



EIGHTH ISSAT INTERNATIONAL CONFERENCE



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Ming-Wei Lu

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# RELIABILITY AND QUALITY IN DESIGN

AUGUST 7-9, 2002

EMBASSY SUITES HOTEL ANAHEIM - SOUTH  
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## CONFERENCE PROGRAM

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**The International Society of Science and Applied Technologies (ISSAT)**

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## **WEDNESDAY, AUGUST 7, 2002**

**8:00 am - 9:00 am Registration**

**9:00 am - 9:10 am Opening Remarks**

**9:10 am - 10:00 am Keynote Speaker**

**Dr. Thad Regulinski, University of Arizona**  
**"Critical Reliability Challenges –**  
**Entering 2003"**

**10:00 am - 10:15 am Coffee Break**

### SESSION 1

#### **Reliability-Based Modeling of Materials**

**Wednesday, August 7, 10:15 am - 11:45 am**

Session Chair:

Robert G. Tryon (VEXTEC Corporation, USA)

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Ravindra Patankar (Michigan Technological University, USA)

*Predicting Stochastic Behavior of Fatigue Crack Nucleation and Small Crack Growth in Ductile Alloys Based on Stochastic Behavior of Large Crack Growth*

Yaowu Zhao (VEXTEC Corporation, USA)

Robert Tryon (Vextec Corporation, USA)

*Automatic Simulation of Polycrystalline Metallic Materials*

Robert Tryon (VEXTEC Corporation, USA)

Animesh Dey (Vextec Corporation, USA)

*Reliability Prediction of Large Composite Structures with Defects*

Hoang Pham (Rutgers University, USA)

*Characteristics of a New Vtub-Shaped Failure Rate Function*

### SESSION 2

#### **Supply Chain Management and Logistics Engineering**

**Wednesday, August 7, 10:15 am - 11:45 am**

Session Chair:

Philip L.Y. Chan (The University of Hong Kong, Hong Kong)

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L.K. Chu (The University of Hong Kong, Hong Kong)

K.K.T. Chan (The University of Hong Kong, Hong Kong)

D. Sculli (The University of Hong Kong, Hong Kong)

*A Logistic Program for the Maintenance of Aircraft Cabin Components*

Philip L.-Y. Chan (The University of Hong Kong, Hong Kong)

Felix T.S. Chan (The University of Hong Kong, Hong Kong)

*Strategic Purchasing in Supply Chain Management in a Multinational Manufacturer*

F.T.S. Chan (The University of Hong Kong, Hong Kong)

L.K. Chu (, Hong Kong)

*Critical Success Factors of Managing Supply Chains*

Jason S.K. Lau (The University of Hong Kong, Hong Kong)

George Q. Huang (The University of Hong Kong, Hong Kong)

K.L. Mak (The University of Hong Kong, Hong Kong)

*An Approach to Investigate the Impacts of Sharing Production Information on Supply Chain Dynamics from the Perspective of Supply Chain Scheduling*

### SESSION 3

#### **Reliability Modeling**

**Wednesday, August 7, 1:00 pm - 2:30 pm**

Session Chair:

Francesco Muzi (University of L'Aquila, Italy)

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Jeff Jones (University of Warwick, United Kingdom)

Li Chong (University of Warwick, United Kingdom)

Jay Huang (University of Warwick, United Kingdom)

J. Marshall (TRW Aeronautical Systems, United Kingdom)

*Reliability Modelling & Prediction Using Neural Networks*

Wenhua Mei (Beijing Aeronautical

Technology Research Center, P. R. China)

Yue'e Guo (Beijing Aeronautical Technology Research Center, China)

Hongyuan Zhang (Beijing Aeronautical Technology

Research Center, China)

*Practical Counterexamples to AMSAA Reliability Growth Model for Multiple Systems Development in MIL-HDBK-189 and MIL-HDBK-781*

Francesco Muzi (University of L'Aquila, Italy)

Massimo Malentacchi (AgriFormula Company, Italy)

Paolo Scardamaglia (AgriFormula Company, Italy)

*Numerical Reliability Approach Based On Finite-Element Procedures and Fault-Tree Representation*

Elsayed A. Elsayed (Rutgers University, USA)

Haitao Liao (Rutgers University, USA)

*A Geometric Brownian Motion Model for Field Degradation Data*

### SESSION 4:

#### **The Change and the Improvement of Enterprises Quality**

**Wednesday, August 7, 1:00 pm - 2:30 pm**

Session Chair:

Huey-Ming Lee (Chinese Culture University, Taiwan)

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Huey-Ming Lee (Chinese Culture University, Taiwan)

Tsung-Yen Lee (National Taiwan University, Taiwan)

Jan-Jo Chen (Chicago State University, USA)

*A New Algorithm for the Group Decision Making Using Fuzzy Set Theory for Evaluating the Rate of Aggregative Risk in Software Development*

Yeh-Jui Fey (Ling Tung College, Taiwan, R.O.C.)  
Hsin-I Yen (Chinese Culture University, Taiwan)  
Chia-Yi Ke (Chinese Culture University, Taiwan)

*Application of NeuroFuzzy to the Change of Customer Strategy*

Shi-Huai Lin (Chinese Culture University, Taiwan)  
Yeh-Wei Yin (Chinese Culture University, Taiwan)  
Fang-Hsiu Lin (Pacific Millennium Corporation, Taiwan)

*Firm Actives Finding from the Change of Financial and Market Pages of New Paper in Taiwan*

Yen-Hsun Fey (Ling Tung College, Taiwan)  
*The Change and Development Strategy of Higher Technological and Vocational Education in Taiwan*

**2:30 pm – 2:45 pm Coffee Break**

## SESSION 5

### ***Degradation Test, Assessment and Prevention***

***Wednesday, August 7, 2:45 pm - 4:15 pm***

Session Chair:

Gordon J. Savage (University of Waterloo, Canada)

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Pundarikaksha Baruah (Wayne State University, USA)  
Shubha Murthy (Wayne State University, USA)  
Ratna Babu Chinnam (Wayne State University, USA)

*A Neuro-Fuzzy Approach for On-line Reliability Estimation and Condition-Based-Maintenance using Degradation Signals*

Samad Kobi (ISTIA-LASQUO, France)  
R. Hambli (ISTIA, France)

*Prediction of Damage During Metal Forming Processes Using Design of Experiments Approach*

Giulio Fanti (Universita' Di Padova, Italy)  
Roberto Basso (Universita' Di Padova, Italy)

*Performance Analysis of Fiber Bragg Gratings Sensors*

Qishan Li (The University of Arizona, USA)  
*Optimal Test Plan for Degradation Test*



## SESSION 6

### ***Software Reliability***

***Wednesday, August 7, 2:45 pm - 4:15 pm***

Session Chair:

Hoang Pham (Rutgers University, USA)

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Krishan K. Aggarwal (GGS Indraprastha University, India)  
Yogesh Singh (GGS Indraprastha University, India)  
Jitender Kumar Chhabra (Regional Engineering College, India)

*A Four Parameter Integrated Measure of Software Maintainability*

Takaji Fujiwara (Fujitsu Peripherals Limited, Japan)  
Shigeru Yamada (Tottori University, Japan)

*CO Coverage-Measure and Testing-Domain Metrics Based on a Software Reliability Growth Model*

Myron J. Hecht (SoHaR Incorporated, USA)  
Herb Hecht (SoHaR Incorporated, USA)  
Xuegao An (SoHaR Incorporated, USA)

*Use of Combined System Dependability and Software Reliability Growth Models*

Michal Cutler (SUNY Binghamton, USA)  
Oded Berman (University of Toronto, Canada)

*Optimal Test Scheduling and Assignments of Teams for Modular Software*

**5:30 pm Welcome Reception**

THURSDAY, AUGUST 8, 2002

## SESSION 7

### ***Reliability and Robust Design in the Automotive Industry***

***Thursday, August 8, 8:30 am - 10:00 am***

Session Chair:

Everett Kuo (Ford Motor Company, USA)

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Everett Y. Kuo (Ford Motor Company, USA)

*Vehicle High Mileage Powertrain Mount Degradation Analysis*

Gianna F. Gomez-Levi (Ford Motor Company, USA)  
Everett Kuo (Ford Motor Company, USA)  
Nanxin Wang (Ford Motor Company, USA)

*Statistical Model for Vehicle Body-in-Prime Static Stiffness Target Setting*

Shih-Huang Lin (The University of Michigan, USA)  
J. Pan (The University of Michigan, USA)

*Fatigue Life Prediction for Spot Welds in Coach-Peel and Lap-Shear Specimens Based on Fracture Mechanics*

Ming-Wei Lu (DaimlerChrysler Corporation, USA)  
Richard J. Rudy (DaimlerChrysler Corporation, USA)  
*Statistical Techniques for Vehicle Crash Testing*

## SESSION 8

### ***Data Mining Techniques and Its Applications***

***Thursday, August 8, 8:30 am - 10:00 am***

Session Chair:

Jaw-Sin Su (Chinese Culture University, Taiwan)

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Hengshen Chen (Chinese Culture University, Taiwan, R.O.C.)

Kevin Chu (Chinese Culture University, Taiwan)

Shu-Yen Lee (China Engineering Consultants, Inc., Taiwan)

#### ***OLAP to Access Instructional Evaluation and Student Response***

M.T. Wang (Chinese Culture University, Taiwan)

#### ***Mining Association Rules Dynamically in OnLine Environment***

Jaw-Sin Su (Chinese Culture University, Taiwan, R.O.C.)

#### ***The Internal Failure Quality Cost Control Chart Design and Applications***

Johnson Liaw (Chinese Culture University, Taiwan)

Shu-Yen Lee (China Engineering Consultants, Inc., Taiwan)

Jaw-Sin Su (Chinese Culture University, Taiwan)

#### ***A Study on the Accounting Performance from ECB and GDR***

***10:00 am - 10:15 am Coffee Break***

## SESSION 9

### ***Network Reliability***

***Thursday, August 8, 10:15 am - 11:45 am***

Session Chair:

Yi-Kuei Lin (Van Nung Institute of Technology, Taiwan)

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Yi-Kuei Lin (Van Nung Institute of Technology, Taiwan)

Yuan John (National Tsing Hua University, Taiwan)

#### ***Use Minimal Paths to Evaluate the System Reliability for a Two-Commodity Network with Node Failure***

Yi-Kuei Lin (Van Nung Institute of Technology, Taiwan)

#### ***Reliability Evaluation for a Capacitated-Flow Network with Time Attribute***

Ridha Hambli (ISTIA-LASQUO, France)

A. Kobi (ISTIA, France)

#### ***Application of Neural Network for Quality Improvement in Metal Blanking Process***

Boushaba Mahmoud (University of Constantine, Algeria)

Ghoraf Namir (University of Constantine, Algeria)

#### ***m-consecutive-k-out-of-n: F System via k-consecutive-out-of-n: F System***

## SESSION 10

### ***Software Quality***

***Thursday, August 8, 10:15 am - 11:45 am***

Session Chair:

Taghi M. Khoshgoftaar (Florida Atlantic University, USA)

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Taghi M. Khoshgoftaar (Florida Atlantic University, USA)

Naeem Seliya (Florida Atlantic University, USA)

#### ***Practical Software Quality Prediction with Generalized Boolean Discriminant Functions***

Taghi M. Khoshgoftaar (Florida Atlantic University, USA)

Kehan Gao (Florida Atlantic University, USA)

Robert M. Szabo (IBM, USA)

#### ***Classification with Count Models***

Taghi M. Khoshgoftaar (Florida Atlantic University, USA)

Bojan Cukic (West Virginia University, USA)

Erik Geleyn (Florida Atlantic University, USA)

Dhaval Joshi (Florida Atlantic University, USA)

#### ***Predicting Decay in Legacy Software Systems Using Three-Group Classification***

Yoonjung Lee (Ewha Womans University, Korea)

Enjung Chun (Ewha Womans University, Korea)

Byoungju Choi (Ewha Womans University, Korea)

#### ***A Menu-based Test Generation Technique for Software Quality Certification***

***12:00 noon Lunch***

## SESSION 11

### ***Software Engineering & Reliability***

***Thursday, August 8, 1:30 pm - 3:00 pm***

Session Chair:

Shigeru Yamada (Tottori University, Japan)

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Yoshinobu Tamura (Tottori University, Japan)

Shigeru Yamada (Tottori University, Japan)

Mitsuhiro Kimura (Hosei University, Japan)

#### ***A Neural Network Approach to Software Reliability Assessment in Distributed Development Environment***

Gregory B. Twaites (General Dynamics Advanced Information, USA)

Michelle Sibilla (General Dynamics Decision Systems, USA)

#### ***Software Engineering in an SEI Level-5 Organization***

Koichi Tokuno (Tottori University, Japan)

Shigeru Yamada (Tottori University, Japan)

#### ***Markovian Software Availability Measurements***

#### ***For A Multi-Access System***

Kin Wai Michael Siu (The Hong Kong Polytechnic University, Hong Kong)

#### ***The Quality of Need Identification in Design***



## SESSION 12

### ***Information System Performance***

***Thursday, August 8, 1:30 pm - 3:00 pm***

Session Chair:

Yi-Kuei Lin (Van Nung Institute of Technology, Taiwan)

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Mei-Chun Chen (Van Nung Institute of Technology, Taiwan)

*A Study of the Effect of Intellectual Capital on Business Performance*

Shun-Po Chiu (Van Nung Institute of Technology, Taiwan)

*A Model to Improve the Performance of Internet Content Provider*

Jen-Ruei Fu (Van Nung Institute of Technology, Taiwan)

*Cautions on the Use of Servqual Measure: An Examination on Theoretical Assumptions*

Dehui Tong (University of Waterloo, Canada)

Ravi Seshadri (University of Waterloo, Canada)

Gordon J. Savage (University of Waterloo, Canada)

*A Probabilistic Loss of Quality Cost*

**3:00 pm - 3:15 pm          Coffee Break**

## SESSION 13

### ***Robust Experimental Design for Unknown Response Surface***

***Thursday, August 8, 3:15 pm - 4:30 pm***

Session Chair:

Philip L.-Y. Chan (The University of Hong Kong, Hong Kong)

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Kai-Tai Fang (Hong Kong Baptist University, Hong Kong)

*Theory, Method and Applications of the Uniform Designs*

Runze Li (Pennsylvania State University at University Park, USA)

*Model Selection for Analysis of Uniform Design and Computer Experiment*

Philip L.-Y. Chan (The University of Hong Kong, Hong Kong)

George Q. Huang (The University of Hong Kong, Hong Kong)

*Application of Uniform Design in Quality Improvement in the Manufacture of Liquid Crystal Displays*

Andy C.L. Yeung (The Hong Kong Polytechnic University, Hong Kong)

T.C. Edwin Cheng (The Hong Kong Polytechnic University, Hong Kong)

*A Path Analysis of Supplier Development*

## SESSION 14

### ***Reliability in Design***

***Thursday, August 8, 3:15 pm - 4:30 pm***

Session Chair:

Ming-Wei Lu (DaimlerChrysler Corp., USA)

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Christopher R. Williams (DaimlerChrysler Corporation, USA);

Yung-Li Lee (DaimlerChrysler Corporation, USA);

John T. Rilly (DaimlerChrysler, USA)

*Developing Design Strain-Life Curves*

D. Gary Harlow (Lehigh University, USA)

*The Effect of Statistical Variability In Material Properties On Springback*

Hai-feng Ma (Shenyang Aircraft Design & Research Institute, China);

Tai-ling Song (China Defence Science & Technology Information Center, China)

*Approaches to Increasing Aircraft Operational Availability*

K.Y. Tang (The Hong Kong Polytechnic University, Hong Kong);

C.K. Song (The Hong Kong Polytechnic University, Hong Kong);

T.T. Wong (The University of Hong Kong, Hong Kong)

*Design of a Vehicle Exhaust Particulate Filter*

## **FRIDAY, AUGUST 9, 2002**

## SESSION 15

### ***Quality in Design***

***Friday, August 9, 8:30 am - 10:00 am***

Session Chair:

Yung-Li Lee (DaimlerChrysler Corporation, USA)

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Andrew S. Chang (Cheng Kung University, Taiwan, R.O.C.)

*Control Points And Measures Of A Quality Process*

Bai-Chuan Wang (Moresun Electronic Co., Ltd., Taiwan, R.O.C.)

Hurdy Su (, Republic of South Africa)

Chiung-Wen Chang (, Taiwan)

*Hidden Cost of Enterprise Quality Improvement*

Chun-Liang Lin (General Motor Corporation, USA)

Kee H. Im (General Motors Corporation, USA)

Tejas R. Bhavsar (General Motors Corporation, USA)

*Virtual Experimental Design on Glass Guidance System with an Integrated Dual-Cable Regulator - Part II: Design Optimization*

Giulio Fanti (University of Padova, Italy)

Roberto Basso (University of Padova, Italy)

Michele Bernardi (Parma, Italy)

Umberto Verza (Parma, Italy)

*An Innovative Technique for Quality Control of Gear Pumps*



## SESSION 16

### **Maintenance**

**Friday, August 9, 8:30 am - 10:00 am**

Session Chair:

B.S. Dhillon (University of Ottawa, Canada)

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Chang-Ching Lin (St. John's & St. Mary's  
Institute of Technology, Taiwan)

*Integrating A Machine Performance Estimation Model in  
Reliability Modeling for Condition-Based Predictive Maintenance*

Pareschi Arrigo (University of Bologna, Italy)  
Regattieri Alberto (University of Bologna, Italy)

*Remote Maintenance, Teleservice and Internet, Topics,  
Methods and Applications*

Wen-Chang Pai (Soochow University, Taiwan)  
C.C. Wang (Kuang Wu Institute of Technology, Taiwan)

*A Design Validating Methodology with Control Flow Analysis*

B.S. Dhillon (University of Ottawa, Canada)  
F. Kirmizi (University of Ottawa, Canada)

*Maintenance Safety: A Review*

**10:00 am – 10:15 am Coffee Break**

## SESSION 17:

### **Quality Engineering and Applications**

**Friday, August 9, 10:15 am - 11:45 am**

Session Chair:

Elsayed A. Elsayed (Rutgers University, USA)

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Teodor Tiplica (ISTIA, France); A. Kobi (ISTIA, France)  
A. Barreau (ISTIA, France); R. Chassagnon (ISTIA, France)

*Statistical Control Charts Based on Digital Signal Filtering*

Chao-Ton Su (National Chiao Tung University, Taiwan)  
Hsiao-Ling Chan (National Chiao Tung University, Taiwan)

*Improvement of Measurement Accuracy of Blood Glucose  
Strip Using the Taguchi Dynamic Approach*

S.M. Perovich (University of Montenegro, Montenegro)

S. Bauk (University of Montenegro, Montenegro)

N. M. Vujanovic (University of Belgrade, Serbia)

*Concerning the Improvement of the Error Function to the  
AM Detector Transfer Factor Numerical Calculation by Special  
Trans Function Theory*

A. Ning (The Hong Kong Polytechnic University);  
T.T. Wong (The Hong Kong Polytechnic University);  
C.W. Leung (The Hong Kong Polytechnic University)

*Optimization of Chrome Plating Process Design:  
A Neural Network Approach*

## SESSION 18

### **Engineering Statistics and Management**

**Friday, August 9, 10:15 am - 11:45 am**

Session Chair:

Won Kyung Kim (Kyungnam University, Korea)

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Jhy-Ping Jhang (Huaan University, Taiwan, R.O.C.)  
*A Study of Application of Management by Policy  
to Implement TPM Practice*

Won Kyung Kim (Kyungnam University, Korea);  
Chi Woo Lee (Kyungnam University, Korea)

*Stochastic Dependent Sequential Sampling Plans*

Papic Ljubisa (DQM Research Center, Serbia)  
Joseph Aronov (Russian Scientific and Research  
Institute for Certification, Russia)

Andres Carrion (Polytechnic University of Valencia, Spain)  
Susana San Matias (Polytechnic University of Valencia, Spain)

*Reliability Testing Plan According to Availability Criterion*

Sehijpal Singh (Indian Institute of Technology, Roorkee, India)  
H.S. Shan (Indian Institute of Technology, Roorkee, India)  
Pradeep Kumar (Indian Institute of Technology, Roorkee, India)

*Quality Optimization of Surfaces Produced by Magnetic  
Abrasive Flow Machining Using Taguchi Technique*

**12:00 pm Adjourn**



## PRESENTATION

The allotted time for presentation is about 22 minutes. Please note that you can either use computer projector or overhead transparencies for presentations at the conference. Computer laptop and projectors will be provided.

## REGISTRATION

All attendants including authors and speakers are required to register. Pre-registration is strongly recommended. The registration fee is US\$ 450.00, which includes: a copy of the Conference Proceedings, gift, refreshments, luncheon, and dinner reception. Payment can be made by check or money order payable to ISSAT (no credit cards will be accepted).

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Accommodation is available for the attendant of the ISSAT International Conference on Reliability and Quality in Design at the Embassy Suites Hotel Anaheim - South, California, U.S.A. for the special rate of US \$119.00 per night for single or double occupancy plus 10.10% room tax. Registration must be made directly with the Embassy Suites Hotel. When making reservations, please be sure to indicate that you are going to be attending the ISSAT International Conference.

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