

Future Internet Assembly

Panel 3

Research Challenges in network management

Prague – May 2009

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How to define Research Challenges

- EMANICS: European NoE on N&S management
- IRTF Network management Research Group
- Joint workshop, October 2006
- Paper IEEE Commag:

“Key Research Challenges in Network Management”

Aiko Pras, Jürgen Schönwälder, Mark Burgess, Olivier Festor,
Gregorio Martínez Pérez, Rolf Stadler, and Burkhard Stiller
October 2007

Research challenges

- Management models
- Distributed monitoring
- Data analysis and visualization
- Economic aspects of management
- Uncertainty and probabilistic approaches
- Ontologies
- Behavior of managed systems



Management of the Future Internet

The preferred model is:

Autonomic management

Relevance: High

Originality: ...

Formulation: ...

Relation to Existing work: ...

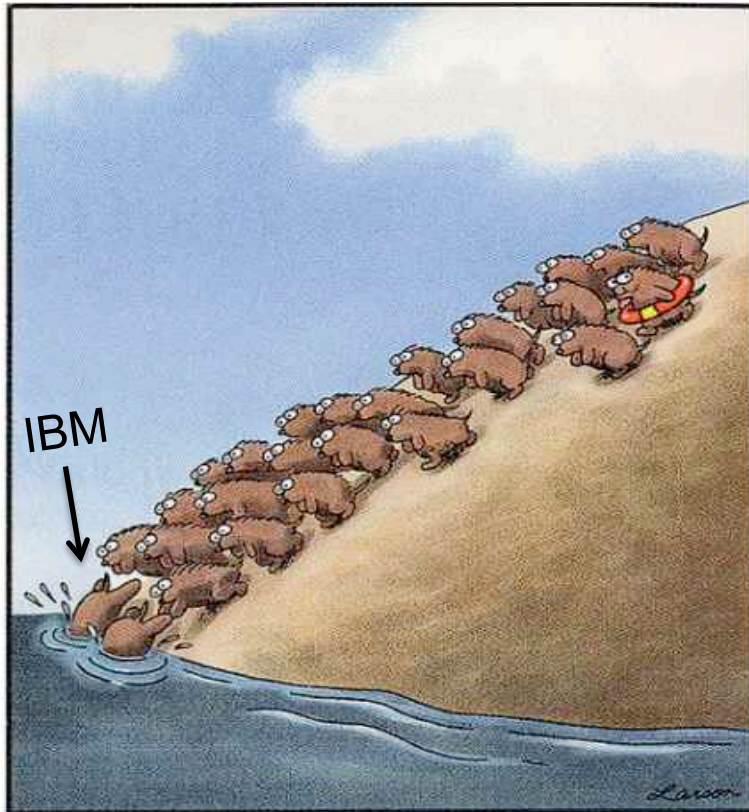
Contribution: ...



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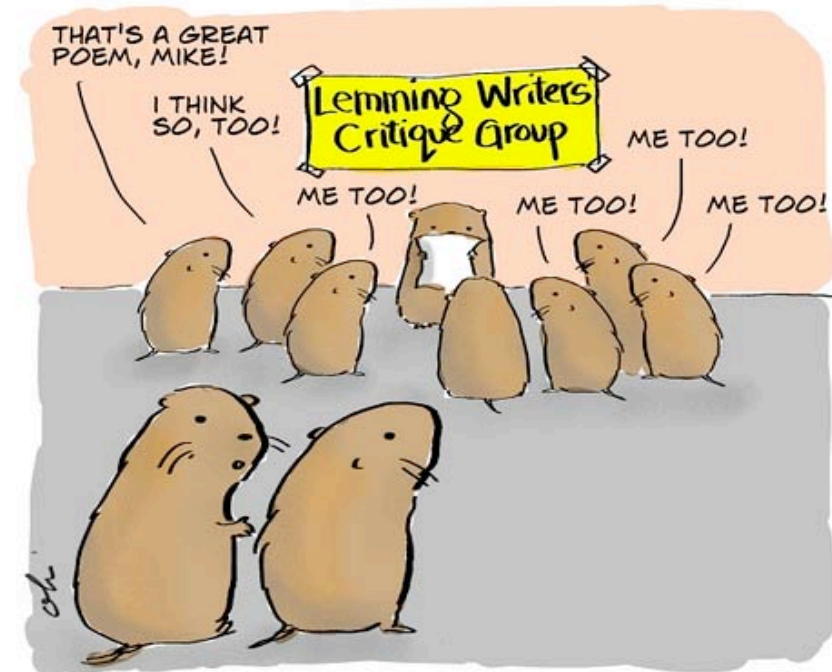
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Originality



Copied from:

<http://chaosmoon.gameriot.com/blogs/The-Justice-Files/Tier-3-Woes>



"You know what they say: when you have lemmings, make lemming aid..."

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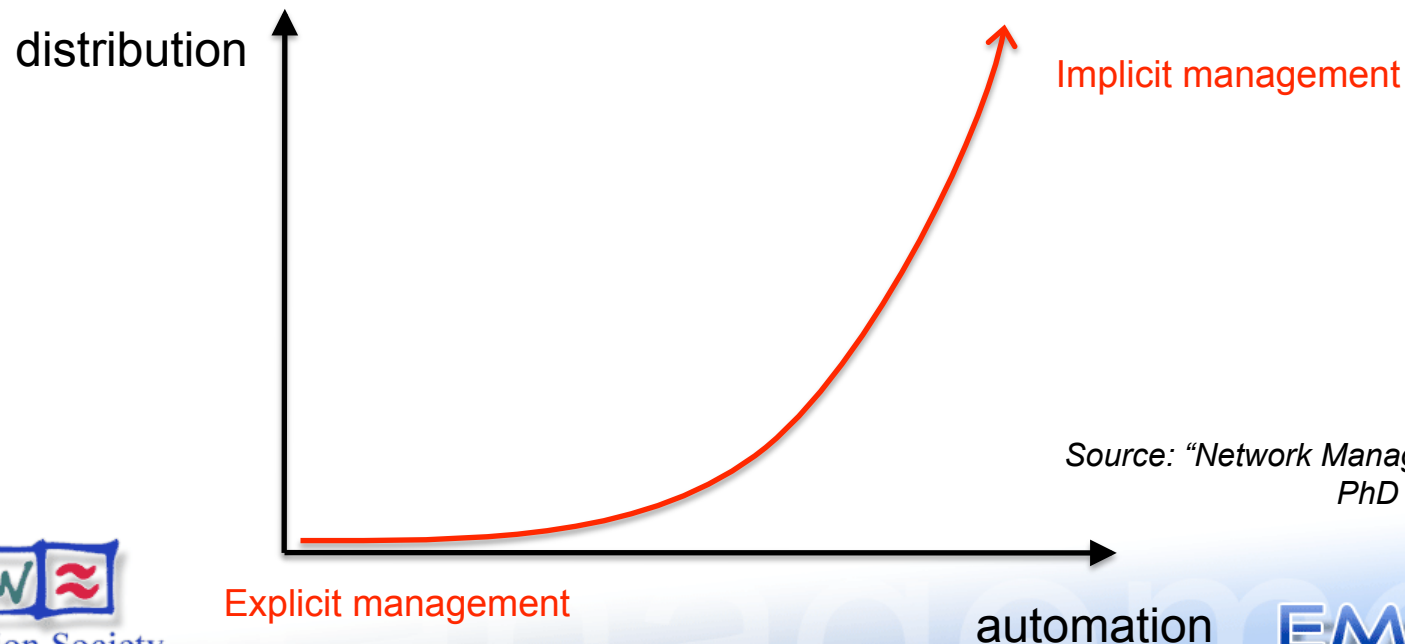
Formulation

- Terminology is unclear
- Definitions lacking
- What is relation between:
 - Automated
 - Automatic
 - Self *
 - Autonomic
 - Autonomous



Relation to existing work

- Nothing new
 - Expert systems (1990)
 - Routing, DHCP, ...
 - Management lifecycle (1995)



Source: "Network Management Architectures"
PhD Thesis, A. Pras, 1995

Contribution

- Researchers generally focus on the advantages
- Researchers tend to avoid the real problems:
 - Application in specific domains
 - Interaction between multiple control loops
 - Stability of the entire system
 - Correctness of complex control software
- How to control the control loop???

Conclusion



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Questions??



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