

Report from Break-Out Discussion (1/2)

Models@run.time workshop, October 3, 2006,
Genova

What should run-time models look like?

What is a run-time model?

- **Has to do with reflection – a running representation of a running system**
- **Has an API**
 - Querying and Manipulating the Model, and, thus, the system
- **Can represent internal and external stimuli**
 - External stimuli cannot be manipulated through the model
 - Environment can influence system behaviour through the model
 - Models of environment needs learning (AI, etc.)
- **Models@run.time vs. models for run time**
 - Model *is* the system

Models need a purpose

- **Simplify decision making and manipulation**
 - The control-loop paradigm may not scale to large systems
- **Drive the application**
- **Debugging**
- **Maintainability**

How can models be maintained at run time?

Do they have to be?

- **No, if the system is the model**
- **No, if the model is an abstraction of the system**
- **Yes, for empirical data like performance or resource usage**

Role in System Validation

Reification of System Goals

- **Continuous monitoring**
- **Related to decision-making purpose**

Causes Overhead

Sandbox → impact analysis for adaptation

- **pjama**

What are the best overall model-driven approaches?

None known

What should be their properties?

- **Consider multitude of configurations and transitions**
- **MDE forces explicit representation of configurations**
 - Not always possible
 - **Types of configurations**
 - **Contracts and invariants**
- **More complex for autonomous: Decision Making**