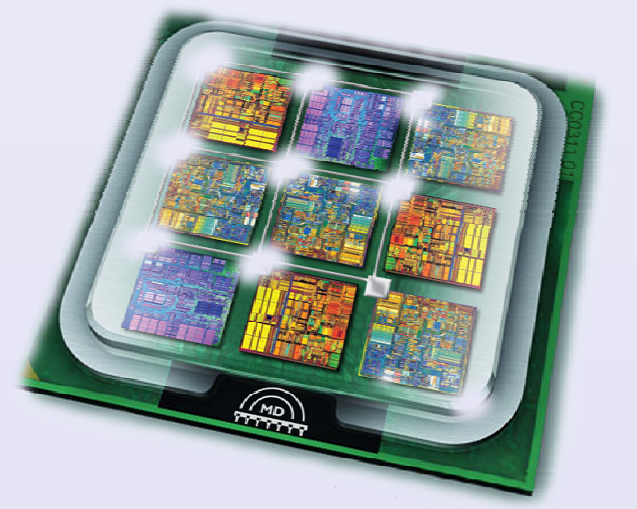




NETWORKS: COMPLEXITY AND SCALABILITY



Motivation

Internet Evolution & Changes in the Telecommunication Area



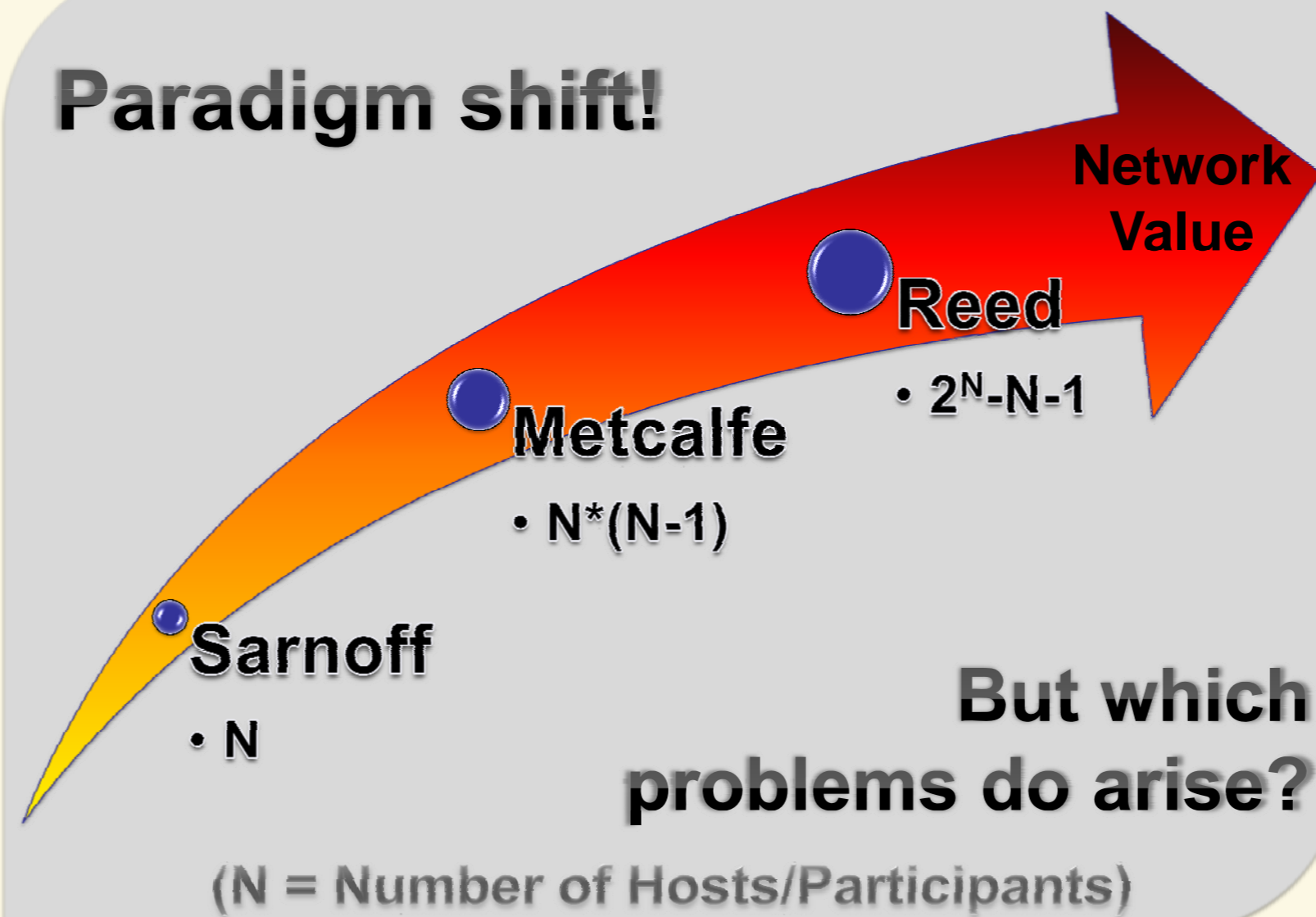
TV/Radio Broadcast Services

E-Mail, PSTN

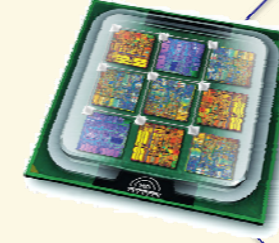
Web 2.0, Mobility
"Always on"-Mentality

Total Convergence of the Telecommunication Market!

Paradigm shift!



Development of On-Chip Interconnection Architectures



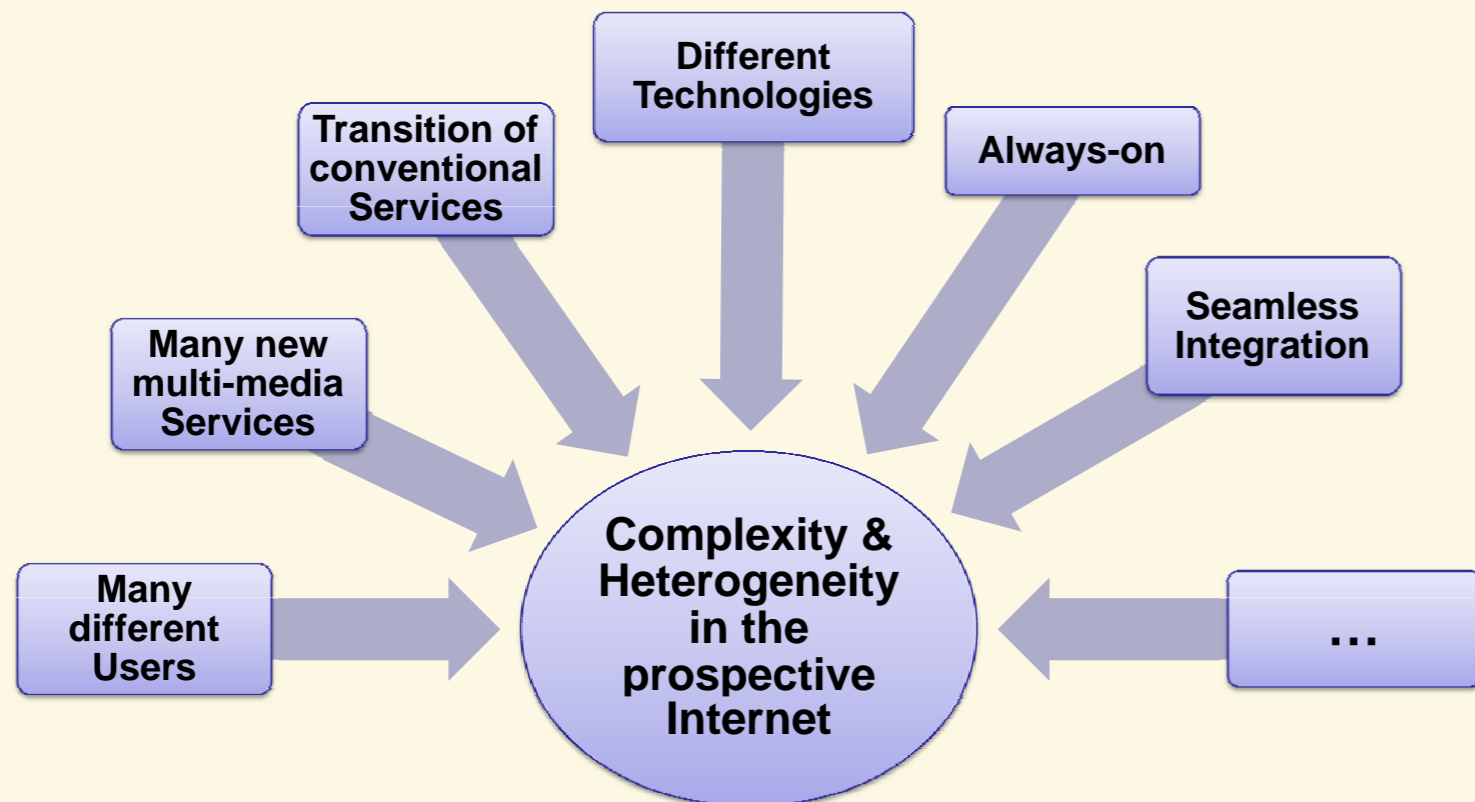
Point-2-Point Interconnects

Conventional Bus Systems

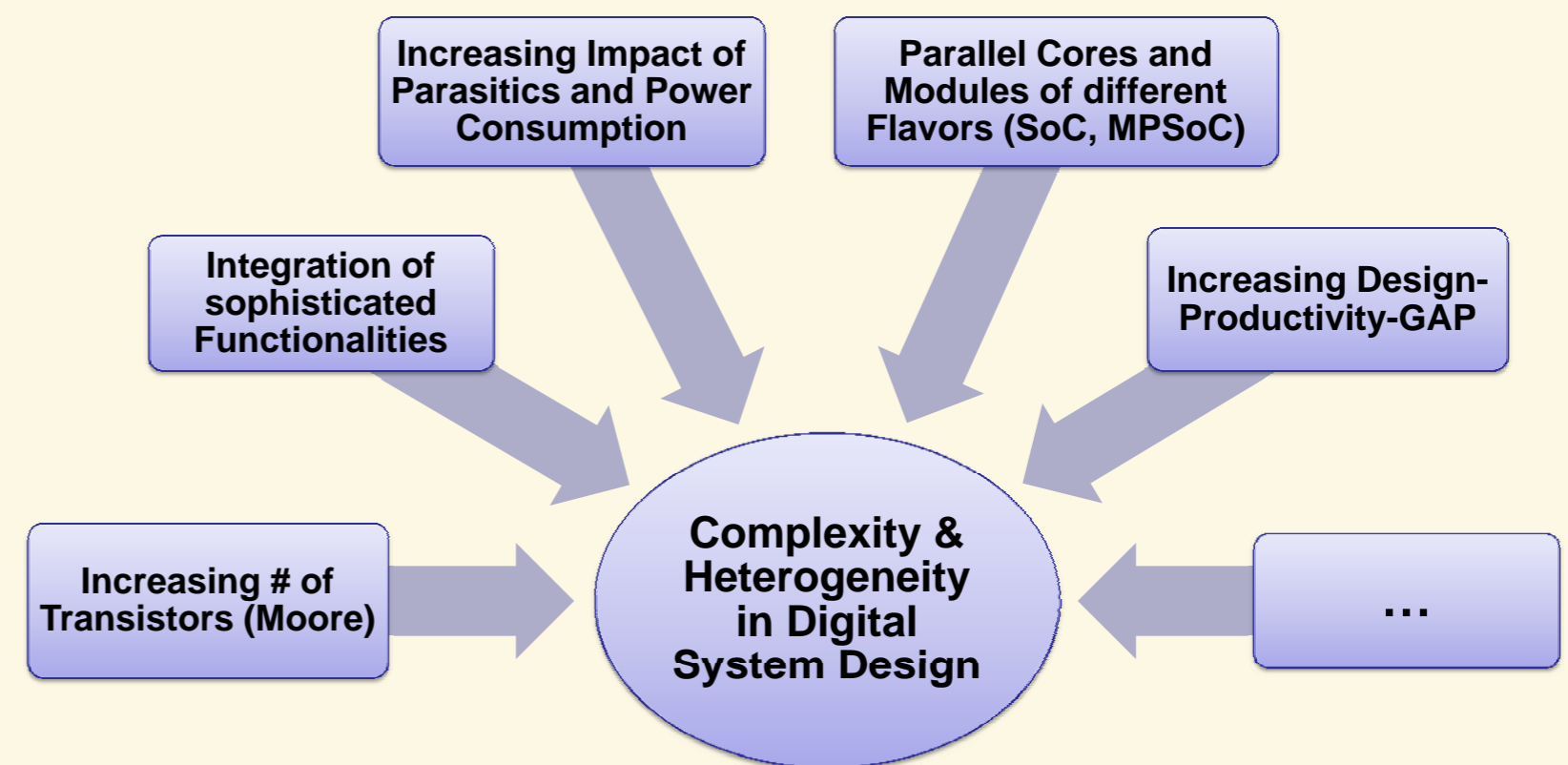
System-on-Chip, Multi-Core

Networks-on-Chip?

Internet & Telecommunication



On-Chip Interconnects

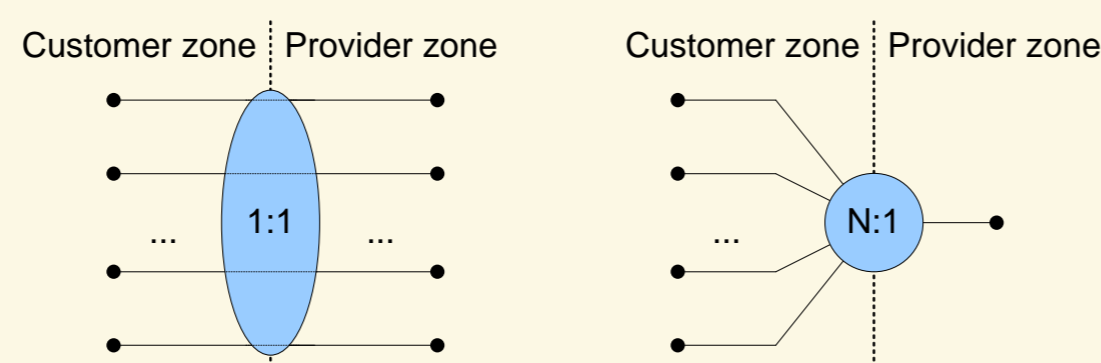


We require scalable & flexible Solutions!

Research covers Scalability & Security Issues in Internet Access Networks

Layer 2: MAC Address Translation (MAT)

- Replace MAC addresses
- Scale # of addresses
- Prevent typical L2-attacks
- Additional feature for implementation on linecards or DSLAMs



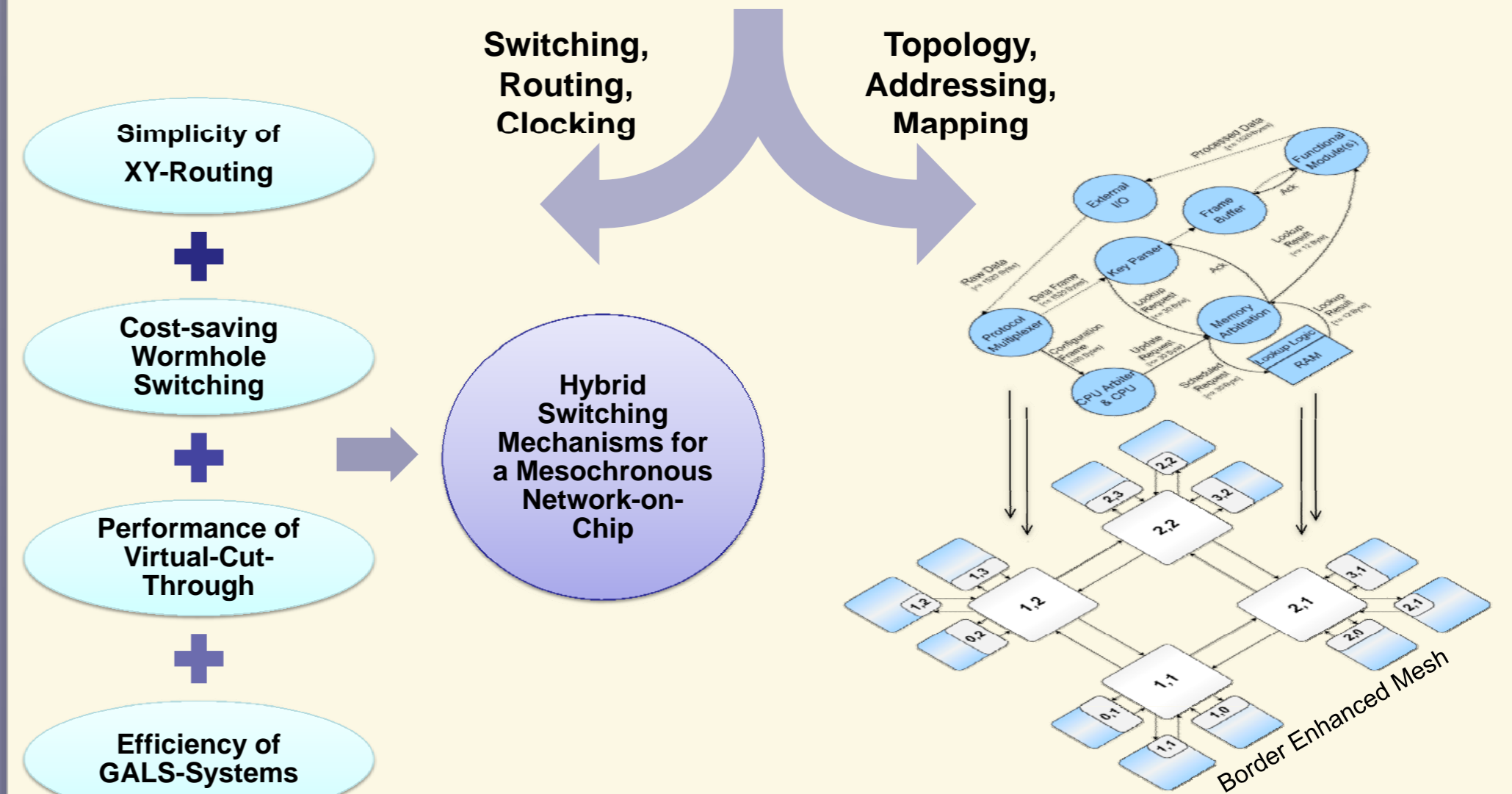
Layer 3: IP Calling Line Identification Presentation (IPclip)

- Trust-by-Wire in packet-switched IP networks
- Derived from ISDN-CLIP
- Enrich IP traffic with trustworthy location information



<http://www.imd.uni-rostock.de/networking>

Research covers aspects of Networks-on-Chip



<http://www.networks-on-chip.com>

Selected Recent Results...

- Trust-by-Wire in Packet-switched IP Networks: Calling Line Identification Presentation for IP, 1st ITU-T Kaleidoscope Conference: Innovations in Next Generation Networks - Future Network and Services, Geneva, Switzerland, May, 2008
- Countering Phishing Threats with Trust-by-Wire in Packet-switched IP Networks - A Conceptual Framework, 22nd IEEE IPDPS, 4th International Workshop on Security in Systems and Networks (SSN), Miami, FL, USA, April, 2008
- A Mesochronous Network-on-Chip for an FPGA, Annual Doctoral Workshop on Mathematical and Engineering Methods in Computer Science (MEMICS), Znojmo, Czech Republic, October, 2007
- Mapping a Pipelined Data Path onto a Network-on-Chip, 2nd IEEE International Symposium on Industrial Embedded Systems (SIES), Lisbon, Portugal, July, 2007
- sMAT - A Simplified MAC Address Translation Scheme, 15th IEEE Workshop on Local and Metropolitan Area Networks (LANMAN'2007), Princeton, NJ, USA, June, 2007



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