UNIVERSITY OF KENT AT CANTERBURY

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:

◆ *Marie-Claude Gaudel (Univ. Paris Sud, France)*

◆ *Miroslaw Malek (Humboldt Univ., Germany)*

◆ *Rick Schlichting (AT&T Shannon Laboratory, USA)*

Panel Topic

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;

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

◆ *Marie-Claude Gaudel (Univ. Paris Sud, France)*

    ◆ The mythical architectural level;

◆ *Miroslaw Malek (Humboldt Univ., Germany)*

    ◆ Moving across three dimensions;

◆ *Rick Schlichting (AT&T Shannon Laboratory, USA)*

    ◆ The lost art of abstraction;