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Agent Dependability in Open Systems

Gruia-Catalin Roman

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 **Washington University in St. Louis**
SCHOOL OF ENGINEERING & APPLIED SCIENCE

Theme



Mind over matter:
the delicate balance we call **dependability**

- Understand what is to be feared
- Compensate for what cannot be controlled
- Reason about what will happen



Perspective



Open systems operating over ad hoc networks

- System structure
 - physical mobility of devices
 - logical mobility of agents
 - interactions constrained by logical connectivity
 - resources (data, code, sensors, etc.)

- Network profile
 - wireless communication
 - frequent and unpredictable disconnections



Design Strategies



- Reduced complexity through **coordination**
- Increased productivity through **transparent context maintenance**
- Increased stability through **stability enhancement**
- Evolution and adaptation through **code migration**



The Power of Rational Thought



- Unified model for reasoning about logical and physical mobility
- Abstract treatment of connectivity and access controls
- Rethinking query consistency and guarantees
- Spatiotemporal communication services



Conclusions



- Dependability is the desired outcome of a game played on multiple levels
 - the essential traits of the physical environment
 - the nature of devices and communication
 - the virtual world offered by the middleware designer
 - the predictability achieved through formal analysis

