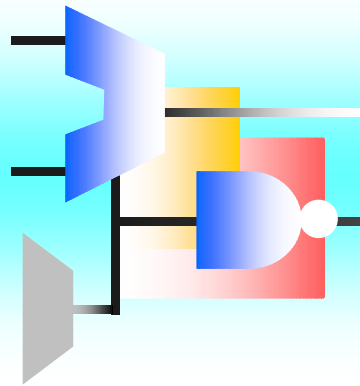# STRINGENT

At Linköping University, Linköping, Sweden

STRINGENT

Strategic Integrated Electronic Systems Research

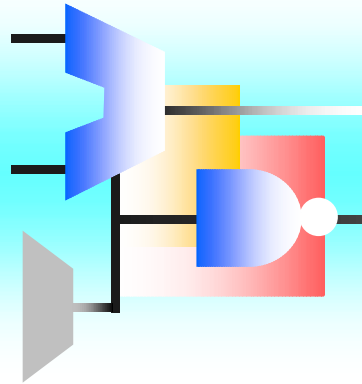**Cooperation between 4 divisions in 2 departments**

Department of Electrical Engineering

- Electron Devices, Professor Christer Svensson
- Computer Engineering, Professor Dake Liu
- Electronic Systems, Professor Lars Wanhammar

Department of Computer Science

- Embedded Systems, Professor Zebo Peng
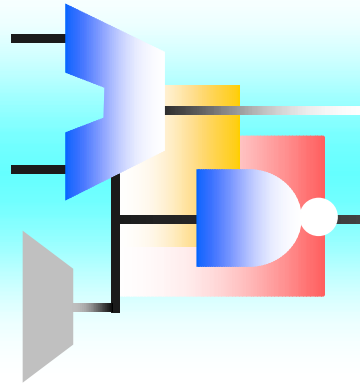
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Background

Integrated electronics

- Still develops at "full pace" (Moores law)
- The main factor behind IT society

Challenges today

- Mastering the complexity in systems, design and physical implementation

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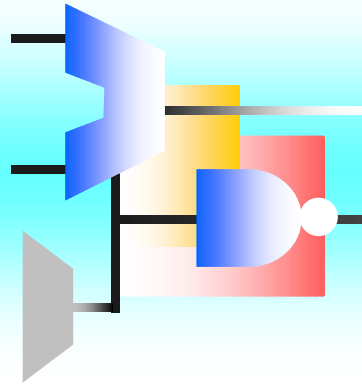## Scientific vision and main goals

Vision

- To make Circuit and System Sciences **lead** the development of future electronics

Goals

- New methods to convert complex ideas into silicon (*System Design*)
- Improve efficiency of embedded systems (*Technology utilization*)
- Reduce development times (*Design efficiency*)

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- **The largest electronics research center in Sweden**
  - 57 researchers, include
    - 6 Professors, 8 Associate professors
    - 6 Research engineers, 37 Ph.D. Students

- **Research fully covers system to devices**
  - System Specification, HW-SW codesign, DFT
  - SoC Integration, Processors, Multiple processors
  - DSP algorithms, DSP ASIC,
  - High Speed, low power analog and digital circuits
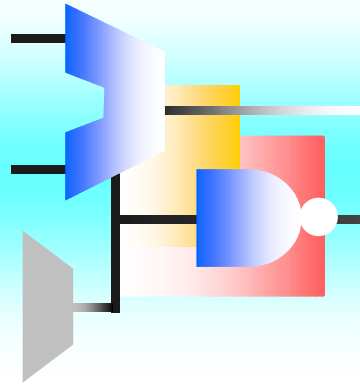 - Electronic devices
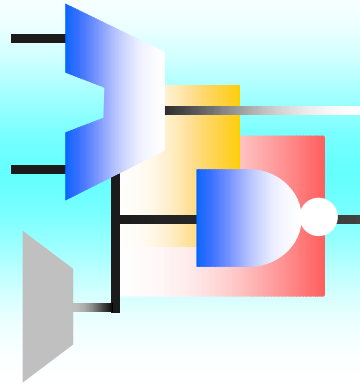
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- **Powerful environment – Departments of Electrical Engineering and Computer Science – 30 professors**
    - Telecommunications
    - Control engineering (including automotive)
    - Software engineering
    - Image processing and image coding
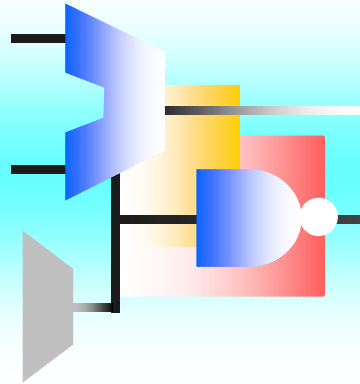   - Intelligent homes

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Total budget

- About 3 MUSD/yr
- 8 professors (50%), 7 engineers, 3 administrators (50%), 20 Ph.D. students

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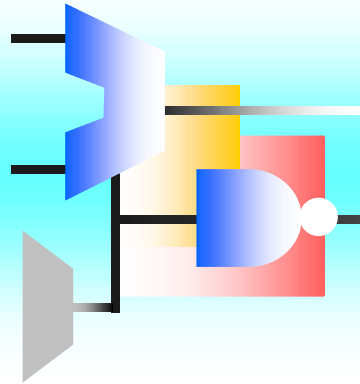## Research plan

3 work packages all aiming at our goals

- System design
- Technology utilization
- Design efficiency

Each work package contains a number of Projects

Each project of size 1-2 Ph.D. students

+ part-time researcher/supervisor

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Organisation

Steering committee

Magnus Danestig
Mikael Rudberg
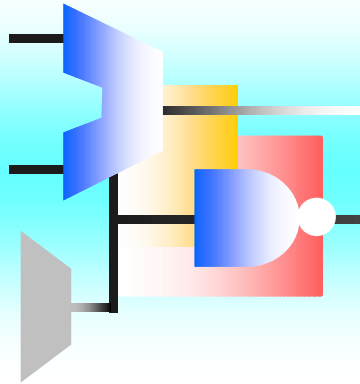Jonas Plantin
Lars Svensson
Jan Grahn

Advisory board

Prof. Manfred Glesner
Prof Christian Piguet
Prof Tor Ramstad
Dr Shekhar Borkar
Dr Gunnar Björklund

Christer Svensson, Director

Projects

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Organisation

Work Packages	Projects
System Design	Networks-on-chip (4, 3)
	Heterogeneous Multiprocessor Systems (5, 2)
	Signal Processing Algorithms (5, 1)
Technology Utilization	High Speed Interfaces (2, 1)
	AD and DA converters (4, 2)
Efficient Design	Verification (3, 2)
	Testing (5, 2)

(number of students, number of "groups")
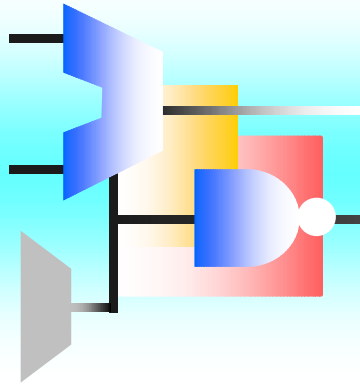
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Some specific projects

Radio frontends – Soctrix demonstrator
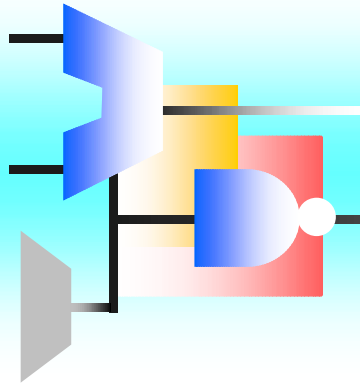> AD/DA conversion, ADC-modelling, RF LNAs, Opt. LNA, RF sampling

High speed interconnect – Socbus demonstrator
> Network-on-chip, Multigigabit interconnect, Multigigabit I/O

Network processors, Signal processors
> Compact 10Gb wire speed NP, baseband DSPs

Contact

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