



Panel on "Software
Testing & Evaluation"
and "Dependability
Benchmarking"

WG 10.4 meeting, Paraty

Goal of the Panel

“ to discuss contact points between software testing & evaluation and dependability benchmarking, and find possible contribution from these well established areas to dependability benchmarking ”

Quotation from our workshop organisers

Presentation

- ◆ **The panellists**
 - **Karama Kanoun, LAAS-CNRS, France:**
“Dependability Benchmarker and Software Evaluator”
 - **Mladen Vouk, North Carolina State University, Raleigh, USA:** *“Software Tester and Software Evaluator”*
 - **Marie-Claude Gaudel, LRI, Université de Paris-Sud, France:** *“Software Tester and ... chair of the panel”* 😊

Question 1, from our organisers

- ◆ **If a dependability benchmark is a test (or set of tests) to quantify computer dependability, what is the overlap of this with software testing and software evaluation?**
 - **Comment 1: “computerised systems dependability” rather than “computer dependability”?**
 - **Comment 2: benchmarks need to be specifically designed to be representative of field usage... as is software evaluation, but not always testing**

Questions 2 & 3

- ◆ What tests are out there for software characteristics other than functional correctness (i.e. software reliability, safety, security, etc)?
 - Personal (and biased) comment: in order to do testing in a meaningful way, it is necessary to have requirements provided in an unambiguous, **verifiable** way
- ◆ Is the notion of software reliability the same for the software testing community and for the dependability community?

Questions 4 & 5

- ◆ **Is the software reliability a feature of the software (i.e. a given program) or it also depends on the environment (the HW platform, the OS and middleware, system workload, operational profile, etc)?**
- ◆ **What are the possible contributions of**
 - **mutation,**
 - **software metrics,**
 - **formal methods, etc****to dependability benchmarking?**



Let us listen to the
panellists

A testing point of view (1)

- *What tests are out there for software characteristics other than functional correctness (i.e. software reliability, safety, security, etc)?*
- ◆ **Few methods...**
 - Operational profile => reliability testing,
 - Elayne Weyuker's works on performance testing,
 - Testing driven by objectives => safety testing
 - ... more inputs from the audience ?
- ◆ **Role of Fault Injection ?**
 - Robustness testing more than reliability testing...

A testing point of view (2)

- *Is the notion of software reliability the same for “the” software testing community and for the dependability community?*
- ◆ **Which software testing community? 😊**
Probably yes
 - *Is the software reliability a feature of the software (i.e. a given program) or it also depends on the environment (the HW platform, the OS and middleware, system workload, operational profile, etc)?*
- ◆ **A program is just a piece of text... cf. [Galves & Gaudel 98] on the failures of a correct program**

The testing point of view (3)

- ◆ **Test sets are almost never generic (exception: compiler certification; I feel able to design a reasonable dependability benchmark for a compiler, or at least I hope so ☺)**
- ◆ **Benchmark = standard test set, or standard test procedure?**
- ◆ **For “usual” testing, the choice of a test strategy is strongly dependent on**
 - **Controllability issues**
 - **Observability issues**
 - **Quality requirements, and among them, reliability issues, security issues, etc**