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Recent evolution in the organization of CNRS; increasing impact of public research in the society of innovation

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CNRS – FLAG SHIP OF THE FRENCH RESEARCH SYSTEM

- CNRS is a **scientific and technological public organization** under the responsibility of the French Ministry of Higher Education and Research
- The largest fundamental research organization in Europe
- Coordinating, evaluating and **performing fundamental research** in France
- Advancement of knowledge having economic social or cultural impact
- Specific commitments
 - I Strengthening interdisciplinarity
 - I Important means dedicated to very large-scale research infrastructure
 - I Key commitment in the setting up of a European research area
 - I Active international policy



CNRS – EVOLUTION OF THE GOVERNANCE

- *Up to the end of 2009*: the CNRS is headed by a « **tandem - duo** »
President
Director general
(named both by the Government, four year terms once renewable,):
- **President** - defining strategy, general policy and relationship with universities, industry and foreign partners (since 1990 – 4 Presidents)
- **Director general** - assuring scientific, administrative and financial functioning (since 1990 – 6 Directors)
- *Starting 2010* CNRS is headed by a « **triangle** » led by the **President** – named by the government (4 years once renewable)
- President (Alain Fuchs) is assisted by: the **Chief scientific Officer**
the **Chief Officer for resources**



CNRS - REPRESENTED IN ALL FIELDS OF KNOWLEDGE



- **CNRS covers all scientific disciplines**

mathematics

physics

nuclear and particle physics

information technology

chemistry

biology

earth and space sciences

ecology and environment

engineering

human and social sciences

- It carries out research in all fields of knowledge through **10 thematic institutes** (*3 being national coordinators*)



CNRS - RESOURCES AND RESULTS

- **Employs 34 000** persons including **25 600** permanent personnel, (**11 400** researchers and **14 200** engineers, technicians and administrative staff at the service of research)
- 2010 Budget: **3.1** billion euros, including **2.5** billion euros in govnr.subsidies and **0.6** billion euros in CNRS-generated income
- **1 100** research units
- **90% of research** is performed in partnership with universities, national, European and international research institutes as well as private companies within **joint research units**
- additional **34 000** permanent personnel persons working in joint research units (including **25 000** university teachers-researchers)
- **25,500** publications each year in average in refenced international journals, of which half are published jointly with collaborators outside France



CNRS - AN IMPORTANT ACTOR IN ECONOMIC LIFE AND IN THE SOCIETY OF INNOVATION

Opening up towards industrial actors after 1970

Establishment of the Dep. of Engineering Sciences (1975)

First frame agreement signed with Rhone-Poulenc (1975), setting up a possibility to establish joint units with industrial partners

CNRS develops today fruitful relationships with the industry, helps laboratories to enhance their research and transfers technology to the business world

- **25** framework agreements with major industrial groups
- **4382** main patents at the end of 2010,
out of which **432** new patents filed in 2010,
- **864** active licences (bringing over 50 millions euros per year)
- **about 1,700** industrial contracts concluded with companies every year
- **593** innovative companies set up since 1999 (over 200 active in 2010)



Tools for increasing industrial and innovation impact of CNRS (1)

Directorate of innovation and relations with entreprises

Former Directorate of industrial policy

transferring scientific results in practice: contracting, patents, licences, marketing, innovation, incubators, spin off companies

Consisting of 2 structures

FIST SA (France Innovation scientifique et transfert) *started in 1992*

filiale of CNRS and OSEO (Innovation) having a private status (45 experts)

- patenting, licensing, technological operations, capital transfer

Network of partnership services

persons working in the Regional Delegations (20)

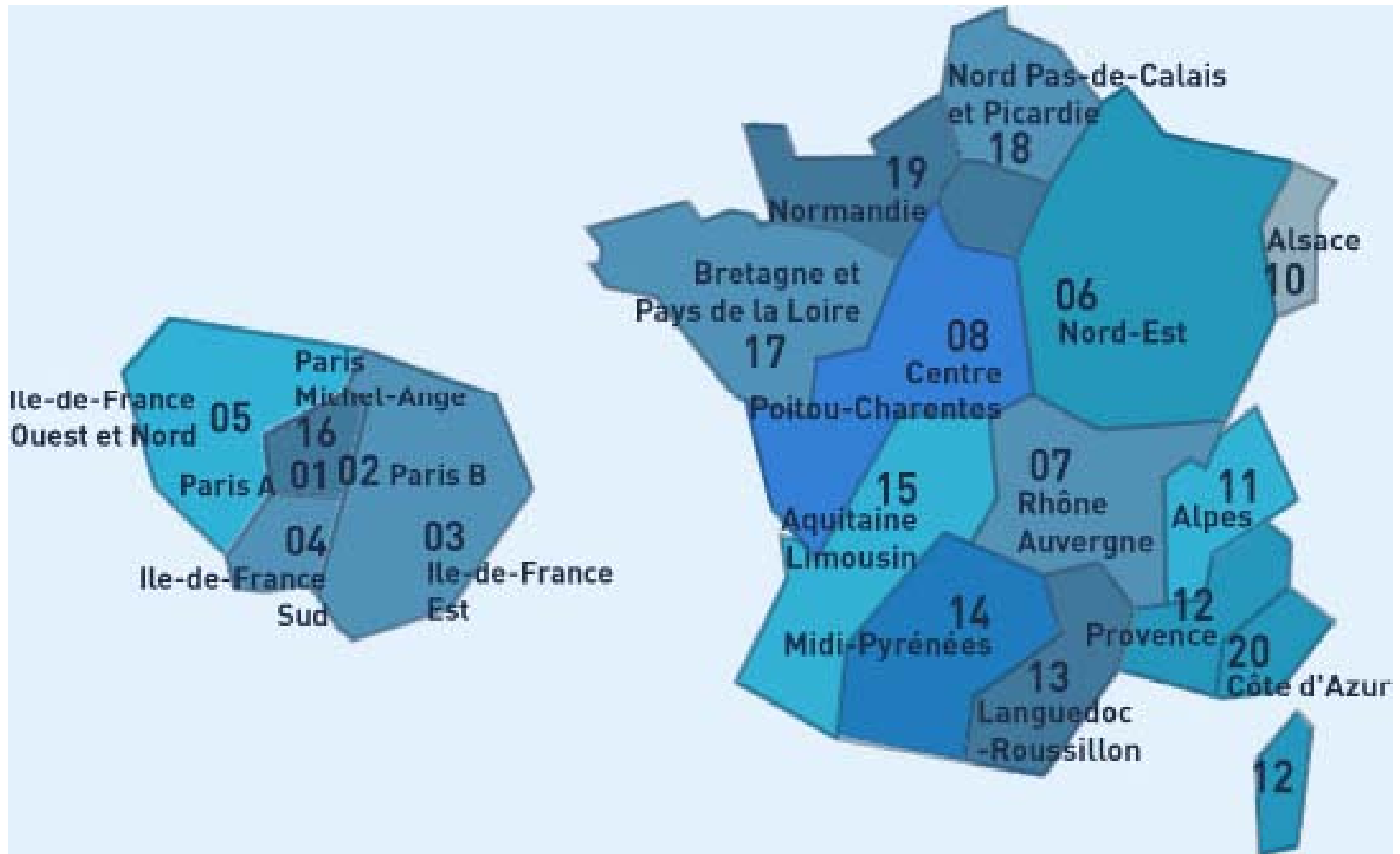
- advising and assisting researchers in contracting activities
- detecting and following activities having technological and patenting potential

Tools for facilitation collaborations between SME and public research

- **repertory of competences** in CNRS laboratories
- **School of innovation**: initialing contacts between SME and researchers detecting and following activities having technological potential



CNRS Administrative Regions





Tools for increasing industrial and innovation impact of CNRS (2)

FIST SA (France Innovation scientifique et transfert)

Services :

- Defining strategy for commercializing a technology and questions of intellectual property
- Identify potential users and negotiating contracts
- Optimising management of patents and licenses.

Realizing in 2010:

- Commercialization of 1500 technologies in all scientific disciplines
- Analyzing 300 new technologies par year
- Management of 3200 priority patents.
- Following 800 exploitation licenses
- Negotiation of 100 new exploitation licenses per year.



Example of a mixed unit with industry
Laboratory of solid state physics UMR 137
(CNRS / University Paris 11 Orsay / group THALES)

Partnership between CNRS, one of the best French Universities and high-technology group THALES specialised in communications

Researchers: 11 CNRS, 5 University, 7 Thalers,
Engineers / technicians 9 CNRS, 2 Thales,
Non-permanent staffers 12

Application of spintronics and nanomagnetism (following discovery of the giant magnetoresistance) in the development of the magnetic memories used in telecommunication

**This unit was cofounded in 1995 by the French physicist
Albert FERT (Nobel price winner for physics in 2007)**



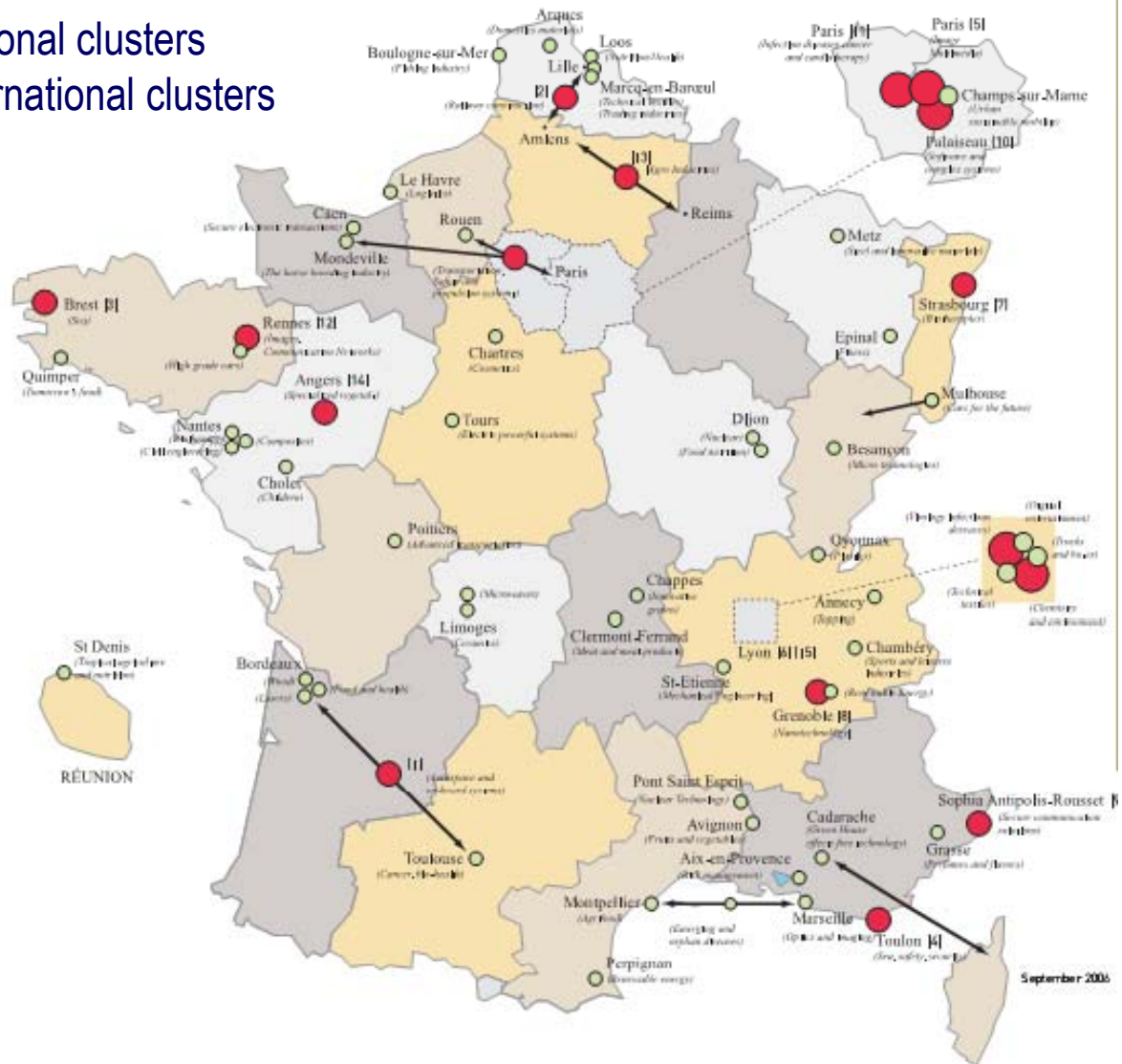
Governmental tool: COMPETITIVENESS CLUSTERS

- Competitiveness cluster: an association within a given geographic area of 3 kinds of players: **Industry/Higher Education/Research**
 - | **71** clusters since 2007 (**CNRS involved in 62**)
 - | **7** global (internationally competitive)
 - | **10** internationally – oriented
 - | **54** national
- Financial support from government **1,5 billions € (2006 –2008)**
(under authority of the Min. of economy) **1,5 billions € (2009-2013)**
- **5,000** companies, predominantly high tech industries
- **4,600** SMEs involved into clusters; ~77 SMEs / cluster
 - | on average SMEs receive 1/3 of national & regional financial support
- **1 out-of-6** employee in industry (11%: **640,000 people**) in a cluster
 - | in some regions (Franche Comté, Alsace) over 25% of industry workforce
- **15 000** researchers involved



MAP OF COMPETITIVENESS CLUSTERS

- National clusters
- International clusters



www.competitivite.gouv.fr



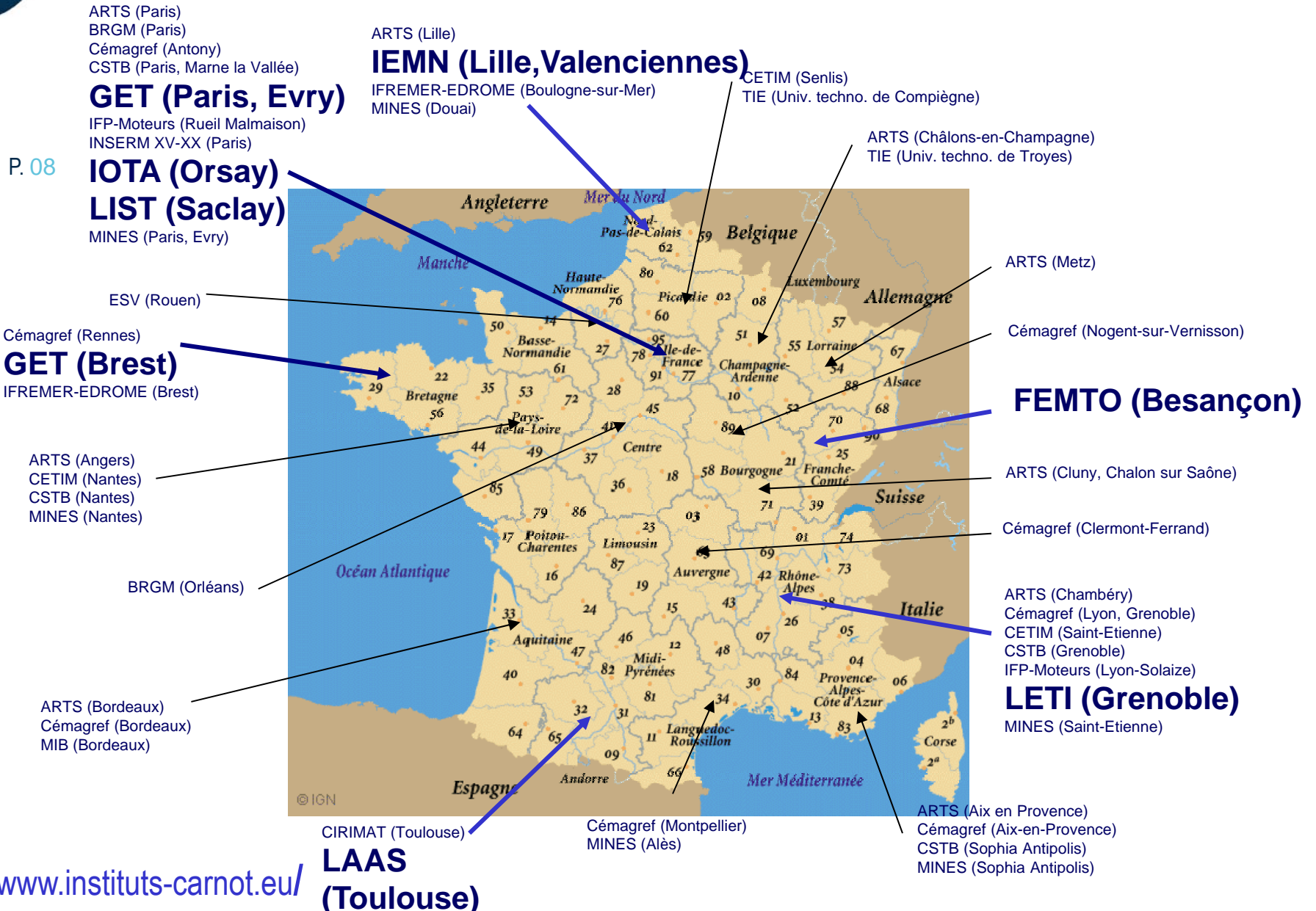
Governmental tool: CARNOT INSTITUTES



- **Since 2006** created **34** structures (**CNRS involved in 21**)
- Designed to reinforce innovation through technological research (public-private cooperations)
- CARNOT objective is to help public research expertise to fit better with economical partners needs – **market oriented vision**
- Carnot Institutes gather **17 000** persons involved in research activities (16% from the public research sector)
- **1,5** Billion Euros annual consolidated budget
- 238 Million Euros contracts receipts with the companies



LOCALIZATION OF THE FIRST 20 CARNOT INSTITUTES





Medals of innovation at CNRS

First three laureates selected in 2011:

- **economy for combating poverty**
- **wave physics for applied to medical diagnostics**
- **robotics for industry**

<http://www.cnrs.fr/fr/pdf/medailles/innovation2011.pdf>



Thank you for your attention