

# Networks and Clusters: initiatives for a knowledge based economy in France

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# Research in France

- **GNP** : 1463 billion euros  
R&D budget: 32,5 billion euros  
R&D : 2,2 % of GNP (2,9 % in Japan)
- **Public research** : 165 establishments of higher education of which 85 universities, about 60 research institutions, 320 000 research personnel (of which 56% in companies).
- **Companies** : participate at the level of 54 % in public research expenses (compared with 66 % in other countries)  
In 2000, more than 5000 companies and industrial technology centers have carried out R&D.

# Innovation

- “ Innovation is to create value out of new knowledge”
- “ Research and innovation are two fundamental levers because they favour economic growth, employment creation and social progress in the interest of all ”

**(Claudie HAIGNERE : Press Conférence - Innovation Plan**

**11 December, 2002)**

# The Law on innovation and research

## .The Law on innovation and research of 12 July 1999 : measures aiming at

- - Allowing researchers to create a company on the basis of their own research or to be associated with (company decision making)
- - Developing partnerships between public research and industry

**An observation, an objective** : in France R&D = 2,2 % of GNP, according to the European Council decision it has to reach 3% before 2010 = that means industry must increase its share

**2002 – 2003 an innovation plan, a new law debated this Spring.**

# National and regional initiatives

- **A national policy**

Characterized by the creation of thematic partnership networks between public research and industry, by the synergy of means and the emergence of large clusters of competence.

- **Regional support**

Regional clusters are supported by local authorities in the framework of State-Region 6 years Programs.

- **A European ambition**

Facilitate the access of French research to the 6th framework European R&D programme.

# Two complementary approaches

- **1- Spread innovation** in SMEs and promote the creation of start ups as a result of public research.
- **2 - Structure research** according to big priority areas with the help of national networks and regionally located competence clusters associating private and public partners.

# Spread innovation in SMEs support structures

## In each Region

- Shared technological facilities:
  - **Plates Formes Technologiques**
- Regional Centers of Innovation and Technology (**CRITT**) and Centers for technological resources (**CRT**)
- Coordinated by Technological development networks (**ANVAR** French Agency of Innovation, Region, DRRT)

# Spread innovation in SMEs

## Incentive measures to create start-up

- **Start-up creation Prize** (each year since 1999 – State support : 76.22 M €)
- Support to **start-up “ public ” incubators : 31 created** (at least one in each Region) - State support : 24.64 M € for 3 years (x2 Terr.Coll)

**Results from 1999 to 2002 :**

**.creation of 850 start ups and 3 150 jobs**

- **10 seed funds**, among which 7 are regional funds (State : 23 M €)



# Structure research

## Private and public partnerships

### From a national to a regional level

- **National Technological Research and Innovation Networks (RRIT)** on priority fields
- **National Centers of Technological Research (CNRT)** regionally located
- **networks of local centers**

### Case studies in two R&D domains :

#### ITC and Life sciences

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# Technological Research and Innovation Networks (RRIT)

## A national initiative

- to merge research teams from the public and the private sectors
- on mainstream S&T themes (ITC, life sciences, energy-transport, environment, space and aeronautics..)
- in response to strong demands from economic world
- Year calls for proposals with priorities.

From 1998 to 2002 :

**16 networks created, more than 700 projects selected**

# RRIT: 16 Technological Research and Innovation Networks

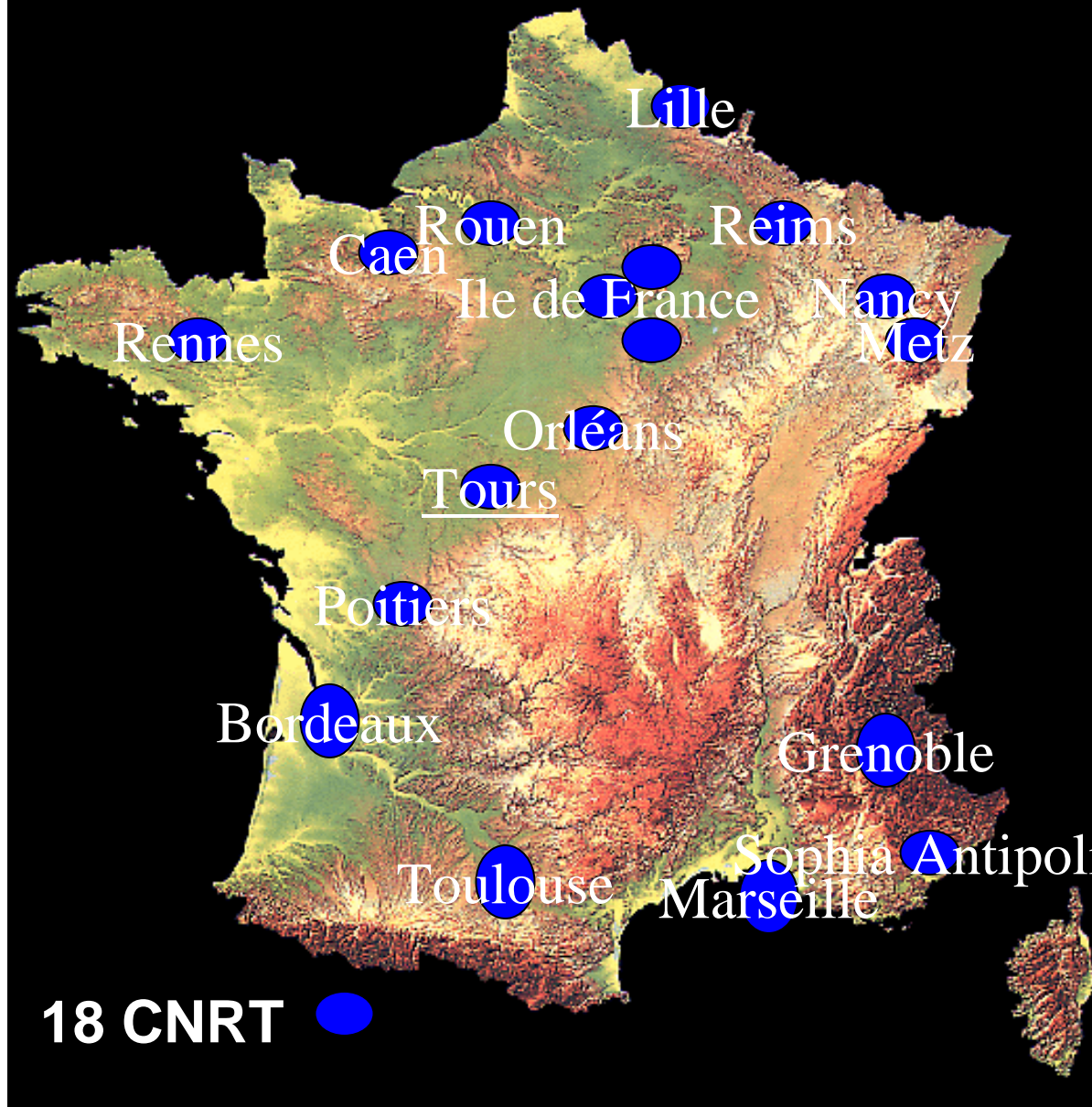
- **Information Technologies and Communication (TIC)**
  - **RNRT (1998):**  
**Telecommunications**
  - **RMNT (1999):**  
**Micro/nanotechnologies**
  - **RNTL (2000):**  
**Software Engineering**
  - **RIAM (2001):**  
**Audiovisual/Multimedia**
- **Bio-engineering:**
  - **Géno plante (1999)**
  - **Genhomme (2000)**
  - **RNTS (2000):**  
**Healthcare Technologies**
  - **RARE (2001):**  
**Alimentation**

# RRIT: 16 Technological Research and Innovation Networks

- **Energy, environment, transports, resources...:**
  - **PREDIT (1996):**  
Transports
  - **PACo (1999):** Fuel Cells
  - **Civil and Urban Engineering (1999)**
  - **RNMP (2000):** Materials
  - **RITEAU (2000):**  
Water and Environment
  - **RITMER (2001):**  
Accidental marine  
Pollutions
- **Space and aeronautics:**
  - **RTE (2000):**  
Earth and Space
  - **RaéS (2000):**  
Aerospace Research on  
the Future Supersonic

# The National Centers of Technological Research (CNRT)

- **Center** : a local “ nucleus ” associating industrial partner(s) and public research, complemented by a national network of labs
- **National** : a national quality stamp (label)  
State and Regional funding within the State-Region Framework program
- **Technological Research** :
  - Research : partly “ academic ” and oriented towards publication, partly applied and oriented towards patents
  - Technological : research priorities are chosen by the industrial partner(s)



# Networks and centers

## 1 in Life sciences

- RRIT Genhomme
- Evry Genopole (CNRT)
- Network of genopoles (genomics clusters)

## 2 in information technologies

- RRIT : telecommunication (RNRT)
- CNRT of Tours
- Network of Major Technological Platforms in micro and nanotechnologies

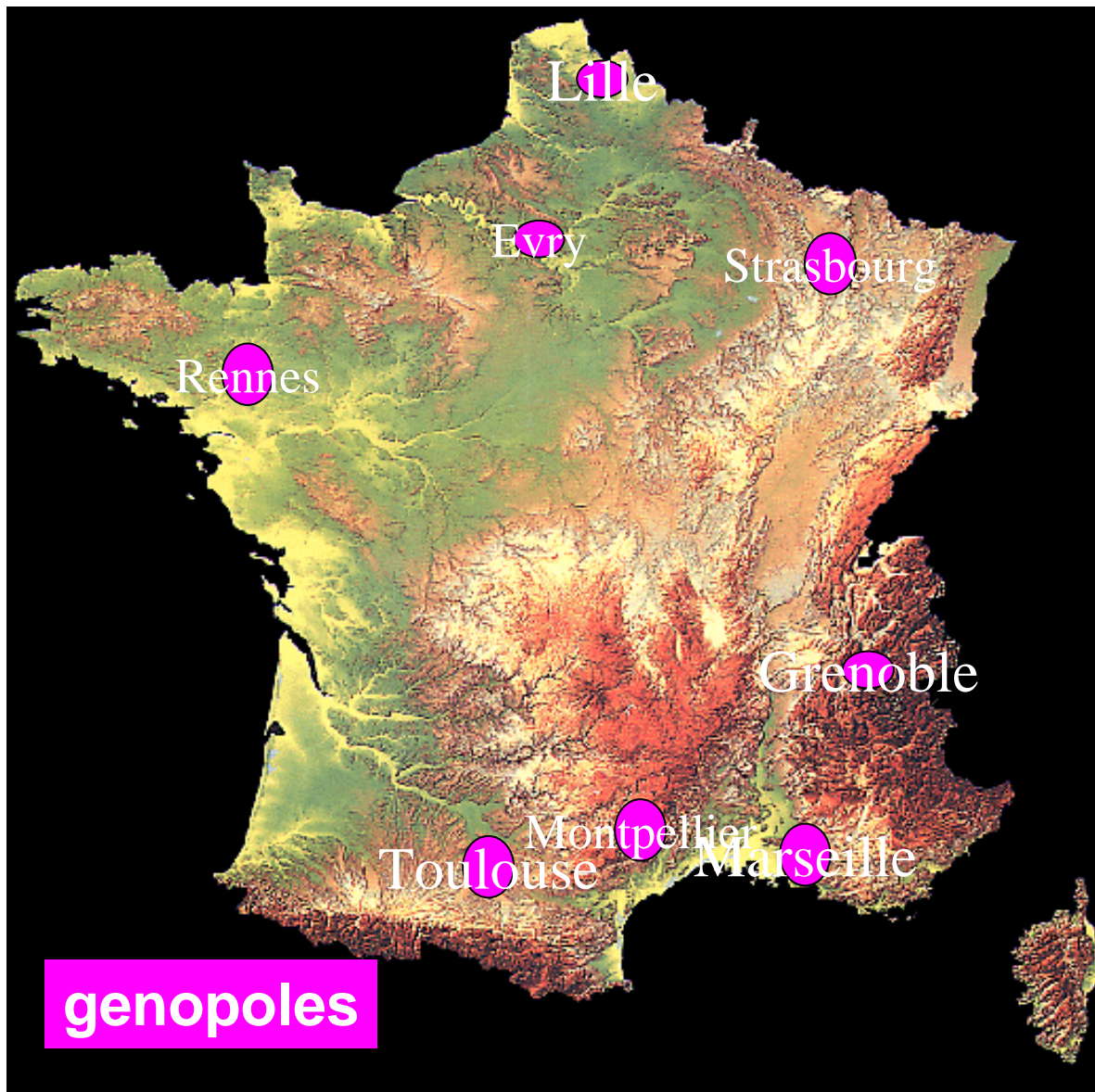
# Genhomme Network

- Created in June 2000
- A public and private partnership : 93 members
- A Scientific Council chaired by the Director of the Lille Genopole and an Orientation Council chaired by the CEO of a private company
- 300 millions euros over 5 years (State/Private 50%)
- To date : 78 projects labelled
- related to Genomic infrastructures : national genomic platforms in Evry, the network of Genopoles



# National Network of Genome Centres (regional genopoles)

- Part of a **National Genomic Program**
  - a national call for grants for the construction of a limited number of genomic centres in France
  - each regional genopole consists in a scientific project, a university program, business development tools (support biotech companies)
  - 8 genopoles
  - State Funding : 1999 : 22 M €, 2000 : 15 M €, 2001 : 29 M €



# Evry Genopole

- A Biopark associating public and industrial research
- Supported by Private and Public Organizations (French government, territorial collectivities and AFM)
- Created in 1998
- 22 research labs
- 734 people

# Evry Genopole

- **A scientific campus** : National Sequencing and Genotyping centres, French centre for bio informatics, the Plant Genome Network (RRIT), Genethon lab
- Affiliations with national research institutions : CEA, CNRS, INRA, INSERM.
- **A University program** :
  - Undergraduate courses in life sciences
  - Doctoral program in genomic
  - High level management courses
  - Master program in bio informatics

# Evry Genopole

## Genopole enterprises

- A business incubator dedicated to biotechnology
- Genopole pre-seed Capital fund (1.2 M €, 15 private investors)
- Results in 4 years : 40 biotech companies

## Genopole Europe

- Participation in the 5<sup>th</sup> and 6<sup>th</sup> FPRTD
- Consortium with European bioparks (UK, Germany, Italy) : toolbox of the best practices for creating a biopark

# information technologies

## three examples:

The National technological research network on telecommunications (RNRT)

The National Center of Technological Research of TOURS

The network of major Technological Platforms in micro and nano technologies

# The National Network for Research in Telecommunications (RNRT)

## RNRT is a network

It supports the animation of the scientific and technical telecom community through :

- thematic calls for proposals
- working groups and reports on trends and issues in the domain
- thematic workshops
- an annual meeting (with lectures and posters sessions)

# The National Network for Research in Telecommunications (RNRT)

- RNRT issues yearly calls for proposals with priorities
- RNRT supports three types of projects : precompetitive, exploratory, test-beds
- All projects must identify scientific, technological and business perspectives
- Public funding is granted by Ministries in charge of Research and Industry



# The National Network for Research in Telecommunications (RNRT)

- **200 projects have been labelled in 5 years**,
  - 390 M € R&D programs, 194 M € public funding
  - more than 2700 man.year involved over 5 years
  - about 40 telcos and manufacturers, more than 100 public labs and 120 SMEs
  - New actors keep joining the network
- **Project results are very positive** (spin-offs, contributions to standards, publications, patents...)
  - Presently, 60 projects are carried out

# CNRT of Tours

## Power microelectronics

- **A Centre : located in Tours (Pays de Loire)**
  - Industrial partner : ST Microelectronics Tours (1500 people)
  - Academic partners : François Rabelais University of Tours, National Center for scientific research (CNRS) and Atomic Energy Commission (CEA) laboratories located in Tours
- **...and a National network of 13 public laboratories** (CEA, CNRS, Universities) located in Grenoble, Strasbourg, Toulouse, Rennes, Marseille, Limoges, Orléans

# CNRT of Tours

## Power microelectronics

- an agreement signed between the University of Tours, the CEA and ST Microelectronics
- Staff : 50 people in Tours, 30 elsewhere
- A director, a Scientific Council, a Steering Committee
- A technological platform with 100 clean rooms dedicated to research
- Budget : 31 M € (State, Region, Department, City of Tours : 25% each + ST Microelectronics : 68%)

# Network of Major Technological Platforms on micro and nano technologies

- Creation of a national network of regional Major Technological Platforms,
- complementary and competitive on an international level
- to develop most advanced and integrated processes in micro nano-technologies.

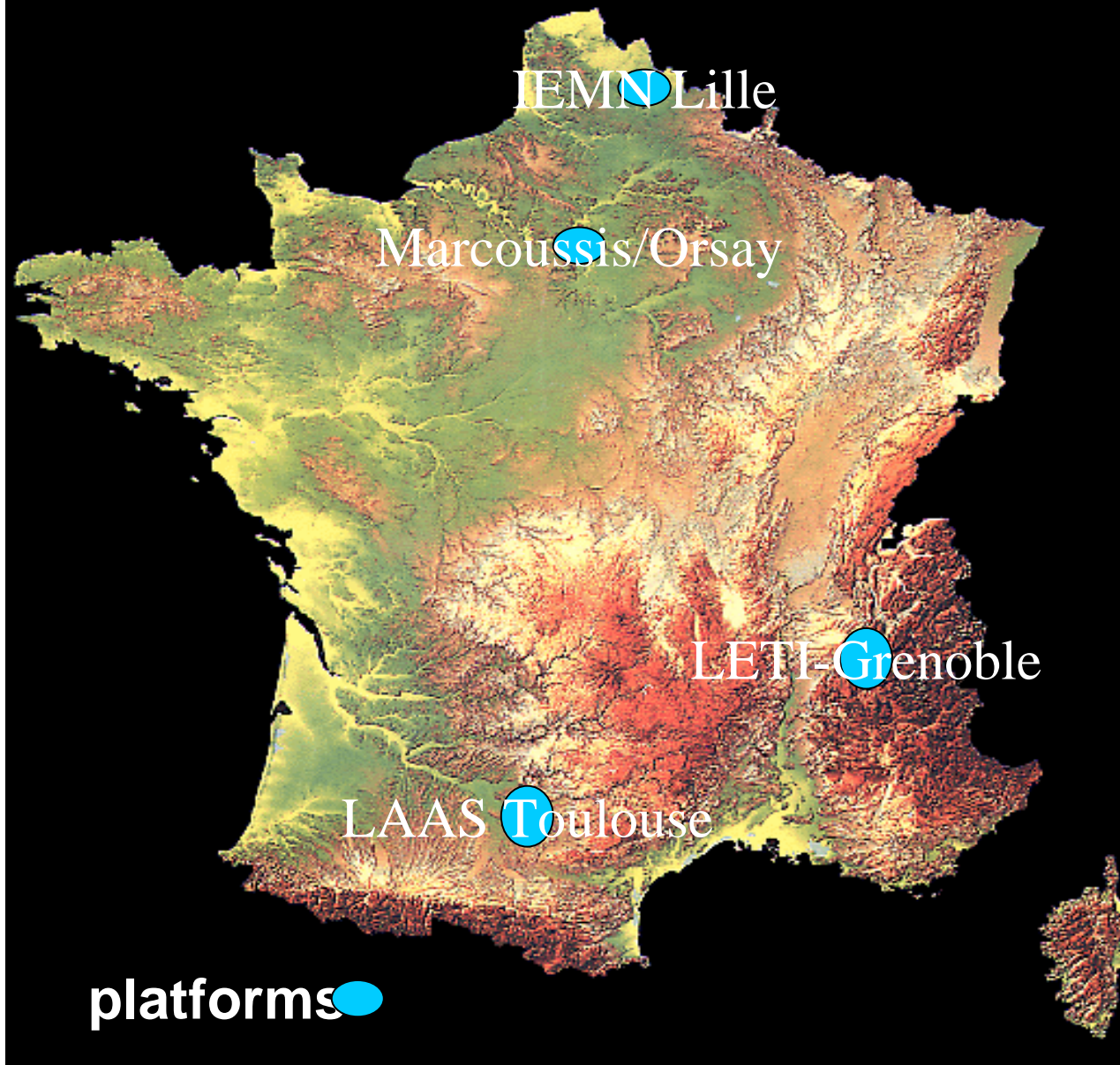
# Network of Major Technological Platforms on micro and nano technologies

## Four regional Major Technological Platforms

- PLATO of LETI-CEA in **Grenoble**, in the core of MINATEC Project.
- Platform of LAAS in **Toulouse**
- Platform of IEMN in **Lille**
- one platform on two sites in **Ile-de-France** : the Laboratory of Photonics and Nanotechnologies in Marcoussis and the Institute of Fundamental Electronics in Orsay (in the core of « Minerve + » Project).

# Network of Major Technological Platforms on micro and nano technologies

- One steering Committee in each cluster
- One national coordination committee
- One evaluation committee ( national and foreign experts from academic and industry sector )





1 : Smart devices building (BOC) => [click to enlarge](#)

2 : Advanced components building (BCA), CEA laboratories => [click to enlarge](#)

3 : Advanced components building (BCA), INP Grenoble laboratories => [click to enlarge](#)

4 : High technology building (BHT) => [click to enlarge](#)

5 : Maison des Micro et Nanotechnologies (MMNT) => [click to enlarge](#)

6 : INP Grenoble building (engineering school) => [click to enlarge](#)

7 : Existing CEA-Leti laboratoires => [click to enlarge](#)



# Minatec

[www.minatec.com](http://www.minatec.com)

- **Grenoble-Isère** : 17 000 jobs in scientific and academic research, 200 laboratories and five international research centers, 53 000 students and 10 engineering schools
- **a powerful local microelectronics industry**, comprising 13 350 workers (including 3 000 in research), 30 international corporations, and 20 high-potential start-ups launched in the last five years
- **Crolles** : Alliance between three industrial groups : ST Microelectronics, Philips and Motorola
- **decisive support of local authorities.**

# Minatec

All the elements of innovation on one site :

## TRAINING

INPG

## RESEARCH

CEA, CNRS, Universities

## COORDINATION

The House of Micro and Nanotechnologies

(resource center : links with RMNT, CNRT, European networks)

## INDUSTRIAL VALORISATION

# Sophia Antipolis technopole

[www.sophia-antipolis.net](http://www.sophia-antipolis.net)

**Scientific Park** : 2300 ha 24 550 jobs 148 companies

## Higher education and research

4 000 researchers in more than 50 institutions (CNRS, INRA, INRIA, INSERM..)

5 000 students (UNSA, ENSMP, ESIEE, ESSI, Eurecom Institute, EAI Tech..)

**Support of PACA Region, Alpes Maritimes Department, State**

# Sophia Antipolis technopole

## Three domains

- Health sciences
- Geosciences
- Computer sciences, electronics, networks and communication

**CNRT Telius** (research on ITC uses)

A large project in 2004 : creation of a Campus on information sciences and technologies (PACA Region/State)



# New French Plan for innovation

- **reinforce private companies' participation in R&D** (eg : better fiscal conditions for start ups ..)
- **increase market-orientation and valorisation of public research investments** (eg : evaluation chart , technology transfer best practices, promote business culture in universities..)
- **promote French participation in European Research Space** (eg : European cooperation between networks, Community Patent)