



Testing Methodology/Framework

NeXtworking '07

Berlin

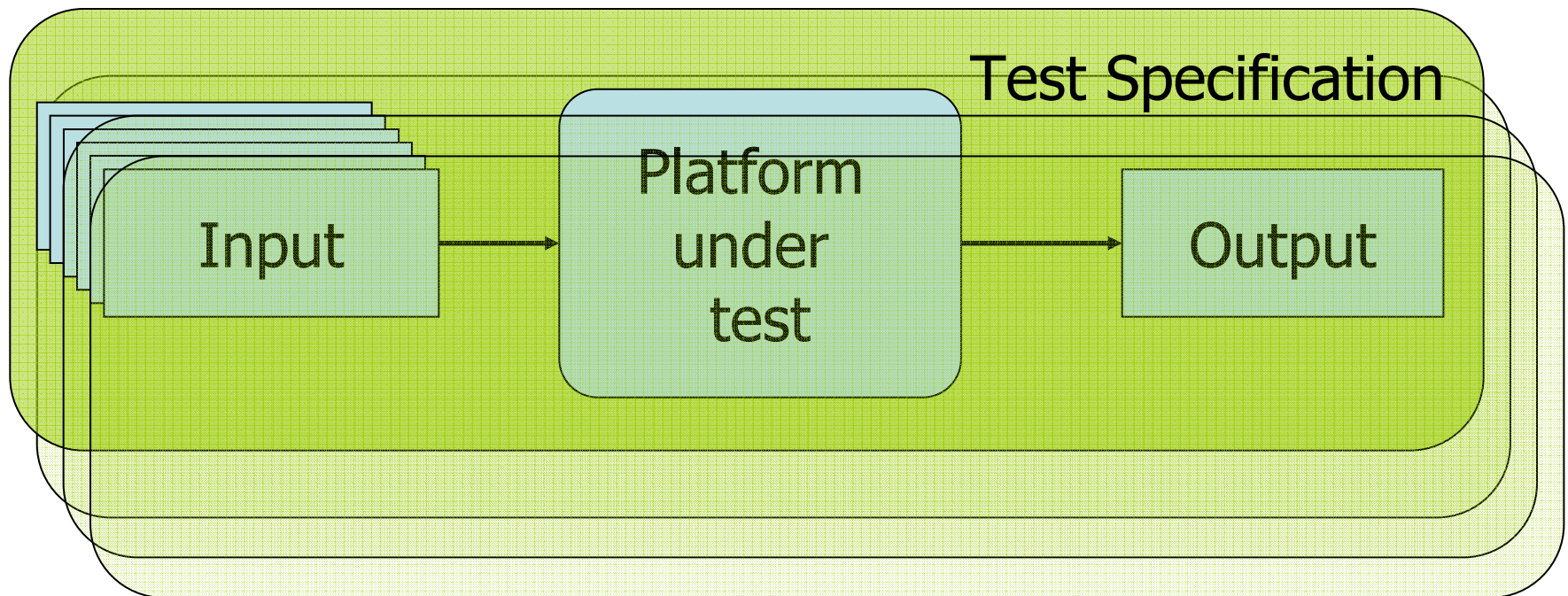
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Problem

- Other engineering disciplines provide clear test methodologies to compare technologies
 - Hardware testing
 - Software/computer programming
 - Benchmark programs/models
 - Formal specification of test input and output
 - Methodology to perform unit testing

Test procedures



Test Procedure

- Describe environment
- Describe goal of platform/system/algorithm
- Describe expected behavior/output
- Describe test input

We have to define our rules

- Tests must be reproducible
- Traces must be made available
- No “single run tests”
- Indication of confidence intervals
- Agreed test scenarios
- Agreed input models
 - Mobility,...

Specific difficulties

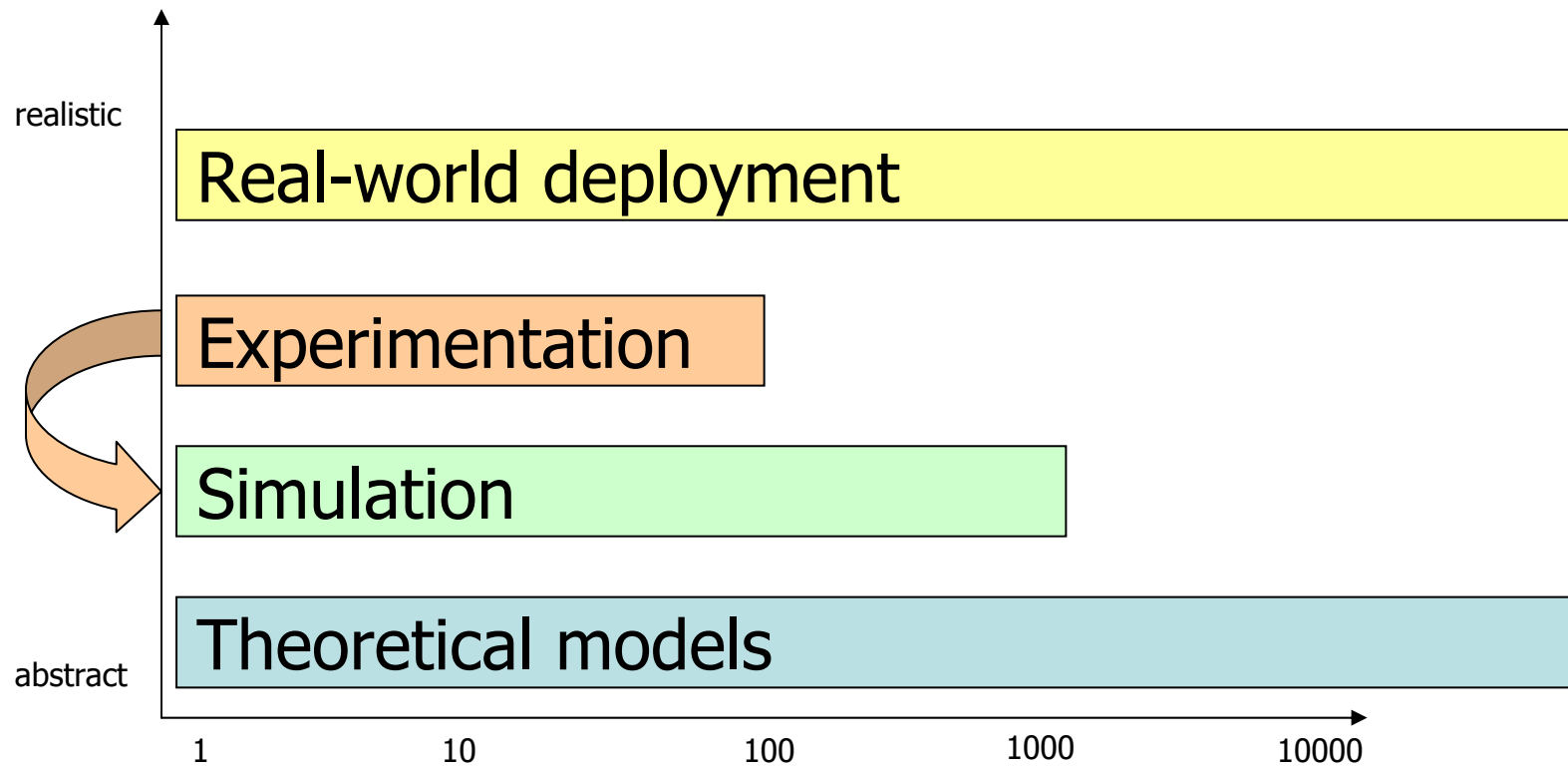
- How to test disruptive technologies?
 - Formal description is difficult
 - In SAC: how to test autonomic behavior?
 - How to build an autonomic testbed?
 - Separate data and monitoring planes?
 - How large must a network be to be “realistic”?
 - How to generate “real traffic”
- Security testing?
 - We can only test against known vulnerabilities

- Mobility
 - What is the right mobility model for protocol testing?
 - RWP? Considered unrealistic, but maybe benchmark model?
 - Inter-contact and contact duration distribution is not too bad...
 - Mobility traces
 - Difficult to obtain (micro mobility)
 - Large scale trace not available
 - How to collect traces for mobile content distribution?
 - Measurements in groups are heavily biased
 - To avoid biased tests you need a huge number of participants

How to develop a test methodology?

- We have to agree on the methodology
 - Input:
 - Failure model
 - Stochastic models instead of simulated physical behavior
 - Traffic pattern
 - Mobility model,...
 - Methodologies differ between target environments
 - Fixed networks
 - Intermittently connected networks
 - Delay/disruption tolerant networks
 - Define scenarios
 - Reproducibility
 - Interrelation between testbeds and simulators
 - We are working on a simulator that takes measurements as input

ANA Autonomic Networking Architecture





Please provide input!

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