Reliability and adaptability of future nanoelectronic systems

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The working group

Members and key aspects of research:

- Prof. Dr.-Ing. Dirk Timmermann (supervisor/coordinator)
- Dr.-Ing. Claas Cornelius(reliability, low power)
- M. Sc. Tim Wegner (thermal management, high-level system design)
- M. Sc. Martin Gag (signal integrity, on-chip communication, robustness)
- Dipl.-Ing. Philipp Gorski (hardware/software co-design, energy efficiency)

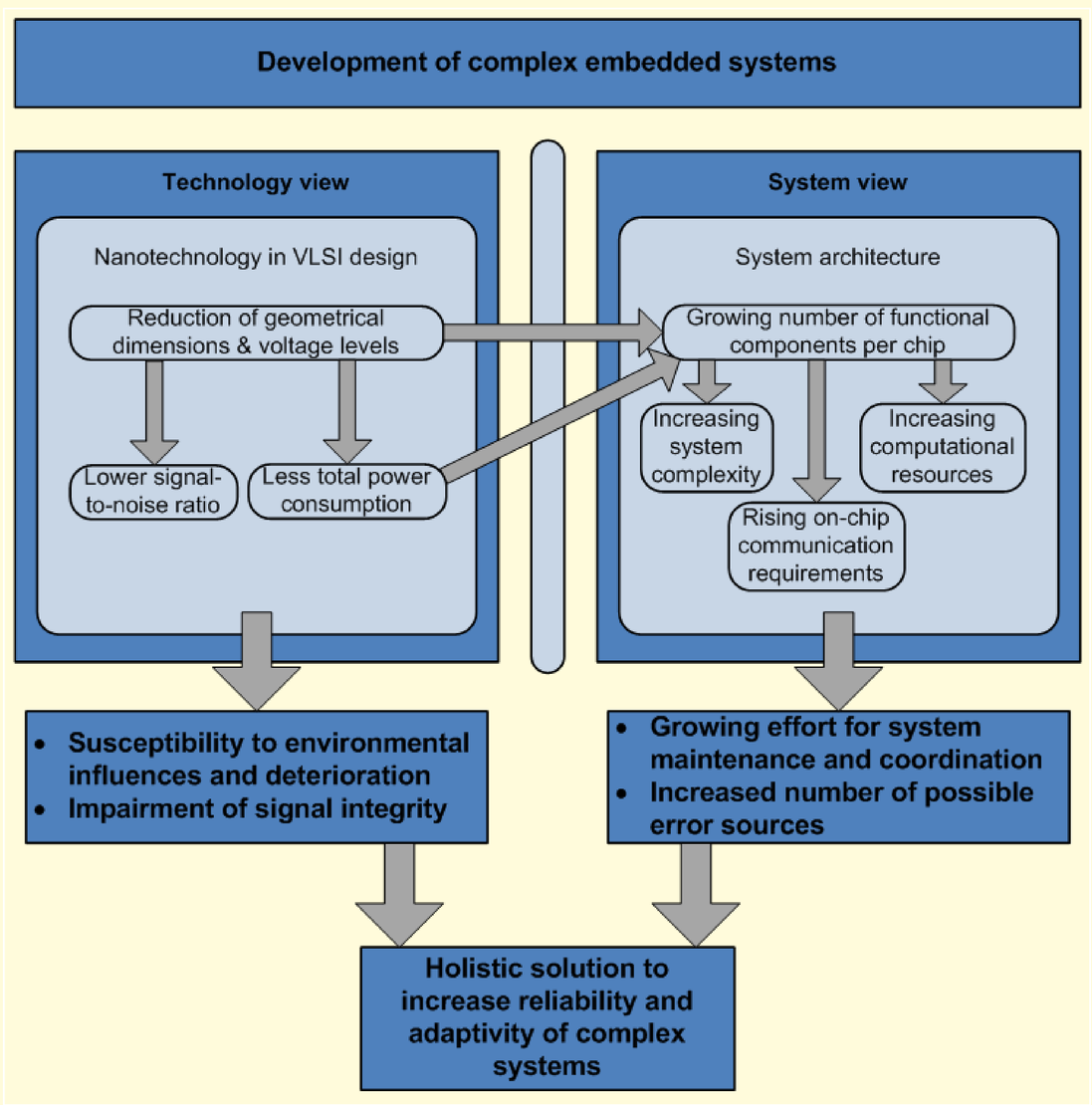
Objectives

Comprehensive approach to increase reliability and adaptability of complex embedded systems at runtime

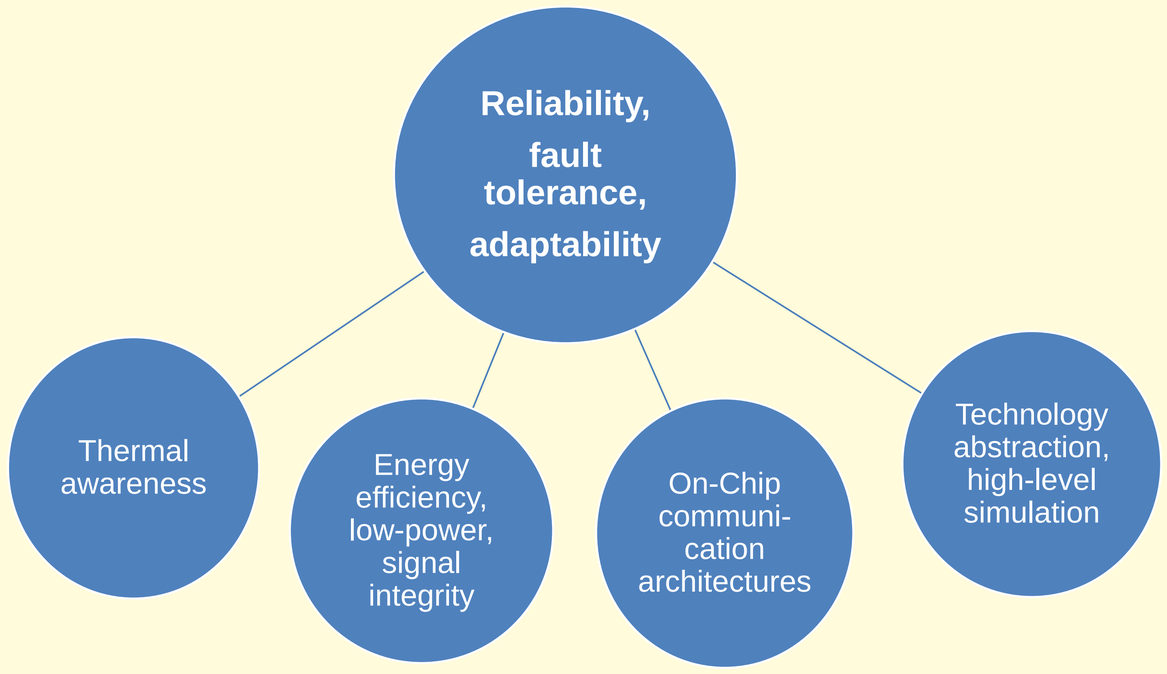
1. Identification of system parameters for enhancement of monitoring and control
2. Determination of appropriate measures considering system-wide correlations and interdepencies
3. Formation of a global long-term runtime system management including prognostic abilities

Closed and self-calibrating management loop to improve system lifetime, performance and power characteristics

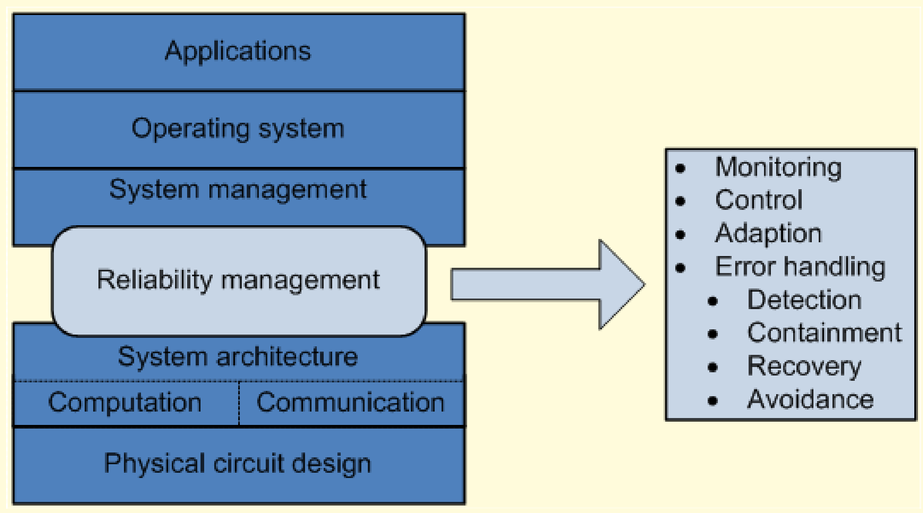
Motivation



Methods & Tools



Approach: Hardware/software Co-Design of a runtime system management including prognostic abilities regarding aging, wearout and temperature



Cooperations & Networking