

Panel  
ICSE 2008 SEAMS

*Software Engineering for  
Self-Adaptive Systems:  
A Research Road Map*

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Moderators

- ◆ Rogério de Lemos (University of Kent, UK)
- ◆ Holger Giese ( HPI at Universität Potsdam, Germany)

Panellists

- ◆ Nelly Bencomo (Lancaster University, UK)
- ◆ Bojan Cukic (West Virginia University, USA)
- ◆ Hausi Müller (University of Victoria, Canada)
- ◆ Danny Weyns (Katholieke Universiteit Leuven, Belgium)

# *The Road Map Paper*

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- ◆ Objective of the panel
  - ◆ present, discuss and receive feedback for road map paper
    - ◆ its current version is a draft
    - ◆ the discussions may influence the final draft
  
- ◆ The road map paper is a result
  - ◆ Dagstuhl Seminar 08031 on “Software Engineering for Self-Adaptive Systems” in January 2008  
<http://www.dagstuhl.de/en/program/calendar/semhp/?semnr=2008031>
    - ◆ list of participants
    - ◆ abstracts, papers, etc.
    - ◆ slides of presentations
    - ◆ 5Ws of self-adaptability

# *The Road Map Paper*

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- ◆ For the *systematic* software engineering of self-adaptive systems, the **objective** of the road map paper
  - ◆ establish a road map for research
  - ◆ identify the main research challenges
  
- ◆ The exercise had no intentions of being exhaustive
  - ◆ focus on four views that were identified to be essential from the software engineering perspective
    - ◆ requirements, modelling, engineering and assurances

# *The Road Map Paper*

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- ◆ Several issues were not covered, e.g.
  - ◆ processes
  - ◆ technologies
    - ◆ model driven development, aspect-oriented programming, and software product lines
- ◆ We have learned from this exercise is that the area is
  - ◆ vast, multidisciplinary, and involves a wide range of system
  - ◆ finding a generic solution that fits all purposes is remote
    - ◆ **exemplars** to benchmark different techniques, methods and tools

# *Theses of the Four Views of Self-Adaptability*

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## ◆ Requirements

- ◆ "the need to define a new requirements language for handling uncertainty"

## ◆ Modelling

- ◆ "the need to enumerate and classify modelling dimensions for obtaining precise models"

## ◆ Engineering

- ◆ "the need to consider feedback control loops as first-class entities"

## ◆ Assurances

- ◆ "the need to define novel verification and validation methods for the provision of assurances"

# *Panellists*

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- ◆ Nelly Bencomo (Lancaster University, UK)
  - ◆ requirements
- ◆ Danny Weyns (Katholieke Universiteit Leuven, Belgium)
  - ◆ modelling
- ◆ Hausi Müller (University of Victoria, Canada)
  - ◆ engineering
- ◆ Bojan Cukic (West Virginia University, USA)
  - ◆ assurances