

Research Infrastructure in France: from the computer science point of view

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INVESTMENTS IN EDUCATION DEVELOPMENT

Contents

- Infrastructure of research
- Main institutions in Computer Science
 - University, CNRS, INRIA
- Funding
- Animation
- Evaluation

Infrastructure

- Education in France
 - http://en.wikipedia.org/wiki/Education_in_France
- Government
 - highly centralized, organized, and ramified
 - French Ministry of National Education
 - **French Ministry of Research and Higher Education**
 - Different other ministries
- Organization
 - Education : University and « Grandes Ecoles »
 - Research : University and different other institutions

Infrastructure

- Research in France :
 - University-grade institutes
 - **Universities**, Autonomous institutions, « Écoles normales supérieures », « Grands établissements »
 - Public research labs :
 - Cemagref (agriculture), **CNRS** (fundamental sciences), INED (demography), INRA (agronomy), IFSTTAR (transports and civil engineering), **INRIA** (IT and automatic), INSERM (medicine), IRD (development)
 - Public industry :
 - BRGM (geoscience) · CEA (nuclear industry) · IFREMER (maritime applications) · ONERA (aerospace)

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University

- http://en.wikipedia.org/wiki/List_of_public_universities_in_France
- At least **eighty-one** autonomous public universities in France :
 - state institutes of higher education and research
 - **open admissions.**
- Public institutions that practice competitive admissions :
 - Paris Dauphine University, which changed status in 2004,
 - the three national polytechnic institutes,
 - the grandes écoles
- Private universities :
 - the Catholic universities, the Protestant universities, the private secular universities, and the American University of Paris.

University

- Organized by academy
 - **Thirty-five** academies, of which **thirty-one** host the principal administrative seats of universities.
 - Although the **rectors or vice-rectors** who head the academies do not have administrative control over the universities, the **division into academies** is nonetheless important because it **governs admissions**.
 - Students in France **have the right to be admitted** to a university in the academy in which **they passed the baccalauréat**, and in some cases to a university in another specified academy.

University

- http://en.wikipedia.org/wiki/List_of_colleges_and_universities_in_France
- Some of them have a **joint collegial university cluster organisation for research**, that is referred-to as '**Pôle de recherche et d'enseignement supérieur (PRES)**'
- EGIDE, List of universities in France
 - <http://www.egide.asso.fr/jahia/Jahia/lang/en/accueil>

CNRS

- <http://www.cnrs.fr/en/aboutCNRS/overview.htm>
- **Centre National de la Recherche Scientifique** (National Center for Scientific Research)
- A **government-funded** research organization, under the administrative authority of **France's Ministry of Research**.
- **Fundamental** research organization
- Founded in **1939** by governmental decree

CNRS

Missions

- **Evaluate** and **carry out** all research capable of **advancing knowledge** and **bringing social, cultural, and economic benefits for society**.
- **Contribute** to the application and promotion of research results.
- **Develop** scientific information.
- **Support** research training.
- **Participate** in the analysis of the national and international *scientific climate* and its *potential for evolution* in order to **develop a national policy**.

CNRS

Research fields

Seven institutes:

- Institute of Biological Sciences (INSB)
- Institute of Chemistry (INC)
- Institute of Ecology and Environment (INEE)
- Institute for Humanities and Social Sciences (INSHS)
- **Institute for Information Sciences and Technologies (INS2I)**
- **Institute for Engineering and Systems Sciences (INSIS)**
- Institute of Physics (INP)

and three national institutes:

- National Institute for Mathematical Sciences (INSMI)
- National Institute of Nuclear and Particle Physics (IN2P3)
- National Institute for Earth Sciences and Astronomy (INSU)

CNRS

Interdisciplinary research :

- Life and its social implications
- **Information, communication and knowledge**
- Environment, energy and sustainable development
- Nanosciences, nanotechnologies, materials
- Astroparticles: from particles to the Universe

CNRS

Laboratories (or research units) :

- are located throughout France,
 - employ a large body of **tenured researchers, engineers, and support staff**.
 - are all on **renewable four-year contracts, with bi-annual evaluation**.
- Two types :
 - CNRS intramural labs: fully funded and managed by CNRS (called **UPR**, or unités propres de recherche, in French)
 - Joint labs: partnered with universities, other research organizations, or industry (called **UMR**, or unités mixtes de recherche, in French)

CNRS

Budget forecast for 2011

- CNRS's annual budget represents a **quarter of French public spending on civilian research**.
- 3.204 billion Euros of which 677 million come from revenues generated by CNRS contracts

Personnel

34,530 employees of which 25,630 are CNRS tenured employees:

- 11,450 researchers
- 14,180 engineers and support staff

Organization

- 10 institutes (3 of which have the status of national institutes)
- 19 regional offices, ensuring decentralized direct management of labs
- 1,053 labs (95 % are joint research laboratories with univ. and industry)

CNRS

International relations

- 85 exchange agreements (with 60 countries)
- 5,000 **foreign visiting scientists** (PhD students, post-docs and visiting researchers)
- 1,714 permanent **foreign researchers** of whom 1205 come from Europe
- 295 permanent foreign engineers and technicians
- 343 International Programs for Scientific Cooperation (**PICS**)
- 114 European and International Associated Laboratories (LEA/LIA)
- 93 European and International Research Groups (GDRE/GDRI)
- 22 International Joint Units (UMI)
- 11 CNRS offices abroad (Beijing, Brussels, Hanoi, Malta, Moscow, New Dehli, Pretoria, Rio de Janeiro, Santiago de Chile, Tokyo, Washington)

CNRS

Industrial relations (2010)

- 25 framework agreements with major international industrial groups
- 4,382 main patents, 495 new patents filed in 2010
- 864 licenses and other financially remunerating active acts
- 593 companies created with CNRS between 1999 and 2010

INRIA

- <http://www.inria.fr/en/>
- Institut National de Recherche en Informatique et Automatique (INRIA) : **National Institute for Research in Computer Science and Control**
- Public science and technology institution placed under the supervision of the French ministries of **research** and **industry**.

INRIA

- **Structure :**
 - 8 research centres located throughout France (**Rocquencourt, Rennes, Sophia Antipolis, Grenoble, Nancy, Bordeaux, Lille and Saclay**) and a head office in Rocquencourt, near Paris.
- **5 Research Fields and Themes :**
 - ICST for life and environmental sciences
 - Applied Mathematics and Computing
 - Perception, Cognition & Interaction
 - Networks, systems and services, distributed computing
 - Algorithmics, programming, software and architecture

INRIA

- **9 Large-scale initiatives**, major interdisciplinary research programmes
- **4 Exploratory actions**: opening up new lines of research
- **8 Collaborative research actions**: promoting cross-disciplinary collaborations
- International mobility
 - Exploit synergies between international partners

INRIA

- Strategic partnerships with large industrial players
- Current strategic partners :
 - Alcatel-Lucent,
 - ST Microelectronics,
 - EDF,
 - Microsoft Research,
 - France Telecom – Orange Labs,
 - Bull,
 - Andra (Mastering radioactive waste)

INRIA

- The INRIA **project team** model
 - Made up of some **twenty** individuals, a project team is headed by a **leading scientist**, and is given **scientific objectives** and a **subject area**, **both very specific**.
 - A team on a human level
 - A well-defined lifecycle : 4 years min, 8, 12 max
 - Management autonomy
 - Their task is twofold: sciences & transfer
 - A partner in essence

INRIA

- Scientific activities
 - 3,429 SCIENTISTS, including
 - 1,375 researchers and research-lecturers
 - 1,273 PhD students and 262 post-doctoral researchers
 - 519 contract workers
 - 171 RESEARCH PROJECT-TEAMS
 - 4,850 scientific publications
 - 271 ACTIVE PATENTS
 - 111 SOFTWARE APPLICATIONS registered
- Human Resources :
 - 4,290 members of staff including 3,429 scientists.
- Budget :
 - Total budget: €252 m before tax
 - Proportion self-financed: 26%

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Funding

- **Gouvernement**
 - Ministry, CNRS, INRIA, ...
 - French Agency : **ANR**
 - Region
 - University
- **Industry**
- **Charitable organisations**
- **Future** : IDEX, LABEX, ‘Investissement d’avenir’, ...
- **Europe**

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Research Animation

- French conferences
- French working group
 - Ex: Lattice working group
- Seminars
- School on specific topic

Research Animation

CNRS National research groups :

- GDR 3002 "Recherche Opérationnelle (RO)"
- GDR 3003 "Bio-informatique moléculaire (BIM)"
- GDR 673 "Informatique mathématique (IM)"
- GDR 720 "Information, Signal, Images, Vision (ISIS)"
- GDR 722 "Information, Interaction, Intelligence (I3)"
- GDR 725 "Architecture, Systèmes, Réseaux (ASR)"
- GDR 3000 "Informatique Graphique (IG)"
- GDR 3168 "Génie de Programmation et du Logiciel (GPL)"
- GDR 2340 "Méthodes et Applications pour la Géomatique et l'Information Spatiale (MAGIS)"

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Evaluation

- National Agency : **AERES**
 - <http://www.aeres-evaluation.com/>
- As an *independent administrative authority* set up in 2007, the AERES is tasked with:
 - **evaluating** research and higher education institutions, research organisations, research units, higher education programmes and degrees
 - and **approving** their **staff evaluation procedures**.
- Access reports of institutions, research units, doctoral schools and programmes & degrees

Evaluation

- Professor in Universities
 - National Council : **CNU**
 - <http://www.cpcnu.fr/accueil.htm>
 - Manage qualification, recruitment and career
 - Composed of groups divided into sections. Each section is a discipline. There 77 disciplines :
 - Groupe 5 : Sciences (5, 6, 7, 8, 9, 10)
 - Groupe 5a :
 - » Section 25 : Mathematics
 - » Section 26 : Applied Mathematics and Applications of Mathematics
 - Groupe 5b:
 - » Section 27 : Computer Science **‘Biggest one’**

Evaluation

- Researchers in CNRS and INRIA
 - Organization commission :
 - CNRS : <http://www.cnrs.fr/comitenational/english/accueil.htm>
 - Composed of groups divided into sections.
 - » CNRS : 40 sections and 5 others (multidisciplinary)
 - INRIA :
 - Evaluation committee : (internal)
<http://www.inria.fr/en/institute/organisation/committees/evaluation-committee>
 - Visiting committee : (external, independent, mostly foreign researchers)
<http://www.inria.fr/en/institute/organisation/committees/visiting-committee>
 - Manage recruitment and career