

QRE CENTER NEWSLETTER

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Fall 1997

Quality & Reliability Engineering (QRE) Center Newsletter

NSF/Industry/University Cooperative Center - Rutgers University & Arizona State University

QRE CENTER OPENS

The Quality and Reliability Engineering (QRE) Center has officially been initiated. A kick-off meeting is to be held on October 20-21 at the Rutgers campus in Piscataway, NJ. The QRE Center is a national resource for research, technology evaluation, development of quality and reliability tools, quality and reliability testing, education, and information transfer.

The QRE Center is sponsored by the NSF and operated by Rutgers University and Arizona State University. The center currently has twelve member companies or organizations.

The QRE Center is dedicated to the vigorous pursuit of new research and techniques, that will lead to high quality and highly reliable components, products, and systems. In the current environment of growing public demand for higher quality product and service and rapid technological changes, the QRE Center will play a key role in serving the mutual interests of industry, government agencies and academia. As part of two major universities (Rutgers and Arizona State University), the QRE Center educates a new generation of technical personnel for careers in the quality and reliability engineering field.

The mission of the center is to conduct research and develop models and prototypes for evaluating system performance and improving quality and reliability of components, products, and systems. Our goal is to provide timely, high quality and cost-effective research, development, training, seminars and workshops in the quality and reliability engineering areas.

The QRE Center also has a quality/reliability testing facility that can be used to assess the quality and reliability of products or materials during their life cycle, to perform accelerated stress testing, to characterize materials properties, and to accurately obtain geometric measurements.

Expanding the base of skills and knowledge related to quality and reliability is also at the heart of the QRE Center's mission. Dedicated education and information transfer programs serve this purpose. Both Rutgers and Arizona State have regular course offerings in quality and reliability. There are several other means for exchanging information between the QRE Center and its sponsors and the user community, including research collaborations, site visits and formal research presentations.

Charter Members of the QRE Center

The following companies and organizations are charter members of the QRE Center:

- Chrysler Corporation - Huntsville
- Chrysler Corporation - Auburn Hills
- Dranetz Technologies
- Eastman Kodak
- Ethicon
- Hughes Missile Systems
- IBM Almaden Research Center
- Intel Corp.
- Lucent Technologies
- Nokia Mobile Phones
- ARDEC/Picatiny Arsenal
- Warner Lambert

The QRE Center's activities are collaborations between University personnel and industry and government organizations. Members guide the directions of QRE Center's research and education programs. They are the bridges between academia and practical deployment of new approaches and technology. The members obtain a broad view of the future of quality and reliability research and technology.

For further information on QRE Center membership opportunities, contact:

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96 Frelinghuysen Rd.
Piscataway, NJ 08854-8018
Phone: (732) 445-3654
Fax: (732) 445-5467
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Fall Technical Conference

The 41st Fall Technical Conference will be held October 16-17 in Baltimore. The conference is jointly sponsored by the American Society for Quality (Chemical and Process Industries Division and Statistics Division) and the American Statistical Association (Section on Physical and Engineering Sciences). The conference has traditionally been a lively

exchange of academic and industrial practitioners of quality.

Members of the QRE Center have been active in the conference. Prof. Susan Albin is co-chair of the program committee and Prof. Douglas Montgomery is moderating the Journal of Quality Technology Session and is co-author of a paper. Prof. George Runger will present a paper and Robin Wurl, a doctoral student of Susan Albin, will present a paper and received an ASQ scholarship to cover expenses to attend the meeting.

Quality Day November 13 at Picatinny Arsenal

On November 13, there will be a Quality Day at Picatinny Arsenal, NJ. There will be an all day program to promote awareness of quality for the employees at Picatinny Arsenal. The U.S. Army Armament, Research Development and Engineering Center (ARDEC) located at Picatinny Arsenal is a charter member of the QRE Center.

ARDEC's thrusts include the development and advancement of smart munitions and digitized fire control systems. In 1996, ARDEC received both the ACOE Commander-in-Chief's Award and the Presidential Award for Quality.

INFORMS Conference in Dallas, October 25-29

The Institute for Operations Research and Management Science (INFORMS) will hold its biannual conference in Dallas. There will be many sessions dedicated to optimization issues in the reliability and quality fields. There will be many representatives of Rutgers, Arizona State and QRE member companies serving as session chairs and presenting papers. Specifically, Drs. E. A. Elsayed, Hoang Pham and James Luxhøj of Rutgers will be session chairs. Papers will be presented by many QRE Center representatives including Dr. Michael Tortorella of Lucent Technologies, Dr. Bert Keats of Arizona State, and Hossein Egbali, Loan Pham, Xuemei Zhang, and Xindong Wang, Ph.D students at Rutgers.

For information, call 1-800-343-0062.

Download Quality Software

The following websites offer shareware or working demonstrations which can be downloaded.

Shareware:

16. Clemson Continuous Quality Improvement (CQI) server - <http://deming.ces.clemson.edu>
17. Clemson Total Quality Management BBS - <http://deming.ces.clemson.edu/pub/tqmbbs/software>
18. Florida Institute of Technology (Walt Shaw) - <ftp://163.118.22.190/enm5001/software>

Commercial sites:

16. At-Sigma SPC - <http://www.atsigma.com/spc-main.htm>
17. Hertzler Systems - <http://www.hertzler.com>
18. MultiSimplex - <http://multisimplex.se/product.htm>

Call for Papers

ISSAT International Conference on Reliability and Quality in Design

The Fourth ISSAT International Conference on Reliability and Quality in Design is an international forum for presentation of new results, research development, and applications in reliability and quality in design. Papers may address any aspect of reliability and quality in design. Papers dealing with case studies, experimental results, or applications of new or well-known theory to the solution of actual reliability and quality problems in engineering design are of particular interest.

Topics of interest include:

- reliability
- modeling analysis and simulation
- fault tolerance
- quality assurance
- optimization
- software reliability and testing
- quality cost
- maintainability and availability
- data collection and analysis
- human factors and reliability
- concurrent engineering and design
- performance analysis

Three copies of the papers (maximum 15 double sided pages) should be submitted by January 31, to Program Chair:

Dr. Ming-Wei Lu, RQD-98
CIMS 484-04-10
Chrysler Corporation
800 Chrysler Drive East
Auburn Hills, MI 48326 USA
Phone: (248) 576-0167
Email: mwl@chrysler.com

New Laboratory Equipment for QRE Research

Rutgers Laboratory is upgraded to include SEM and random vibration test equipment.

Capabilities at the Quality & Reliability Engineering Laboratory at Rutgers' Department of Industrial Engineering have been expanded by several recent additions.

Bellcore, Inc. recently donated a Scanning Electronic Microscope (SEM) to Rutgers. The SEM will be used to inspect failure surfaces, determine root-cause of failure, detect signs of degradation and conduct other analyses. This will complement ongoing research in the areas of accelerated testing and reliability prediction based on physical degradation models. The SEM has magnification capabilities of greater than 250,000.

Rutgers also recently acquired a new vibration testing system and controller. The system is capable of sine-swept and random vibration testing over a wide range of vibration levels. This test equipment will be used to simulate the stresses which occur during product shipping and handling, and to study failure mechanisms which are primarily accelerated by vibration. This will complement the laboratory's existing temperature cycling test equipment.

To learn more about this test equipment and the capabilities of the Quality & Reliability Laboratory, contact:

Dr. David W. Coit
Rutgers University
Phone: (732) 445-2033
Email: coit@rci.rutgers.edu

Calendar of Events

The Development of Vibration and Shock Criteria from Measured Data

Oct. 17, 1997 - Oct. 17, 1997
Detroit, MI
Contact: IEST
940 E. Northwest Highway
Mount Prospect, IL, 60056
Phone: (847) 255-1561
FAX: (847) 255-1699

International Test Conference

Nov. 01, 1997 - Nov. 06, 1997
Washington, DC
Contact: International Test Conference
2000 L Street, NW, Suite 710
Washington, DC, 20036
Phone: (202) 973-8665
FAX: (202) 331-0111

Practical Implementation of Probabilistic Methods Workshop

Nov. 03, 1997 - Nov. 06, 1997
Palm Beach Gardens, FL
Contact: SAE International
400 Commonwealth Dr.
Warrendale, PA, 15096
Phone: (412) 772-7148
FAX: (412) 776-4955

68th Shock and Vibration Symposium

Nov. 03, 1997 - Nov. 10, 1997
Hunt Valley, MD
Contact: Shock and Vibration Information
Analysis Center.
2231 Crystal Drive, Suite 711
Arlington, VA, 22202
Phone: (703) 412-7712
FAX: (703) 412-7500

Contributions to Newsletter

For contributions to the newsletter and information, please contact:

Dr. David W. Coit
Rutgers University
Phone: (732) 445-2033
Email:coit@rci.rutgers.edu

1997 Predictive Technology & Stockpile Life Symposium

Nov. 06, 1997 - Nov. 07, 1997
Alexandria, VA
Contact: Mr. Michael Cassiello, TACOM-ARDEC, AMSTA-AR-QAT-P, Bldg. 62S
Picatinny Arsenal, NJ, 07806-5000
Phone: (201) 274-5054
FAX: (201) 274-3939

Product Integrity Through Environmental Stress Screening

Dec. 03, 1997 - Dec. 03, 1997
San Diego, CA
Contact: IEST, 940 E. Northwest Highway
Mount Prospect, IL, 60056
Phone: (847) 255-1561
FAX: (847) 255-1699

Developing and Implementing Environmental Management Systems

Dec. 03, 1997 - Dec. 05, 1997
Houston, TX
Contact: EXCEL Partnership, 75 Glenn Rd
Sandy Hook, CT, 06482
Phone: (800) 374-3818
FAX: (203) 426-7811

7th International Symposium on System Operational Effectiveness

Dec. 08, 1997 - Dec. 10, 1997
Exeter, United Kingdom
Contact: Symposium Administrator
Centre M.I.R.C.E., Harrison Building
University of Exeter
EX4 4QF, United Kingdom
Phone: 44 (0) 1392 263639
FAX: 44 (0) 1392 263620

RAMS 1998

Jan. 19, 1998 - Jan. 22, 1998
Anaheim, CA
Annual Reliability and Maintainability
Symposium
Contact: RAMS Database Coordinator
804 Vickers Avenue,
Durham, NC, 27701-3143