System-Level Adaptations

- System-level services and quality of services:
  - Functionality, dependability, performance, usability, etc.
- Self-* (management, healing) requires system support to adapt to changes:
  - User needs, environment, resources, faults;
  - Automatically, optimal and stable;
- Adaptability of system behaviour is achieved through observability and controlability of a system variables:
  - feedback control loops to control the system dynamics:
    - monitoring, reasoning, influencing:
    - interpretation, adaptation, learning, decision making;
System-Level Adaptations

- Using Model Trees to Characterize Computer Resource Usage
  *Steve Heisig, S. Moyle*

- Online Model-based Adaptation for Optimizing Performance and Dependability
  *Kaustubh Joshi, M. Hiltunen, R. Schlichting, W. Sanders, A. Agbaria*

- Instrumentation in Software Dynamic Translators for Self-Managed Systems
  *N. Kumar, J. Misurda, Bruce Childers, M. Soffa*

- Self-Healing Mechanisms for Kernel System Compromises
  *Sandy Ring, D. Esler, E. Cole*
System-Level Adaptations

- What is the appropriate level to monitor and influence the system?
  - Architectural, middleware, operating system;
  - Does it depend on the system property?
- How to combine different techniques for modelling systems?
  - Process or data;
- What the degree of autonomy should be associated to the system?
  - Adaptability versus predictability;
Questions

- What does “self-managed” mean to you?
- What aspects of the self-management problem are you addressing?
- What aspects are you NOT dealing with?
- What domains, properties, or applications are you targeting?
- What are the top two/three new technical ideas/approaches that you are pursuing in this work?