

Fundamental Research in Software Engineering

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Topics

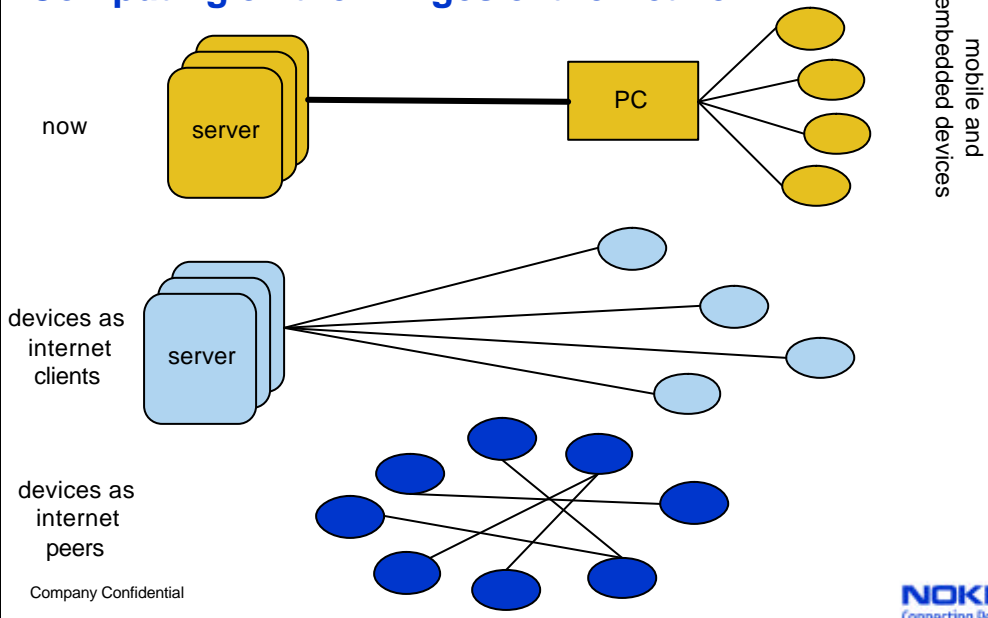
- Trends in innovation
 - Open Innovation
 - From products to solutions to services
 - Computation moves to the fringes of the network
 - User experience, usability and simplicity
- Trends in software engineering
 - Increasing abstraction level
 - Later binding
 - Increased automation of tasks
 - Integration and QoS
 - Variability and configurability
 - **The scale challenge**
- Research Challenges

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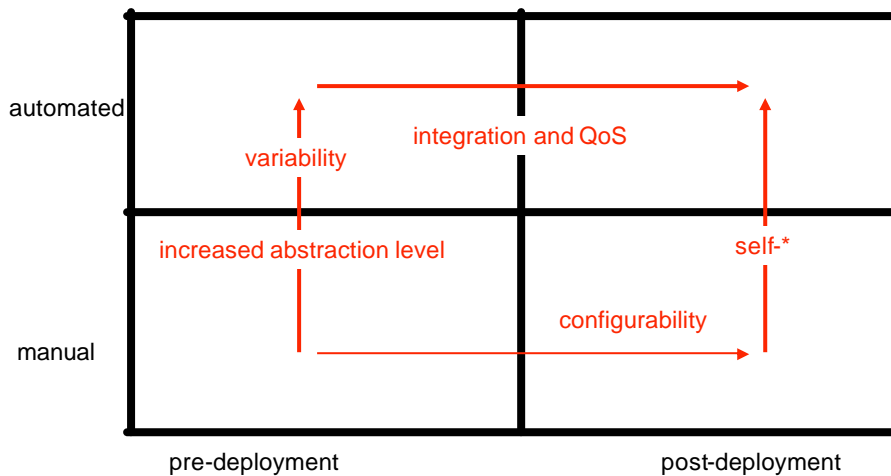
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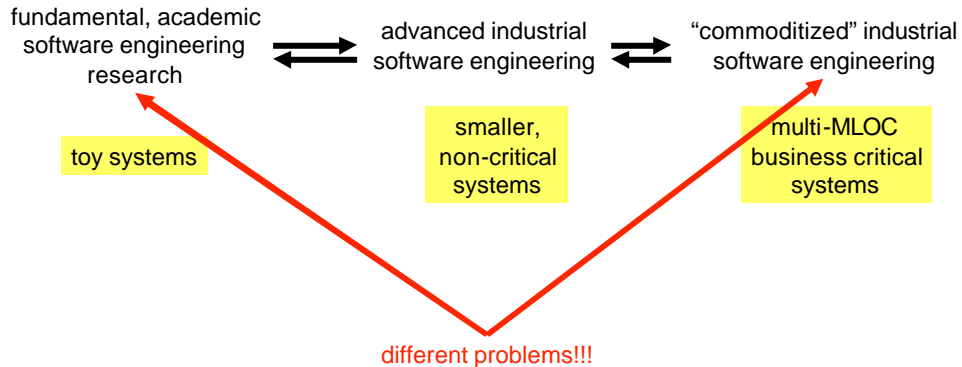
Computing on the Fringes of the Network



Later Binding – Where and When to Perform a Task



The Scale Problem



The technical problems are trivial!
It's the cultural, business, organizational and process challenges that keep me awake at night!
What then is the role of software engineering research?
(versus computer science research in general)

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Some Research Challenges

- Using software architecture as a means to facilitate decoupling of components and subsystems
- Managing dependencies between software components and software and hardware components
- Managed evolution of long-living systems
- Run-time optimization of QoS versus resource efficiency
- Late, automated composition of distributed behaviours
- Integrating functionality from different managed run-times
- Managing “user experience” in a converging, mobile context
- Managing undesired emergent behaviours – e.g. integration problems
- Individual responsibility versus “the software development machinery”
- Developing true distributed peer-to-peer systems
- Development tools for non-software engineers

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