

# BITS

## Burn-in & Test Socket Workshop

# WELCOME

March 2 - 5, 2003

Hilton Phoenix East / Mesa Hotel  
Mesa, Arizona



Sponsored By The IEEE Computer Society  
Test Technology Technical Council



tffc<sup>TM</sup>



Burn-in & Test Socket  
Workshop

## 2003 BiTS Workshop Overview

- **Welcome to the 4th Annual BiTS Workshop**
  - **The Only IEEE Sponsored Workshop Dedicated To Socketing And Related Fields**
  - **Comprehensive Program**
    - ✓ **Technical Program**
      - **Panel, Papers & Keynote Speaker**
    - ✓ **Supplier Displays**
    - ✓ **Networking Opportunities**
      - **Social Program**
      - **Meet and Chat With Someone You Don't Know**



**Burn-in & Test Socket  
Workshop**

## **2003 BiTS Workshop Overview**

- **Welcome to the 4th Annual BiTS Workshop**
  - **Informal and Casual Throughout All Sessions and Activities**
  - **Feedback & Suggestions are Encouraged**

**(Please Turn-off Cell Phones & Beepers)**



**Burn-in & Test Socket  
Workshop**

## **2003 BITS Workshop Overview**

- **Attendee Registration Includes**
  - **Technical Program**
  - **Meals & Social Program**
  - **Supplier Displays**
  - **Registration Package**
    - ✓ **Badge**
    - ✓ **Hardcopy Proceedings**
      - **Overall Workshop Evaluation Form**
    - ✓ **Souvenir**
- **Information Table**



**Burn-in & Test Socket  
Workshop**

## **2003 BITS Workshop Overview**

- **Technical Program**
  - **Presentation & Panel Discussion - Sunday**
    - ✓ **Key Focus Topic**
  - **Over 20 Practical and Useful Presentations From Users and Suppliers**
    - ✓ **8 Sessions Across 2 1/2 Days**
    - ✓ **Q&A After Each Presenter**
    - ✓ **Many Other Excellent Abstracts Submitted**
  - **Keynote Speaker - Tuesday**



**Burn-in & Test Socket  
Workshop**

## **2003 BiTS Workshop Overview**

*Meet and Chat With Someone You Don't Know*

- **Many Opportunities to Network, Share & Discuss**
  - **3 Breakfasts, 2 Lunches, 3 Receptions and 2 Dinners**
    - ✓ **Plus: Hors d'ouvres with Reception Monday Evening**
  - **Long Morning and Afternoon Breaks**
  - **Tuesday Afternoon Social Event of Your Choice**
    - ✓ **Scramble Golf Tournament At Kokopelli**
    - ✓ **Cactus League Baseball Game (Cubs vs. Brewers)**
  - **Supplier Display Area**
    - ✓ **Open During Many Breaks & Receptions**



Burn-in & Test Socket  
Workshop

## 2003 BITS Workshop Overview

- **Evaluation / Comments Forms**
  - After Each Session
  - Overall Workshop
- **Plaques / Awards**
  - Best Data Presented
  - Most Inspirational Paper
  - Best Presentation, Tutorial in Nature
  - Best Presentation / Paper
  - AND.....a Special Award.....



Burn-in & Test Socket  
Workshop

## Special Award

for the

Least Concealed Sales Pitch

The

(Almost) Brilliant Disguise

Award





**Burn-in & Test Socket  
Workshop**

## **Special Award**

**The (Almost) Brilliant Disguise Award**

### **H a l l O f F a m e**

**BiTS 2000 - Mehdi Attaran - Oztek**

**BiTS 2001 - Jim Ostendorf - Dynavision**

**BiTS 2002 - Mike Niederhofer & Bruce Simikowski - Incal**



**Burn-in & Test Socket  
Workshop**

## **2003 BiTS Workshop Overview**

- **Plaques / Awards**
  - **New: See the BiTS Award Archive in the Proceedings**



Burn-in & Test Socket  
Workshop

## 2003 BITS COMMITTEE

### GENERAL CHAIR

Frederick Taber

IBM Microelectronics

### PROGRAM

Rafiq Hussain, Chair

Advanced Micro Devices

Clayton Carpenter

Intel

### REGISTRATION

Paul Boyce, Chair

Advantage Specialist

John Hartstein

Wells-CTI

### LOCAL ARRANGEMENTS

Valts Treiberis, Chair

Everett Charles Technologies

John Ambrosini

Enplas-Tesco

Owen Prillaman

Yamaichi Electronics USA

### PUBLICITY & PUBLICATIONS

John O'Sullivan, Chair

Johnstech International

# About the IEEE Computer Society



With over 100,000 members, the IEEE Computer Society is the world's leading organization of computer professionals. Founded in 1946, it is the largest of the 36 societies of the Institute of Electrical and Electronics Engineers (IEEE).

The Computer Society's vision is to be the leading provider of technical information and services to the world's computing professionals.

The Society is dedicated to advancing the theory, practice, and application of computer and information processing technology. Through its conferences, applications-related and research-oriented journals, local and student chapters, distance learning campus, technical committees, and standards working groups, the Society promotes an active exchange of information, ideas, and technological innovation among its members. In addition, the Society maintains close ties with the US Computing Sciences Accreditation Board and Accreditation Board for Engineering and Technology, monitoring and evaluating curriculum accreditation guidelines.

With over 40 percent of its members living and working outside the United States, the Computer Society fosters international communication, cooperation, and information exchange. To meet the needs of its members conveniently and efficiently, the Society maintains service center offices in Brussels and Tokyo, in addition to a publications office in Los Alamitos, California, and the headquarters in Washington, DC.

Visit the IEEE Computer Society at <http://computer.org>



# TTTC: Test Technology Technical Council

tttc<sup>TM</sup>

## TTTC IN GENERAL



**PURPOSE:** The Test Technology Technical Council is a volunteer professional organization sponsored by the IEEE Computer Society. The goals of TTTC are to contribute to member's professional development and advancement and to help them solve engineering problems in electronic test, and help advance the state-of-the art. In particular, TTTC aims at facilitating the knowledge flow in an integrated manner, to ensure overall quality in terms of technical excellence, fairness, openness, and equal opportunities.

**MEMBERSHIP:** TTTC membership is open to all individuals interested in test engineering at a professional level.

**DUES:** There are NO dues for TTTC membership and no parent-organization membership requirements.

**BENEFITS:** The TTTC members benefit from personal association with other test professionals. They may have the opportunity to be involved on a wide range of committees. They receive appropriate and updated information and announcements. There are substantial reductions in fees for TTTC-sponsored meetings and tutorials for members of IEEE and/or IEEE Computer Society.

## TTTC ACTIVITIES

**TECHNICAL MEETINGS:** To spread technical knowledge and advance the state-of-the art, TTTC sponsors many well-known conferences and symposia and holds numerous regional and topical workshops worldwide.

**STANDARDS:** TTTC initiates nurtures and encourages new test standards. TTTC-initiated Working Groups have produced numerous IEEE standards, including the 1149 series used throughout the industry.

**TECHNICAL ACTIVITIES:** TTTC sponsors a number of Technical Activity Committees (TACs) that address emerging test technology topics and guide a wide range of activities.

**TUTORIALS and EDUCATION:** TTTC sponsors a comprehensive *Test Technology Educational Program (TTEP)*. This program provides opportunities for design and test professionals to update and expand their knowledge base in test technology, and to earn official accreditation from IEEE TTTC, upon the completion of four full day tutorials proposed by TTEP.

## TTTC CONTACT

**TTTC On-Line:** The TTTC Web Site at <http://computer.org/tttc> offers samples of the TTTC Newsletter, information about technical activities, conferences, workshops and standards, and link to the Web pages of a number of TTTC-sponsored technical meetings.

**Becoming a MEMBER:** Becoming a TTTC Member is extremely simple. You may either contact by phone or e-mail the TTTC office, or fill and submit a TTTC application form, or visit the membership section of the TTTC web site.

**TTTC OFFICE:** 1474 Freeman Drive, Amissville, VA 20106, USA Phone: +1-540-937-8280 Fax: +1-540-937-7848 E-mail: [tttc@computer.org](mailto:tttc@computer.org)

# TTTC MEMBERSHIP IS FREE



Burn-in & Test Socket  
Workshop

# TTTC: Test Technology Technical Council

tttc<sup>TM</sup>



## TTTC Officers for 2002 (2003 Update Coming Soon)

*TTTC Chair*

**Paolo PRINETTO**

Politecnico di Torino - Italy

Paolo.Prinetto@polito.it

*TTTC 1st Vice Chair*

**André IVANOV**

Un. of British Columbia - Canada

ivanov@ee.ubc.ca

*TTTC 2nd Vice Chair*

**Alex ORAILOGLU**

Un. of Cal. at San Diego - USA

alex@cs.ucsd.edu

*Past Chair*

**Yervant ZORIAN**

LogicVision, Inc. - USA

zorian@logicvision.com

*Senior Past Chair*

**Fred LIGUORI**

ATE Consulting Services - USA

ebbalou@home.com

*IEEE Design & Test EIC*

**Rajesh K. GUPTA**

University of California Irvine- USA

gupta@uci.edu

*ITC General Chair*

**James A. MONZEL**

IBM Microelectronics - USA

j.monzel@computer.org

*Test Week Coordinator*

**Yervant ZORIAN**

LogicVision, Inc. - USA

zorian@logicvision.com

*Secretary*

**Fred LIGUORI**

ATE Consulting Services - USA

ebbalou@home.com

*Vice Secretary*

**Ramesh KARRI**

Polytechnic University - USA

ramesh@india.poly.edu

*Finance Chair*

**Christian LANDRAULT**

LIRMM - France

landrault@lirmm.fr

*Finance Vice-Chair*

**Daniel J. GRAHAM**

inTEST Corporation - USA

d.graham@intest.com

# TTTC: Test Technology Technical Council

tttc™



## Group Chairs (2003 Update Coming Soon)

<i>Technical Meetings</i>	<b>Dimitris GIZOPOULOS</b>	University of Piraeus - Greece	dgizop@unipi.gr
<i>Technical Activities</i>	<b>André IVANOV</b>	Un. of British Columbia - Canada	ivanov@ee.ubc.ca
<i>Tutorials &amp; Education</i>	<b>Alex ORAILOGLU</b>	Un. of Cal. at San Diego - USA	alex@cs.ucsd.edu
<i>Standards</i>	<b>Adam CRON</b>	Synopsys, Inc. - USA	acron@synopsys.com
<i>Communications</i>	<b>Michel RENOVELL</b>	LIRMM - France	renovell@lirmm.fr
<i>Standing Committees</i>	<b>Adit D. SINGH</b>	Auburn Univ. - USA	adsingh@eng.auburn.edu
<i>Industry Advisory Board</i>	<b>Yervant ZORIAN</b>	LogicVision, Inc. - USA	zorian@logicvision.com
<i>Electronic Media</i>	<b>Alfredo BENSO</b>	Politecnico di Torino - Italy	Alfredo.Benso@polito.it
<i>Asia &amp; Pacific</i>	<b>Kozo KINOSHITA</b>	Osaka Gakuin University - Japan	kozo@utc.osaka-gu.ac.jp
<i>Europe</i>	<b>Joan FIGUERAS</b>	Un. Politec. de Catalunya - Spain	figueras@eel.upc.es
<i>Latin America</i>	<b>Fabian VARGAS</b>	Catholic University PUCRS - Brasil	vargas@ee.pucrs.br
<i>North America</i>	<b>Charles F. HAWKINS</b>	Un. of New Mexico - USA	hawkins@eece.unm.edu
<i>Middle East &amp; Africa</i>	<b>Ibrahim HAJJ</b>	American Un. of Beirut - Lebanon	ihajj@aub.edu.lb



Burn-in & Test Socket  
Workshop

# TTTC: Test Technology Technical Council

tttc<sup>TM</sup>

**2002 Data (2003 Update Coming Soon):**

**Technical Activity Committees - 24**

**Standards Working Groups - 9**

**TTTC Sponsored Technical Meetings in 2002 - 29**

(Details can be found in the BiTS 2003 Proceedings)



# IEEE Membership Benefit

IEEE  
“SPECTRUM”  
Magazine

IEEE • Trillion-bit Disk Drives Computer Music Cowboys

# SPECTRUM

FEBRUARY 2003

## TOP 10 TECH CARS

Fuel-Cell Powered,  
Bluetooth Equipped,  
And Ready to Roll



◆ IEEE

● **PLUS**  
The Dirty Little Secret  
Of Moore's Law

When George W. Bush  
Was An Environmentalist

# IEEE Computer Society Membership Benefit

IEEE Computer Society  
“COMPUTER”  
Magazine



# IEEE Computer Society Membership Benefit - Access to Special Publications

IEEE Computer Society  
“Design & Test of Computers”  
Magazine





**Burn-in & Test Socket  
Workshop**

## **BiTS Workshop On The Web**

**Your Complete Source For Information About BiTS**

<http://www.BiTSworkshop.org>

- **Papers, Authors, Attendees**
- **Call For Papers**
- **Advance/Final Program**
- **Registration Information & Forms; Register On-line**
- **Hotel Information**
- **Committee Members**
- **Contact BiTS - Add to Mailing List & Inquiries**
- **Links to Other Sites**
- **Special Access Sections (Author Info, etc.)**
- **Supplier Display Info**
- **'Press' About BiTS**
- **Search BiTS Feature**



**Burn-in & Test Socket  
Workshop**

# **BiTS Workshop On The Web**

**Your Complete Source For Information About BiTS**

<http://www.BiTSworkshop.org>

**Coming Soon**

**BiTS 2003 Archive**

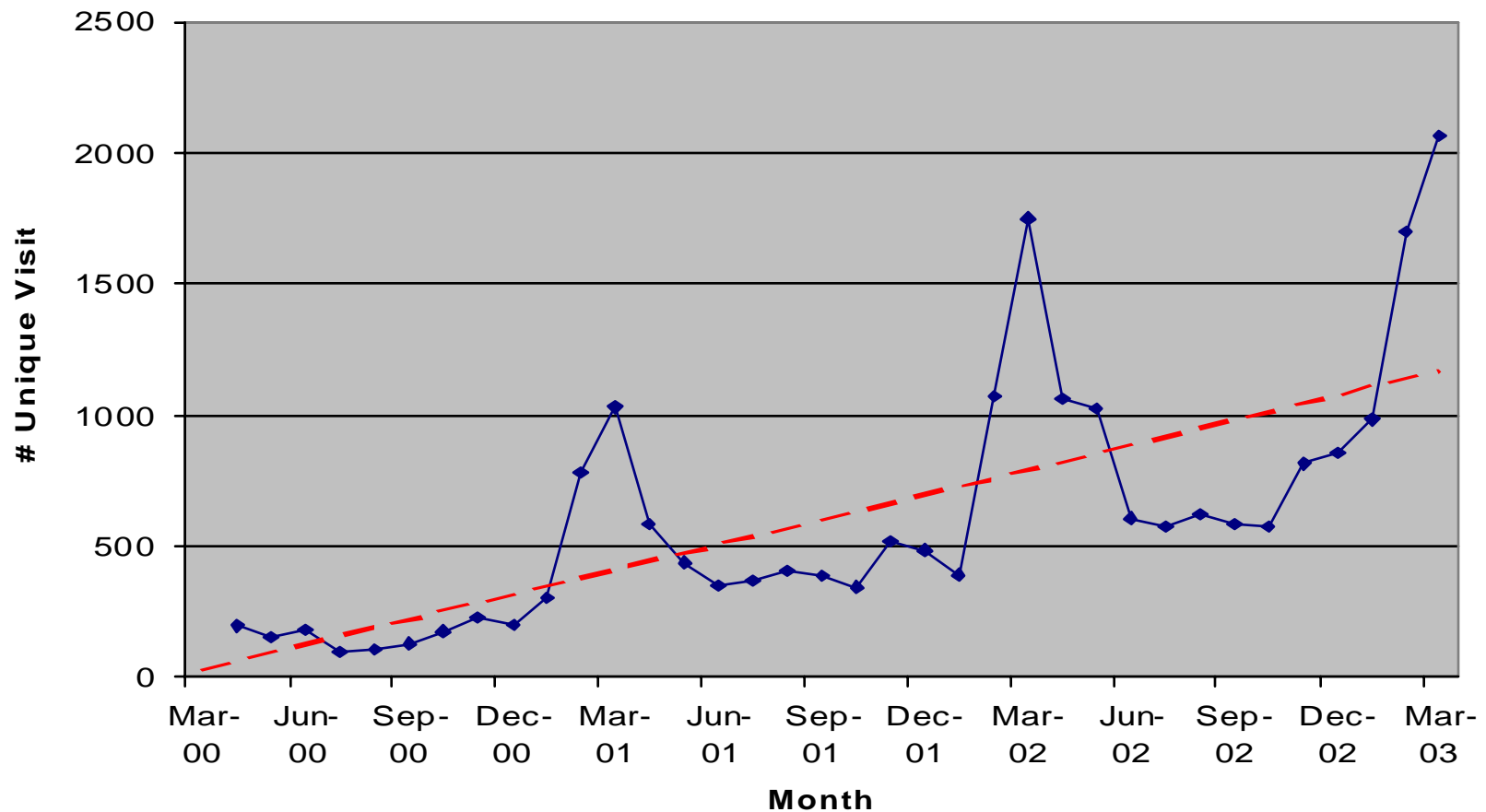
**BiTS 2004 Call For Papers**



Burn-in & Test Socket  
Workshop

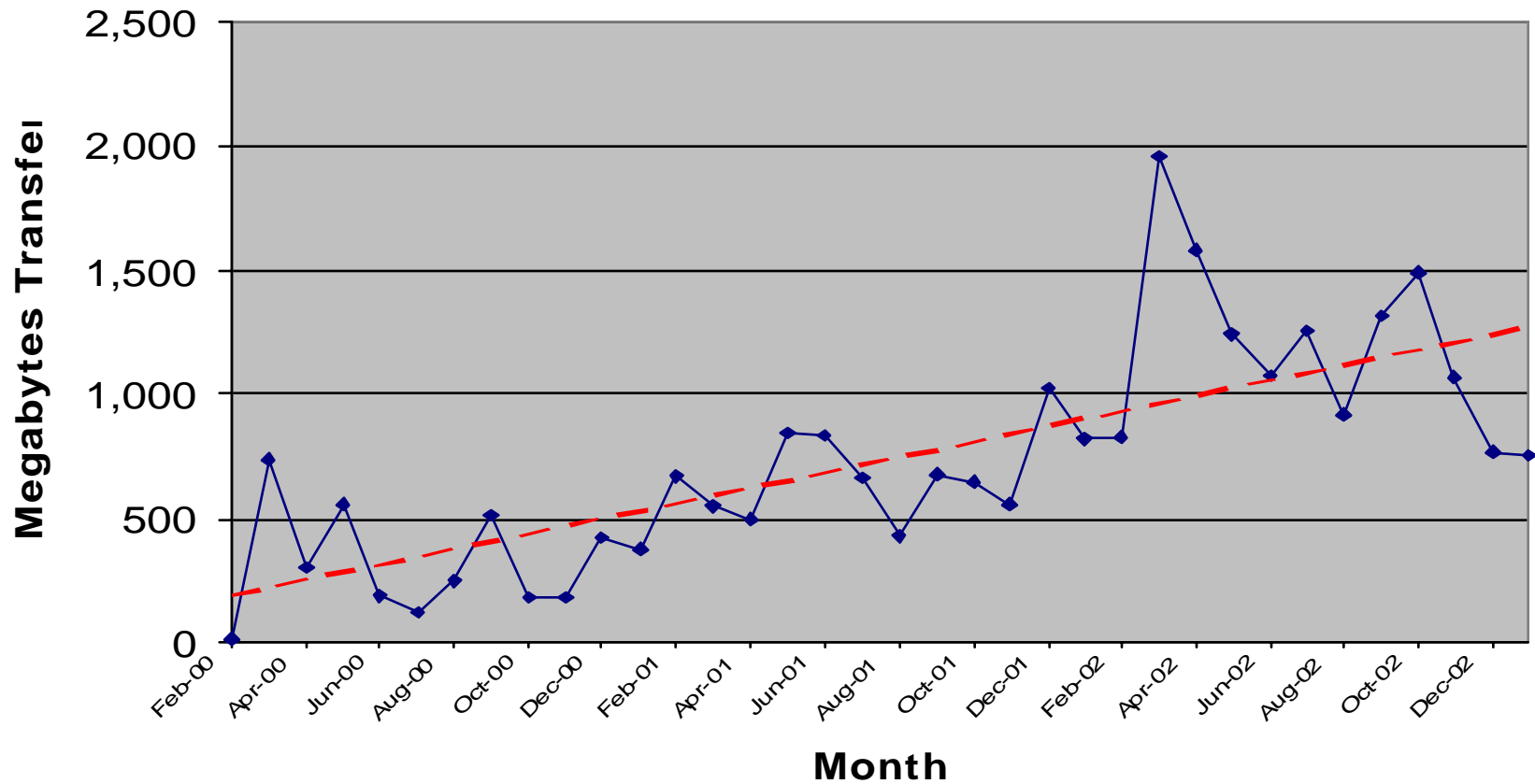
# BiTS Workshop On The Web

Bitsworkshop.org Website Visitors



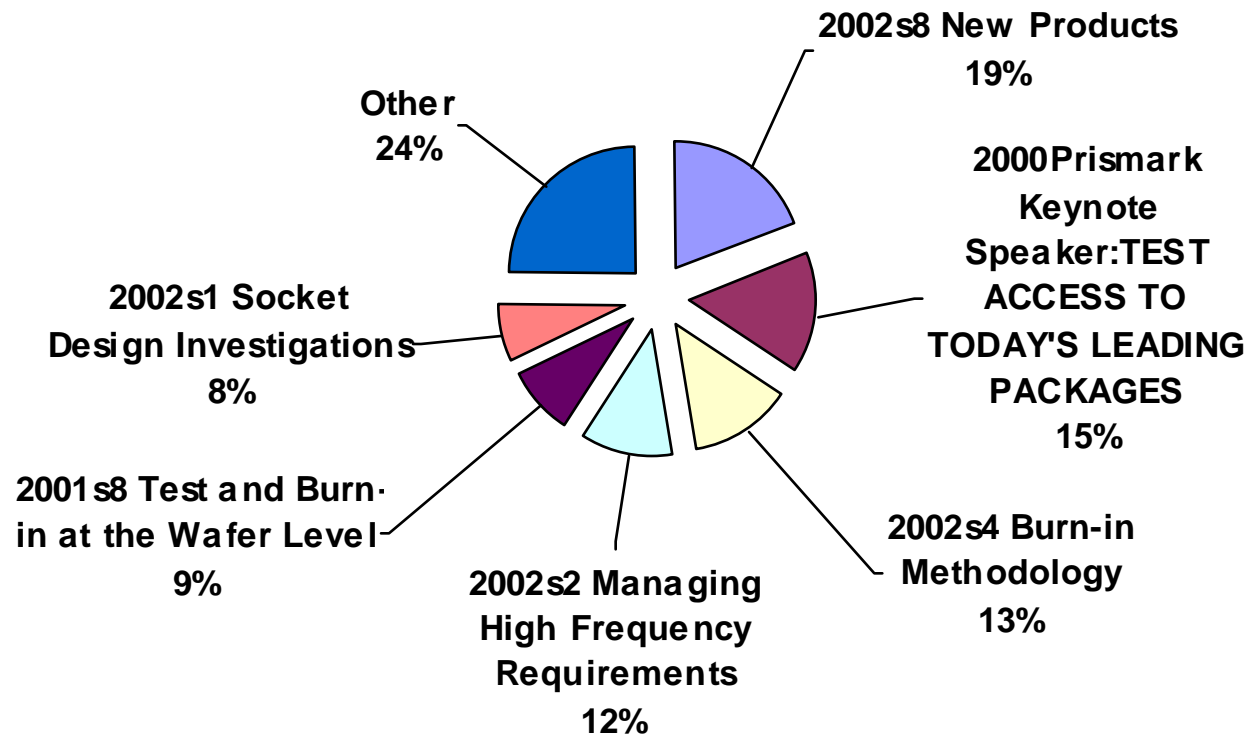
# BiTS Workshop On The Web

**Megabytes Downloaded from bitsworkshop.org**



# BiTS Workshop On The Web

## Most Popular Download Topics 2002







**Burn-in & Test Socket  
Workshop**

## **Supplier Displays**

- **34 Companies Exhibiting**
- **Kachina, Pueblo & Fiesta Ballrooms, Plus Atrium**
- **Pick-up A Supplier Display Directory**
- **Display Schedule:**

**MONDAY**

**TUESDAY**

**WEDNESDAY**

**9:30AM - 10:30AM**

**9:30AM - 10:30AM**

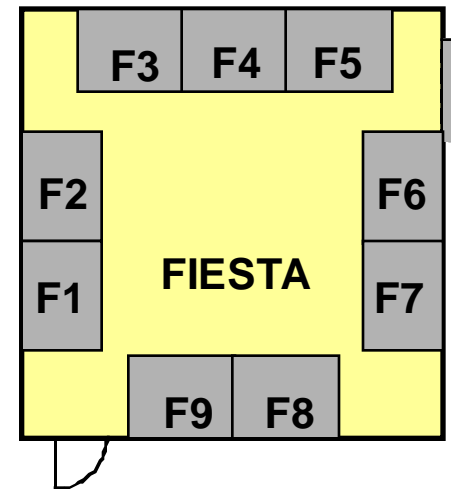
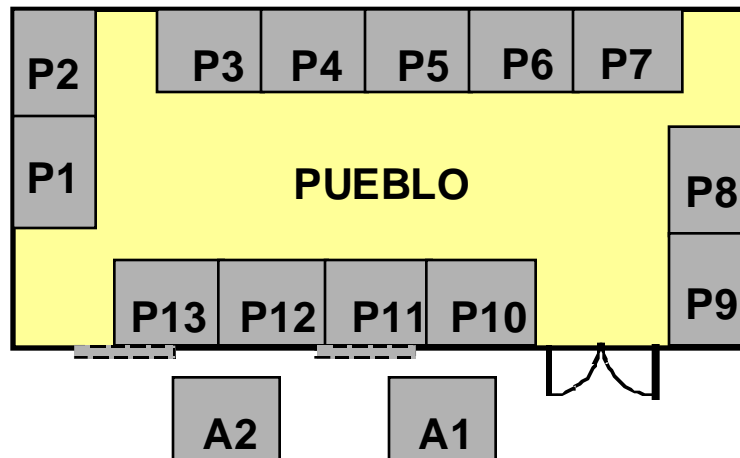
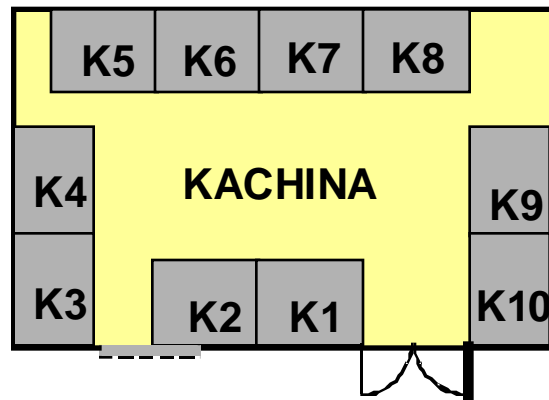
**3:00PM - 4:00PM**

**6:00PM - 8:00PM**

**6:00PM - 7:00PM**



# Supplier Display Area



## KACHINA

## PUEBLO

## FIESTA

- K1 - Loranger International
- K2 - NHK Spring Company
- K3 - Synergetix
- K4 - Honeywell Elect. Matl.
- K5 - RS Tech
- K6 - Micro Control Co.
- K7 - Kulicke & Soffa
- K8 - GigaTest Labs
- K9 - Wells-CTI
- K10 - Rika Denshi America

- P1 - Plastronics
- P2 - Motion Dynamics
- P3 - Everett Charles Tech.
- P4 - ELES
- P5 - Enplas Tesco Inc.
- P6 - Paricon Technologies
- P7 - AEHR Test Systems

- P8 - Trio-Tech Int'l.
- P9 - Aries Electronics
- P10 - Micronics Japan
- P11 - Incal Technology
- P12 - Johnstech Int'l.
- P13 - Chip Scale Rev.

- F1 - Contech Solutions
- F2 - Abrel Products
- F3 - Yamaichi Electronics
- F4 - Qualmax
- F5 - Azimuth Electronics
- F6 - Teledyne Interconnect
- F7 - Texas Instruments
- F8 - QA Technology
- F9 - RD Chemical

## ATRIUM

- A1 - EB Tech
- A2 - Idea Logic



## **Technical Program**

- **Presentation & Panel Discussion**

- **“Reducing The Cost Of Test And Burn-in - What Are The Options”**

- ✓ **Presentation: “Cost Considerations In Burn-In Equipment Development” - Anne Sepic & Dan Weinstein (Intel)**

- ✓ **Panelists:**

- **Ken Heiman**      **Micro Control Company**
- **Marc Knox**      **IBM Microelectronics**
- **M.S. Maung**      **Advanced Micro Devices**
- **Helge Puhlmann** **Yamaichi Electronics Deutschland**
- **Steve Strauss**   **Intel Corporation**
- **Bob Zacharis**    **Pycon**



**Burn-in & Test Socket  
Workshop**

## **Technical Program**

- **Keynote Speaker - Bill McClean**
  - President, IC Insights
  - **“IC Market Recovery Outlook”**



# **Technical Program**

- **Technical Sessions**
  - **Test and Burn-in Operations**
  - **Burn-in Tools and Test Equipment**
  - **Socket and Board Development**
  - **Modeling and Characterization**
  - **Thermal Management Techniques**
  - **Socketing Lead-Free Packages**
  - **Contact Technology**
  - **Properties of Socket Materials**