET (ACFM'2001)

<http://www.icsc.ab.ca/175-info.htm>

3.5 Workshop on GRANULAR COM-
PUTING (GrC'2001)

<http://www.icsc.ab.ca/175-info.htm>

4. ICSC Congress on SOFT COM-
PUTING (SOCO'2001) and INTELLI-
GENT SYSTEMS FOR INDUSTRY
(ISFI'2001)

University of Paisley, Scotland, U.K. -
June 26-29, 2001

<http://www.icsc.ab.ca/soco2001.htm>

5. Third WORLD MANUFACTURING
CONGRESS (WMC'2001)

Rochester Institute of Technology, N.Y.,
USA - September 24-27, 2001

WMC'2001 consists of:

5.1 Symposium on MANUFAC-
TURING SYSTEMS (ISMS'2001)

<http://www.icsc.ab.ca/191-info.htm>

5.2 Symposium on MANUFAC-
TURING TECHNOLOGY (ISMT
'2001)

<http://www.icsc.ab.ca/192-info.htm>

5.3 Symposium on MANUFAC-
TURING MANAGEMENT (ISMM
'2001)

<http://www.icsc.ab.ca/193-info.htm>

For information on further events, publi-
cations, further details and updated
events please follow the above links or
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2000 IEEE Microelectronics Reliability and Qualification Workshop

Hilton, Glendale, California

October 31 – November 1, 2000

<http://parts.jpl.nasa.gov/workshop/home.htm>

General Chair:

Sammy Kayali
Jet Propulsion Lab.
(818)354-6830

Technical Program Chair:

John F. Conley, Jr.
Jet Propulsion Lab.
(818)354-3188

Technical Committee:

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Local Arrangements Chair

Joanne Wellman
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(818)354-5787

Publicity/Exhibits Chair

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(626)354-0108

Important Dates:

Submission Deadline:

August 25, 1999

Workshop:

October 31- November 1

Sponsored By:

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CALL FOR PAPERS

The 3rd annual Microelectronics Reliability and Qualification Workshop will be held October 31st - November 1st, 2000 at the Hilton in Glendale, California. The purpose of the workshop is to provide a forum for open discussion in all areas of microelectronics reliability and qualification for high reliability and commercial applications. Papers detailing latest results or work in progress in all areas of microelectronics device reliability and qualification methodologies are solicited. General topics of interest include:

- **RELIABILITY** (*accelerated testing, electromigration, hot carrier, TDDDB, etc.*)
- **QUALIFICATION METHODOLOGIES** (*COTS, screening, ESD, etc.*)
- **RELIABILITY MODELING AND SIMULATION** (*devices, materials, atomic scale, etc.*)
- **MATERIALS** (*advanced materials, dielectrics, thin oxides, SiGe, III-V, defects, etc.*)
- **SPECIAL ENVIRONMENTS** (*radiation, extreme temperature, temperature cycling, etc.*)
- **ADVANCED TECHNOLOGIES** (*MEMS, NVM, MOS, advanced devices, etc.*)
- **PROCESS, PRODUCTION, and YIELD** (*impact on reliability*)

PAPER SUBMISSION:

Prospective authors are requested to submit an abstract of not more than 300 words. The abstract must include the author's name, affiliation, complete address, telephone, and FAX number, email, and preference for oral (approx. 20 minutes) or poster presentation. The abstract must state: (1) the purpose of the work, (2) the results or conclusion of the work, and (3) how the work advances the knowledge of microelectronics reliability or qualification. Authors are responsible for obtaining all required company and government clearances prior to submission.

Please submit your abstract electronically (MS Word attachment preferred) by **August 25, 2000** to:

John F. Conley, Jr., Technical Program Chair
Tel: (818)354-3188, Fax: (818)393-4559
john.f.conley@jpl.nasa.gov,

Authors will be notified by September 20, 2000 of acceptance. A two to four page written summary of all accepted presentations will be due by October 13, 2000 for inclusion in the workshop proceedings.

REGISTRATION:

Registration fee is \$120, which includes break service, lunch, exhibit reception, and workshop proceedings. Further information regarding registration and lodging will be available by June 2, 2000 at <http://parts.jpl.nasa.gov/workshop/home.htm>.

For additional information, please contact:

Joanne Wellman, Local Arrangements Chair
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Susan C. Kinney, Arthur Anderson LLP

Robert Taylor, Office of Naval Research

Russell A. Vacante, Ph.D., Chairman, TRANSLOG International

Wednesday Morning: Panel Discussion: "Partnership in Reliability Maintainability and Supportability Standards", Dr. Vacante, Moderator

Herb Kaufman, Director, SAE Technical Standards and Research

Belinda L. Collins, Ph.D., Director, NIST Office of Standards

Gregory E. Saunders, Director, Defense Standardization Program

Thursday Morning: **Lt. Gen. John M. "Mike" McDuffie, USA**, Director for Logistics, The Joint Staff, Pentagon, Washington D.C., followed by:

The Hubble Astronauts

Five Simultaneous Papers Sessions, Tuesday through Thursday, August 8, 9, & 10:

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Monday: Marks of Conformity; System Engineering; SOLE and You

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CALL FOR PAPERS



www.isqed.org

2001 International Symposium on Quality Electronic Design

isqed@isqed.org

March 26-28, 2001, San Jose, California, USA

The International Symposium on Quality Electronic Design (ISQED), is an electronic design and design automation conference focused on design quality. The conference provides a forum to present and exchange ideas and to promote the research, development, and application of design techniques & methods, design processes, EDA design tools, and design methodologies. The conference attendees are primarily designers of the VLSI Integrated Circuits & Systems (IP & SoC), and those involved in the Research, Development and Application of EDA/CAD Tools and Design flows, Process/Device Technologists, and Manufacturing Specialists. ISQED emphasizes a holistic approach toward design quality and intends to highlight and accelerate co-operation among the IC Design, EDA, and Process Technology communities in establishing industry wide targets for "quality of IC design", and to facilitate the progress toward those quality targets.

PAPERS, TUTORIALS, PANELS ARE SOLICITED ON:

- ❖ Design Quality Definitions, Metrics, and Standards
- ❖ Design and Abstraction/Modeling Methods for IP Blocks & Libraries
- ❖ Design Methodologies; Custom, Semi-Custom, ASIC, FPGA, etc, focused on Quality
- ❖ Quality of Modeling Abstractions and Methods (Device, Interconnect, Micro and Macro Cells)
- ❖ Physical Synthesis Tools and Quality Implication
- ❖ Closing the Design to Manufacturing Loop (Design for Manufacturability)
- ❖ Management of Design Process, and Design Database
- ❖ EDA Tools Interoperability Implications
- ❖ Emerging Processes & Devices, and their Effect on Reliability, Yield, and Performance of the VLSI Design
- ❖ Networking Circuit Design; Flows, Methods, and QoS
- ❖ Packaging Simulation & Engineering for Improved Quality
- ❖ Global, Social, and Economic Implications of Design Quality
- ❖ Design for Testability, and Quality of Test Coverage
- ❖ Low Power Test
- ❖ Low Power Designs with focus on design quality
- ❖ Redundancy Design Techniques and effect on Quality
- ❖ EDA Tools, Design Techniques, and Methodologies, dealing with issues such as:
 - Timing Closure
 - R, L, C Extraction
 - Signal Reflection
 - Ground/Vdd Bounce
 - Signal Noise/Cross-Talk
 - Substrate Noise
 - Voltage Drop
 - Metal Migration
 - High Frequency Effects
 - Thermal Effects
 - Power Estimation
 - Hot Carriers
 - Plasma Induced Damage
 - EMI/EMC
 - Proximity Correction & Phase Shift Methods
 - Verification (Layout, Circuit, Function, etc.)
 - EOS/ESD

IMPORTANT DATES:

Paper Submission Deadline	September 5, 2000
Acceptance Notification	October 19, 2000
Final Camera-Ready Paper	December 3, 2000

Best paper Awards

ISQED technical committee will award the top three papers based on the degree of contribution to the field of design, originality, quality of the article, and other factors determined by the committee. All papers, except invited papers, will be considered for the evaluations. Please refer to the conference web site for ISQED 2000 winners.

Submission Process

Authors should submit FULL-LENGTH, original unpublished papers (6 pages maximum) along with an abstract of at about 200 words. To permit a blind review, DO NOT include name(s) or affiliation(s) of the author(s) on the manuscript and abstract. Send a separate file including the complete contact author information; name, association, street/ mailing address, company mailing address, telephone/fax, e-mail. The guidelines for paper format are available on the conference web site at <http://www.isqed.org>. Electronic submission via e-mail is the only accepted submission mode. Please email your paper in MS Word, PDF, or postscript format to isqed@isqed.org. PDF is the preferred format. Please check the as-printed appearance of your paper before sending it. Tutorial and panel proposals should include the title, speakers/panelists/moderator information, description of the topic, and a brief outline.

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Technical Magazine Section

INET Infrastructure Technology Options and Life Cycle Reliability

The battle for providing internet access and content services the last distance to homes, offices and other facilities involves some unexpected competitors. Telephone, cable, terrestrial wireless, electrical utility, and communication satellite companies, content-providers and some municipalities are the primary stakeholders. End users, in comparison, are considered a payment resource, rather than, as is most likely, a consumer and producer of Internet content. Reliability is depicted as only a detail design characteristic with an economic impact. This article will suggest where reliability expertise may be helpful in the competition.

Amitava Dutta-Roy provided background articles in the IEEE Spectrum issues for March, May, September, and December 1999, (references a, b, c, d, e). Dr. Alan McAdams of Cornell's Johnson School of Management, led a multi-phase workshop of IEEEUSA Committee on Communication and Information Policy (CCIP) volunteers, through discussion and white paper generation on the leading technology options and logical scenarios describing how the internet might grow technologically over the next five to ten years (reference f).

As Internet utilization increases, desirable features become mandatory user requirements for attributes such as ready access, infinite bandwidth, advanced services such as interactive video, tele-commuting, high definition/digital TV, tele-medicine, full multimedia, and 99.99% availability and low cost. Hence, system success is defined as satisfying end user requirements at the lowest possible cost. Since there may not be any one technology option that best serves all of these requirements over the systems life cycle, alternative, evolutionary options, selectable by the end-user, is also a mandatory system requirement.

The five primary technology options under consideration for local access infrastructure currently are: a) Optical Fiber, b) Hybrid-Fiber-Coax, c) Wireless (terrestrial) d) Wireless (satellite) and e)

Digital Subscriber Line (DSL). Since space does not permit a meaningful discussion of each technology's benefits and limitations, the reader is directed to reference f) and the white papers by each of the technology task groups and implementation scenarios of the scenario task groups.

What remains is to challenge the reader by describing where the author believes reliability expertise can make an impact. The Table below depicts some failure modes that exist for two the technologies. It is far from exhaustive, but represents the breadth of need.

Generic sources of operational reliability problems are generally known. Active, rather than passive components, such as lasers and optical switches, are potential failure sources. Built in redundancy may be impractical considering competitive cost of product. High reliability parts for satellite onboard processing, modulation, or amplification applications may be too costly, but redundancy may cause a weight problem. The number of active components impact system design, performance, reliability and costs. The operating environment introduces interesting opportunities, e.g. water seepage impacts on optical cables. Shared facilities as in data flow to and from the Head End of an optical system using the same fiber at different frequencies or carried by the normal data stream can introduce reliability challenges.

Integration during technology transition phases is also a challenge, even though there is some consensus that a full fiber system built in stages using hybrid-fiber-coax and mobile wireless will be the logical downstream design choices. Consider a system incorporating optical fiber to a central office, coax to a local switch, point to point microwave to a building and fiber to the desktop. Demonstrate via simulation or modeling an availability of 0.9999.

INET Futures: Sample Failure Mode Effects, Concerns & Solutions

System/Item	Failure Mode(s)	Concerns/Impacts/solution(s)
All Optical Fiber Networks	Laser failure	Loss of data transmission
-Local architecture: star or ring	Loss of functionality/redundancy	Ring backbone; user at star tip; SONET ring desirable
-Uni- or bi-directional system	Electronics failure or insufficient bandwidth	Cost of more electronics vs more fiber; symmetric bi-directional preferred
-Passive Optical network	Passive optical splitter fails	Rare event
-Dense wave division multiplexing	Multiplexer failure	Eliminate unit; use different services on different wavelengths over same fiber
-Lifeline power	Loss of service with power outage	Need new power backup, e.g. for dial tone (backup batteries)
Wireless		
- Terrestrial Fixed Wireless Access	Solder joint failures	Loss of function; loss of data
- Fixed Satellite Service	Onboard processing & switching system failure	Loss of data
	Excessive bit error or link error rates	TCP/IP protocol performance
	Encapsulation failure	Chip performance degradation; over heating
-Terrestrial Mobile Service	Module failure	No redundancy due to cost impact; remove & replace
	Real-time downloadable software virus (for digital radio)	Loss of interoperability among hardware & software modules
- Mobile Satellite Service	Frequent disconnections	HTTP (web) performance impacts
	Amplifier overheating	Loss of signal level

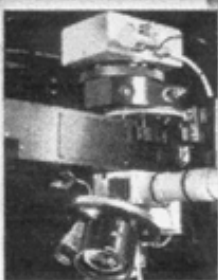
continued on page 28

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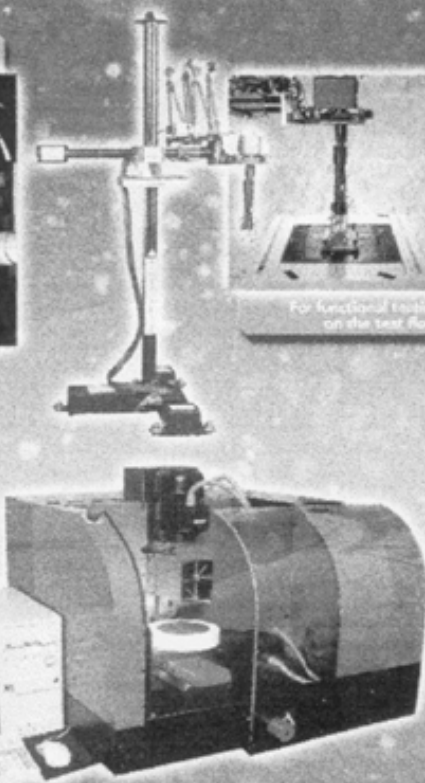
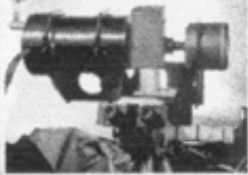
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INET

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Therefore, if one is interested in the reliability of internet infrastructure systems, this author's recommendation is the study of optical fiber and hybrid-fiber-coax networks. The application marketplace is huge. Wireless (satellite) system reliability, on the other hand, while a smaller application market, may have larger technical design challenges.

Hank Wolf is president of IRM Associates, Inc, a consulting firm that provides

management support for inter-disciplinary, academic research. He serves as the Reliability Society's representative on the IEEEUSA Committee on Communications and Information Policy and was a facilitator for Technology Task Group 2, Hybrid-Fiber-Coax, at the INet Futures Workshop in Ithaca, New York, Fall 1999.

References

- a. "Bring Home the Internet" Amitava Dutta-Roy IEEE Spectrum March 1999
- b. "Cable, It's Not Just for TV" Amitava Dutta-Roy IEEE Spectrum May 1999

c. "A Second Wind for Wiring" Amitava Dutta-Roy IEEE Spectrum September 1999

d. "Fixed Wireless Routes for Network Access" Amitava Dutta-Roy IEEE Spectrum September 1999

e. "Networks for Homes" Amitava Dutta-Roy IEEE Spectrum December 1999

f. <http://www.ieeeusa.org/committees/CCIP/workshop/index.html>

Editor's Message

continued from page 1

ten members of the Reliability Society (excluding student members) and a biographical sketch should be included in the submittal.

For uniformity, the biographical sketch should be typed and include four sections:

1. Education: Degrees, Universities, Subjects
2. Work Experience
3. IEEE Experience
4. Other

The biographical sketch should be limited to one side of one 8.5" x 11" sheet of paper. The nominating material: 1) Agreement to serve if elected (signed), 2) Biographical sketch, and 3) Nominating

petition, should be sent before July 31, 2000 to:

Loretta Arellano
Nominating Committee Chair
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Questions can also be e-mailed to l.arellano@ieee.org

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