Challenges per Session 2
JF Meyer

Presenters

Arlat

Barbacci/Weinstock

Sanders

van Moorsel

Fault Injection Representativeness

- **Challenge**: Devise injected faults and models thereof that faithfully represent actual fault occurrences
  - Representing human-related faults is perhaps the most difficult aspect of this challenge
- **Why Important**
  - Understanding fault effects, particularly those of human-related faults
  - Dependability evaluation feedback to the design process
  - Dependability Benchmarking
  - Certification
- **Expected Results**
  - Those which address this challenge and, hopefully, conquer it. This expectation has been around for quite awhile, testifying to the difficulty of its realization.

Quality Measures and their Evaluation

- **Challenge**: 1) Define, 2) formulate, and 3) evaluate measures that reflect quality of service provided by the considered system
  - No matter how such measures they referred to (QoS, QoE, QoBiz, etc.) they must typically account for properties affecting both performance and reliability, i.e., they are measures of performability
  - Technically, 2) is the most difficult since it involves a translation of underlying behavior of the “total system” (the considered system and its operational environment) into values of the quality variable.
- **Why Important**
  - In many applications, what the user perceives is the “bottom line”
  - Large, shared systems such as ISDNs and the Internet provide multiple services of widely differing types to various kinds of users.
- **Expected results**
  - Creation of concepts, methods and and tools that meet this challenge.

Putting Models in the Loop

- **Challenge**: Make effective and practical (industry-applicable) use of stochastic models in the
  - system evaluation-design loop
  - system control (management) loop
- **Why Important**
  - Much progress has been made in stochastic modeling theory, but a LARGE gap remains between what can be done by an expert modeler and its application to system design
  - Model-based management/control (adaptation) has the potential to significantly improve quality of service provided to an application
- **Expected Results**
  - Creation of appropriate measurement strategies, models, model interaction approaches, and model solution methods that meet this challenge.