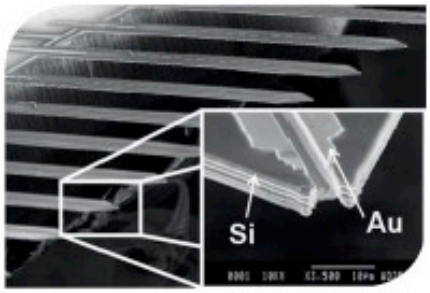
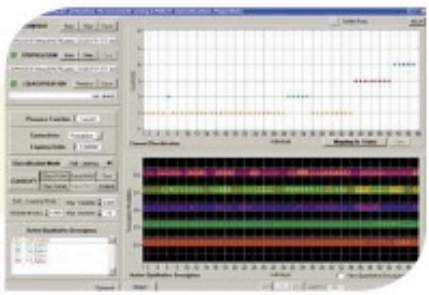


Pressbook
Semicon Europa 2009

LAAS-CNRS

LABORATORY
FOR ANALYSIS
AND ARCHITECTURE
OF SYSTEMS



RESEARCH AT THE HEART OF THE INFORMATION SOCIETY

Microsystems

Micro and Nano Technologies

Automatic control

Networks

Dependable computing

Robotics and AI

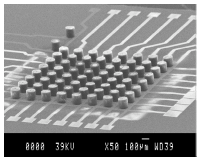
Interaction with life

Pervasive Intelligence

cnrs

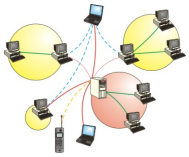
Université de Toulouse

LAAS is a research laboratory of the CNRS, the French National Centre for Scientific Research. LAAS is associated with the University of Toulouse. It conducts multidisciplinary research in the areas of Information and Systems Sciences and Technologies, within four domains:



Micro and Nano Technologies
The 8 research groups involved in this area work on micro and nano systems design and fabrication for telecommunications, embedded systems, energy management, medical diagnosis and chemical analysis, using a 1500 m2 clean room as well as CAD and characterization facilities.

- **Automatic control, Optimization and Signal Processing**
The 4 research groups involved in this area work on uncertain dynamic continuous-time or discrete-event systems and production systems. Close links exist with the Applied Mathematics and the Artificial Intelligence Communities.



- **Critical Information Systems,**
The 4 research groups involved in this area work on the definition, validation and exploitation of both formal and experimental methods and techniques for the design, verification, evaluation and development of software-intensive critical systems.

- **Robotics and Artificial Intelligence.**
The 3 research groups involved in this area work on robot operational and decisional autonomy and on the development of complete robot systems. Experimental facilities include several ground and aerial robots, mobile manipulators and a humanoid robot.

A continuing scientific challenge is undertaken by the laboratory to understand, design and master complex, natural or artificial, integrated or divided systems. It develops a constructivist and integrative approach as well as applications to real world problems.

A wide variety of systems

- Micro and nano systems
- Embedded Systems
- Integrated Systems
- Large Scale Systems
- Systems for biology and Health
- Mobile Systems
- Autonomous Systems
- Critical Systems

***Press Contact**: Anne Mauffret – Mob. (0) 6 77 72 58 93 – anne.mauffret@laas.fr*
LAAS-CNRS Laboratory for Analysis and Architecture of Systems
7 avenue du Colonel Roche, 31077 Toulouse Cedex 4 - France
Tel. +33 (0) 5 61 33 62 00/69 35 - Fax. : +33 (0) 5 61 55 35 77
www.laas.fr

Large application Fields

- Aeronautics
- Space
- Transportation
- Energy
- Power management
- Services
- Life and health sciences
- Biotechnologies
- Telecommunications and networks
- Environment
- Production
- Defence and civil security

Two transdisciplinary axes

- Interactions with life (biology, humans)
- ADREAM: program on networked and ubiquitous systems

Experimental and development facilities serving research

- Micro and Nano Technologies Platform with 1500 m2 clean room, class 100 and 10,000: fabrication of Micro-Nano Chips & Systems
- Characterization Platform for micro and nanosystems: electrical, thermal, RF and biological tests…
- Computer-Aided Design (CAD) facilities
- Experimental Networking Platform: testing, devices in networks at different scales, mobile devices…
- Embedded Systems Platform: testing embedded systems with real, emulated or simulated equipments
- Robotics Platform: 10 different robots (field, in-doors, air, humanoid…)

Close Industrial Relationships

- Carnot Label
- Joint labs with industries
    - AIRSYS with Airbus
    - LISPA with Freescale
    - PEARL with Alstom
    - PixCell with Essilor
    - Autodiag with Actia
    - External research center of SNECMA
- Startups
    - Kineo: motion planning
    - Neosens: chemical sensors
    - QoS design: simulation/optimization for networks
    - Tag Technologies: microsystems for motion detection in Domotics
    - Noomeo: 3D sensors for CAD
- Industrial affiliates Club with 64 companies

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Partnerships

- Involvement in 3 competitiveness clusters (Aerospace Valley, Cancer Bio Health, Agrimip Innovation)
- Member of the RTRA STAE (Sciences and Technologies for Aeronautics and Space Network).
- 108 projects funded by national agencies and the government
- 56 projects funded by the regional council
- 22 European projects
- 112 agreements with industries
- 28 international partnerships
- Partner of two international research labs:
    - LIMMS (Laboratory of Integrated Micro Mechatronic Systems) CNRS/ University of Tokyo
    - LEA-SICA (European Associated Laboratory Intelligent Systems and Advanced Control)
- Joint lab with AIST Japan (Joint Research Laboratory Humanoid Robotics)

Key figures

Staff: 656 persons

- 202 researchers and faculty members
- 262 PhD students
- 68 post-docs and visiting researchers
- 122 engineers and technicians

Annual publications: 900
Research groups: 19
Budget : 16 M€ of annual operational budget

Acronyms

ADREAM	Reconfigurable and Dynamic Architectures for Mobile Autonomous Embedded Systems
AIRSYS	Architecture and Engineering of Systems
AIST	Advanced Industrial Scienceand Technology
LIPSA	Laboratoire d'Intégration des Systèmes de Puissance Avancés
PEARL	Power Electronics associated research laboratory
RTRA	Réseaux thématiques de recherche avancée, French recognition of excellence for an associated network of laboratories

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