

***ICSE WADS 2004 Panel:  
How to Guarantee at the Architectural Level the  
Dependability Requirements of a System?***



**Moderator:**

- ◆ *Rogério de Lemos (University of Kent, UK)*

**Panellists:**

- ◆ *Michael Jackson (Independent Consultant and Open University, UK)*
- ◆ *Will Tracz (Lockheed Martin, USA)*
- ◆ *Frank van der Linden (Phillips Medical Systems, The Netherlands)*

### ***How to Guarantee at the Architectural Level the Dependability Requirements of a System?***

- ◆ too general and anti-climatic!
- ◆ The feasibility of reasoning about dependability at the architectural level:
  - ◆ What *software architectures* can offer in terms of structuring techniques, notations, and tools?
  - ◆ What *dependability* can offer in terms of technologies for designing and evaluating systems?
    - ◆ It is also about *structuring*: e.g., error containment.
- ◆ Critical view of the field based on the experience of our panellists;

# *Dependability Technologies*



***Dependability technologies*** are a collection of methods and techniques by which dependability is attained.

- ◆ ***Rigorous designs*** - prevent the occurrence or introduction of faults;
- ◆ ***Verification & validation*** - reduce the number and the severity of faults;
- ◆ ***Fault tolerance*** - provision of services despite the presence of faults;
- ◆ ***System evaluation*** - evaluate the presence of faults, their future incidence and consequences;

## ***Questions to the Panel***



From the perspective of *dependability technologies*:

- ◆ Are architectural assumptions any different from designing assumptions?
- ◆ What is the coverage of test cases generated from architectural specifications?
- ◆ Does it make sense to talk about fault tolerance at the architectural level?
- ◆ Does it make sense to talk about the compositionality of dependability attributes?

## ***Questions to the Panel***



From the perspective of *system development*:

- ◆ Can dependable systems be generated directly from architectural representations?
  - ◆ What about the wrappers?
- ◆ What are the guarantees that dependable architectures result in dependable systems?

## ***Panellists***



- ◆ *Michael Jackson (Independent Consultant and Open University, UK)*
  - ◆ problem structure must inform architecture;
- ◆ *Will Tracz (Lockheed Martin, USA)*
  - ◆ infrastructure architecture drives dependability;
- ◆ *Frank van der Linden (Phillips Medical Systems, The Netherlands)*
  - ◆ architecture should provide solutions to fulfil present and future dependability requirements;