Knowledge Society Agency Mission

To coordinate information society policies and its mobilization through research, qualification and awareness activities

To promote emerging technologies such as ICT and Nanotechnology

To develop and fund e-Science

UMIC
Knowledge Society Agency

MINISTRY OF SCIENCE, TECHNOLOGY AND HIGHER EDUCATION

Forum for the Information Society Multistakeholders Interaction

Building on the pioneering experience of the multistakeholder Preparation of the 1997 Green Book for the Information Society

Sessions in 2010:

- ➔ Future Internet
- ➔ Internet Governance
- ➔ Digital Economy
- ➔ Accessibility

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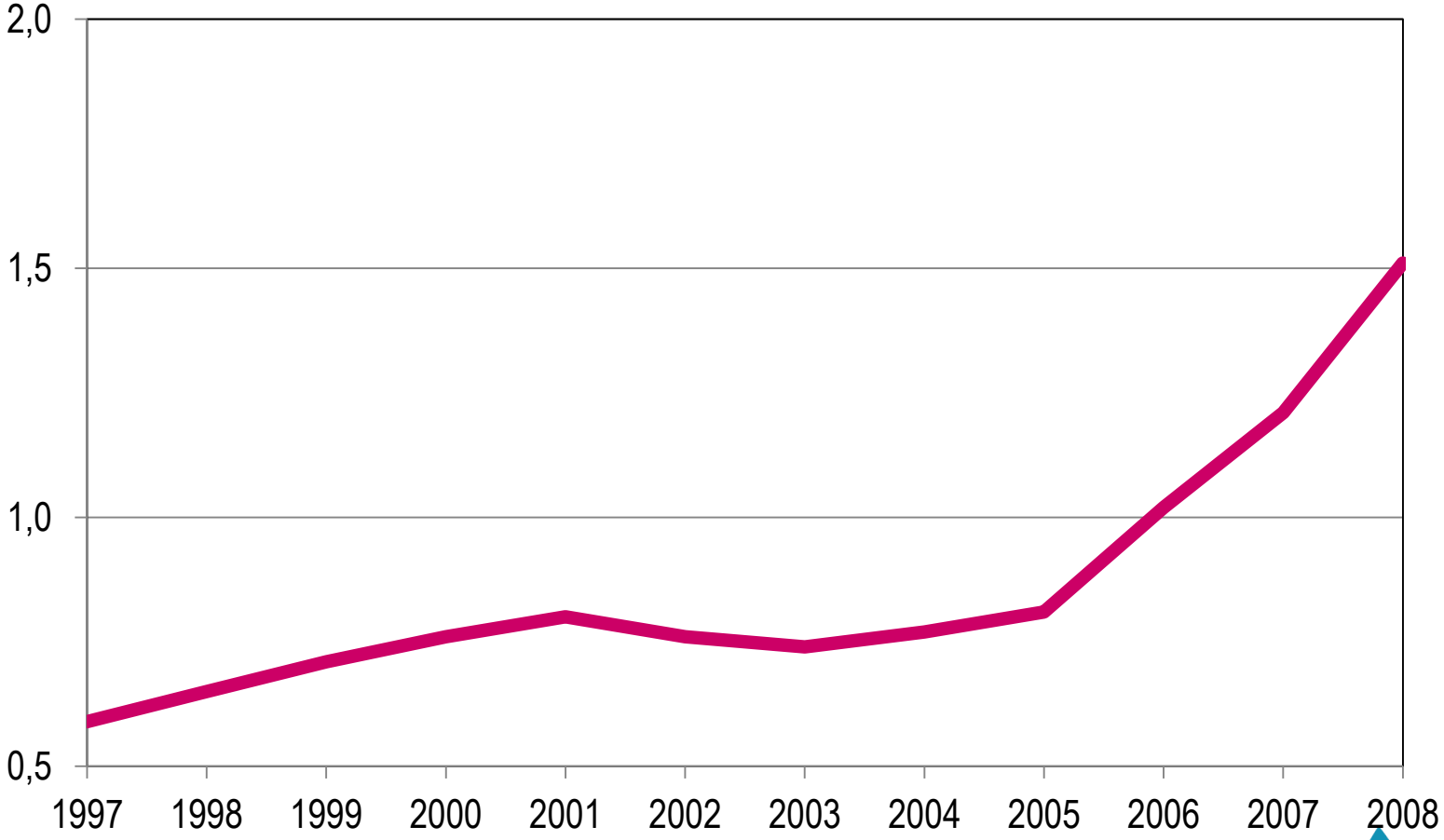
Context of High S&T Growth in Portugal

Investment in R&D

Evolution of R&D Expense in GNP (%), in Portugal



Source: EUROSTAT

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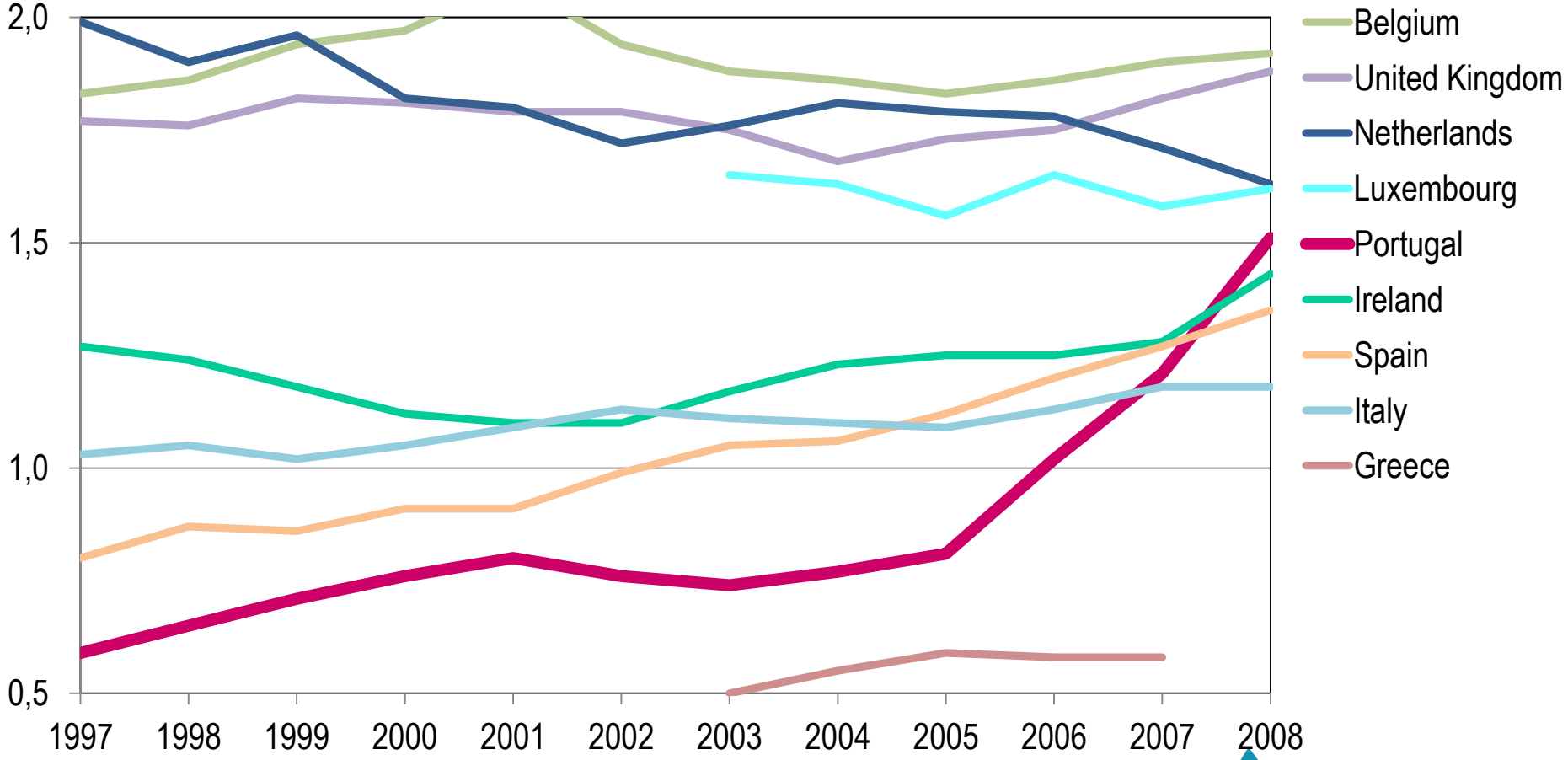
Evolution of R&D Expense in GNP (%), in Portugal

Highest average growth (23%) of UE27 (total=1,4%) in 2005-2008



Source: EUROSTAT

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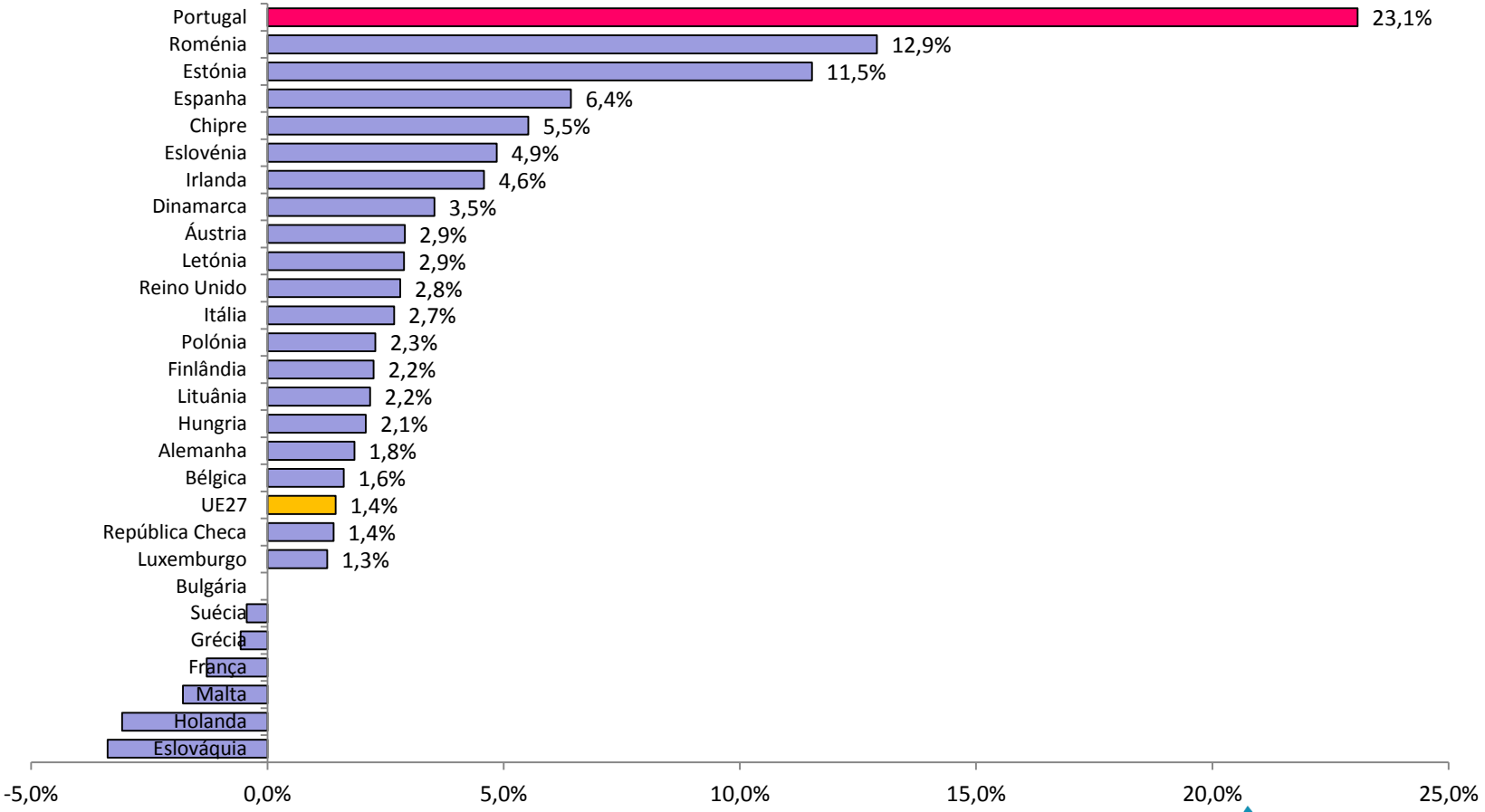
Annual Average Growth of % of R&D Expense in GNP, 2005-2008



Source: EUROSTAT

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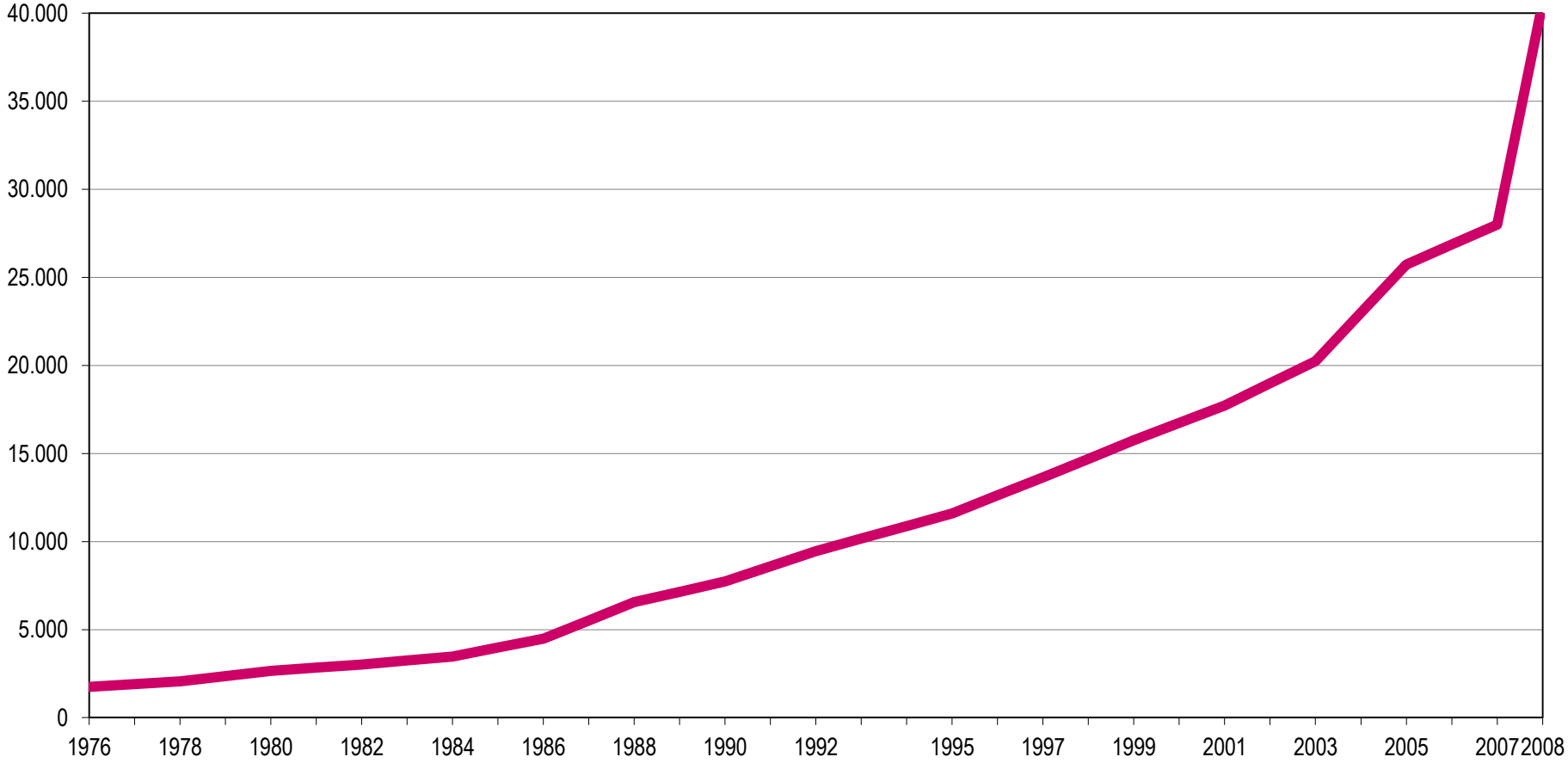
Context of High S&T Growth in Portugal

Investment in People

High Growth in Researchers (FTE)



Source: EUROSTAT

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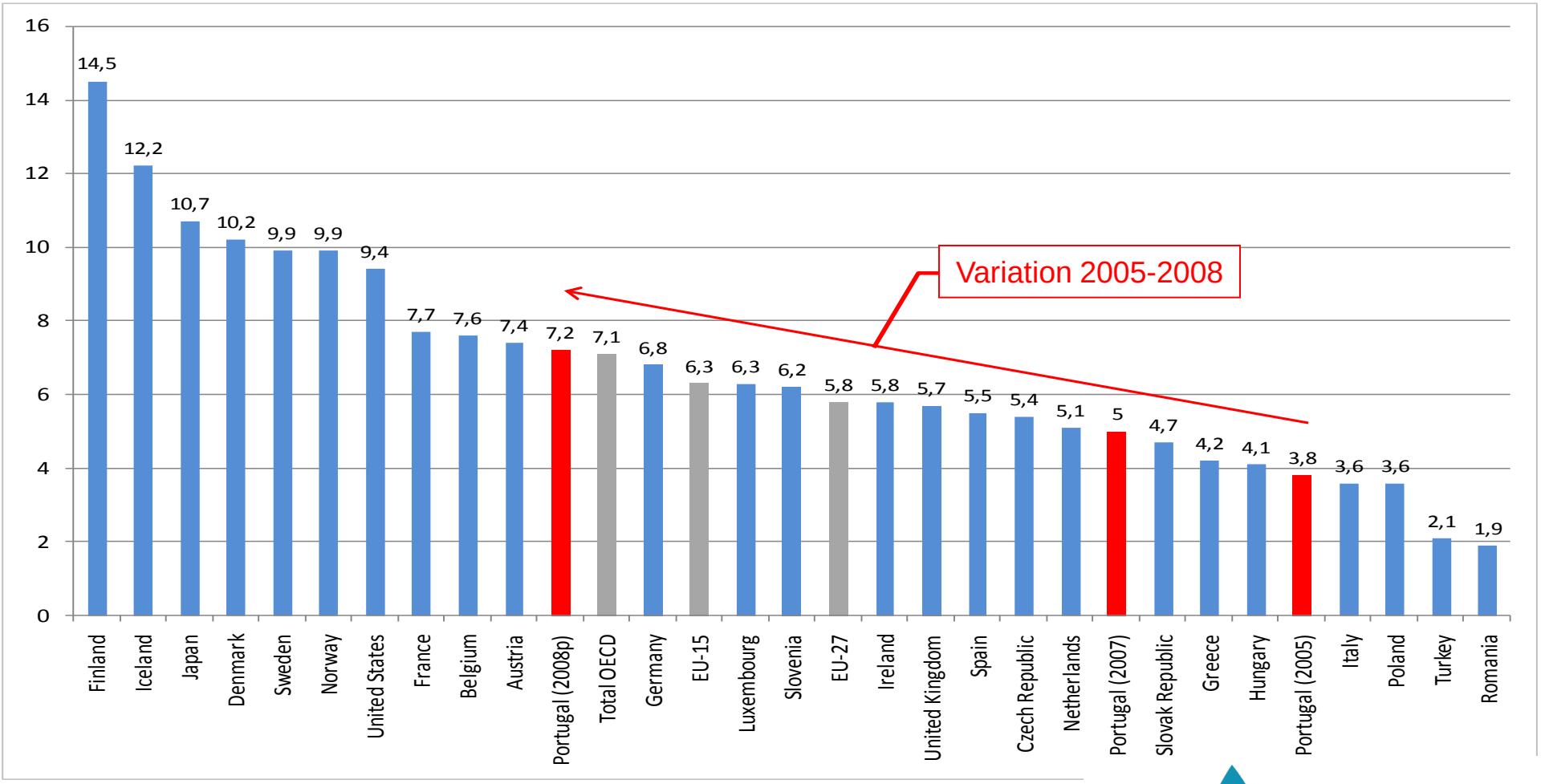
High Growth in Researchers (‰ labor force)



Note: Except for Portugal data are for 2007
Source: OECD

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In this Context of High S&T Growth

Strong National e-Science Strategy

Infrastructure

Content

Distributed Computing

Cooperative Work at a Distance

National e-Science Strategy

- **National Research and Education Network** as a public NGN, presently with fiber owned by the NREN to 85% of Higher Education System, at 10 Gbps and scalable
- **b-on: Knowledge Library Online** planned in 1999, with 17,100 scientific journals, 18,200 e-books, 12,400 proceedings and transactions titles, 10 referential data bases, free access in all Higher Education and Scientific Institutions, *"big deal"* at national scale
- **e-U: Virtual Campus** wireless access integrating all Higher Education *campi*
- **RCAAP: Scientific Open Access Repository of Portugal,** presently with 29 institutions, incl. all 14 public universities, and >46,600 documents, protocol w/ Brazil
- **INGRID: National GRID Initiative** (1,800 CPUs, 1 PetaByte of disc memory, 2 PetaBytes of magnetic tape robot memory), integrated w/ Spanish GRID (IBERGRID), and part of EGI – European grid Initiative
- **IBERCIVIS: Voluntary Computing at the service of science** jointly w/ Spain
- **Tools for collaborative work at a distance**
  HD Videoconferencing and immersive rooms ● VoIP for all Higher Education and Scientific System, allowing simple collaborative video- and tele- conferencing ● National platform for scientific and educational digital content being developed for Medicine and Future Internet, to be further extended.

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International Knowledge Networks

Priority to ICT, particularly Future Internet

International Partnerships

Building Ambitious International Knowledge Networks

involving research, industry and university

MIT – Portugal Program (beginning 11 Oct 2006)
Engineering Systems: Sustainable energy and transportation systems ● Advanced engineering design and manufacturing in electric car and mobile medical applications

Carnegie Mellon – Portugal Program (beginning 27 Oct 2006)
Future Internet Technologies: Next Generation Networks and trusted high-quality services ● Critical infrastructures security and trust ● Cyber-physical systems for ambient intelligence ● Human-centric computing ● Software engineering for large-scale dependable systems

UTexas Austin – Portugal Program (beginning 2 Mar 2007)
Interactive Digital Content, High Performance Computing

Fraunhofer – Portugal Program (beginning May 2008)
Ambient Assisted Living. The 1st Fraunhofer Institute outside Germany

National Thematic Networks

Bringing together research, industry and university

- Electrical Mobility
- Smart Energy
- Sustainable Cities
- Future Internet Technologies
- Security and Critical Infrastructures Protection
- Services and Technologies for Interactive Media

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INL – International Iberian Nanotechnology Laboratory

International research organization (1st in Iberian Peninsula in any area, 1st in World explicitly dedicated to Nanotechnology).
Created jointly by Portugal and Spain in Nov 2005.
Building inaugurated in Jul 2009.

General Concept

200 researchers, 400 people. Scientific staff recruited worldwide.
Open to membership of other countries from any continent

Founding requisites:

- ➔ Assure world class research excellence in all areas of activity
- ➔ Develop partnerships with the industry and foster the transfer of knowledge into economic value and jobs
- ➔ Train researchers and contribute to the development of a skilled workforce for the nanotechnology industry
- ➔ Prevent and mitigate nanotechnology risks

"The ambition of both countries is to create a research site of world scale relevance, capable of attracting scientists and technicians from all points of the world"
José Mariano Gago, *Minister of Science, Technology and Higher Education, Portugal*

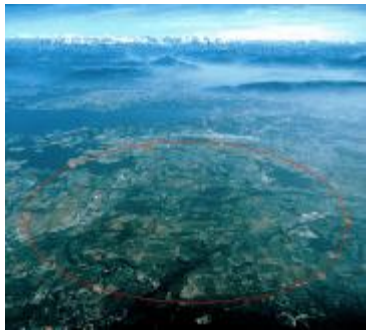
INL
INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY

Legal, Governance and Administrative Matters

Building on the Experience Obtained in Other International Laboratories

Legal Framework and Governance

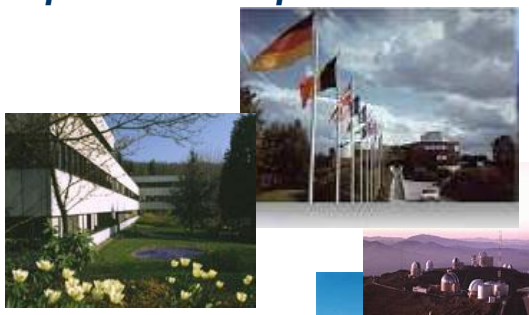
Jean-Marie Dufour, Professor at University of Geneva Law School, President of the Geneva International Academic Network, was a legal advisor of



CERN – *European Organization for Nuclear Research* at Geneva, Switzerland, founded in 1956,

and was involved in the creation of the main international research laboratories in Europe, namely:

ESO – *European Southern Observatory* with headquarters at Garching, Germany, where it also houses the joint *ESO/ESA European Coordination Facility for the Hubble Space Telescope* and with facilities also in the *La Silla Paranal Observatory* in Chile, created in 1962,



EMBL – *European Molecular Biology Laboratory* at Heildelberg, inaugurated in 1978,

ESRF – *European Synchrotron Radiation Facility* at Grenoble, France, created in 1988.

Administrative Issues

Helmut Krech, Head of Administration of the

ESRF – *European Synchrotron Radiation Facility* at Grenoble, France, which was created in 1988.

International Advisory Board

Knowledgeable and Credible Advice

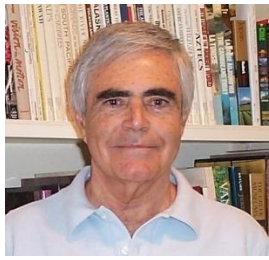
Roberto G.M. Caciuffo
Head Actinide Research, JRC, Institute for Transuranium Elements, Karlsruhe, Germany

Thomas Jovin
Head of Department of Molecular Biology, Max-Plank Institute for Biophysical Chemistry, Göttingen, Germany

Emilio Mendez
Prize *Príncipe de Asturias* of Scientific and Technical Research 1998, Department of Physics and Astronomy, SUNY at Stony Brook, NY, USA

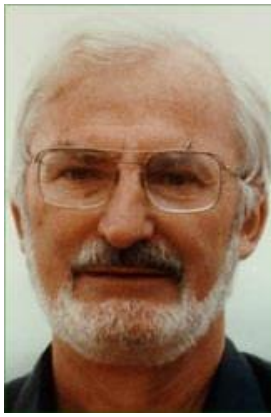
Christopher B. Murray
American Chemical Society's Nobel Laureate Signature Award in 1997, Manager, Nanoscale Materials and Devices, IBM, T.J. Watson Research Ctr., Yorktown Heights NY, USA

Aristides A. G. Requicha
Gordon Marshall Professor of Computer Science and Electrical Engineering, Director of the Laboratory for Molecular Robotics, USC, Los Angeles, USA



Mihail C. Roco
Carl Duisberg Award, Burgers Professorship Award, Engineer of the Year Award (1999, 2004), Chair of US NSTC Subcommittee on Nanoscale Science, Engineering and Technology, Coordinator of the NSF initiative Grant Opportunities for Academic Liaison with Industry, Senior Advisor for Nanotech-nology, NSF, Arlington, Virginia, USA

Heinrich Rohrer
Nobel Prize in Physics 1986 for the invention, with Gerd Binnig, of the Scanning Tunnelling Microscope while working at the IBM Zürich Research Laboratory, Wollerau, Switzerland



Conception and Development

Decided in Nov 2005 ● Conceptualized in 2006 ● Decision on site in Oct 2006 ● Convention w/ Statutes signed at Summit of Nov 2006 ● Treaty ratified by the parliaments in 2007 ● Basis of Design and preliminary construction project in 2007-08 ● Council, Director-General and Deputy Director-General appointed in May 2008 ● Construction started in Jul 2008 ● Inauguration of building in 17 Jul 2009 ● International recruitment of researchers initiated in Apr 2009 ● Beginning of research activities in house end 2010.

Scientific Areas: Nanomedicine (drug delivery, nanotechnology for diagnostics) ● Environmental Applications ● Food and Water Quality Control Applications ● Electronic Nanosystems (NEMS/MEMS, Spintronics, Photonics, Organic electronics) ● Nanomachines and Nanomanipulation ● Nanotechnology Safety and Impact in Society.

INL
INTERNATIONAL IBERIAN
NANOTECHNOLOGY
LABORATORY

INL Campus

Research Infrastructure

- High Accuracy Labs (on ground slab)

  HRSTEM, dual FIB, SPM, XPS/AUGER/SIMS, shielded rooms, NMR, others

  (All labs up to NIST-A vibration specs, very low EMI, acoustics control)

- Class 100 and Class 1000 Cleanroom

  VC-E, nano litho, 400m^2 , 1st phase, extendable to 600m^2

  (including biochemistry and MEMS bay, and PI bay)

- Central support labs

  biology and cell culture lab, packaging lab, RF lab, workshops

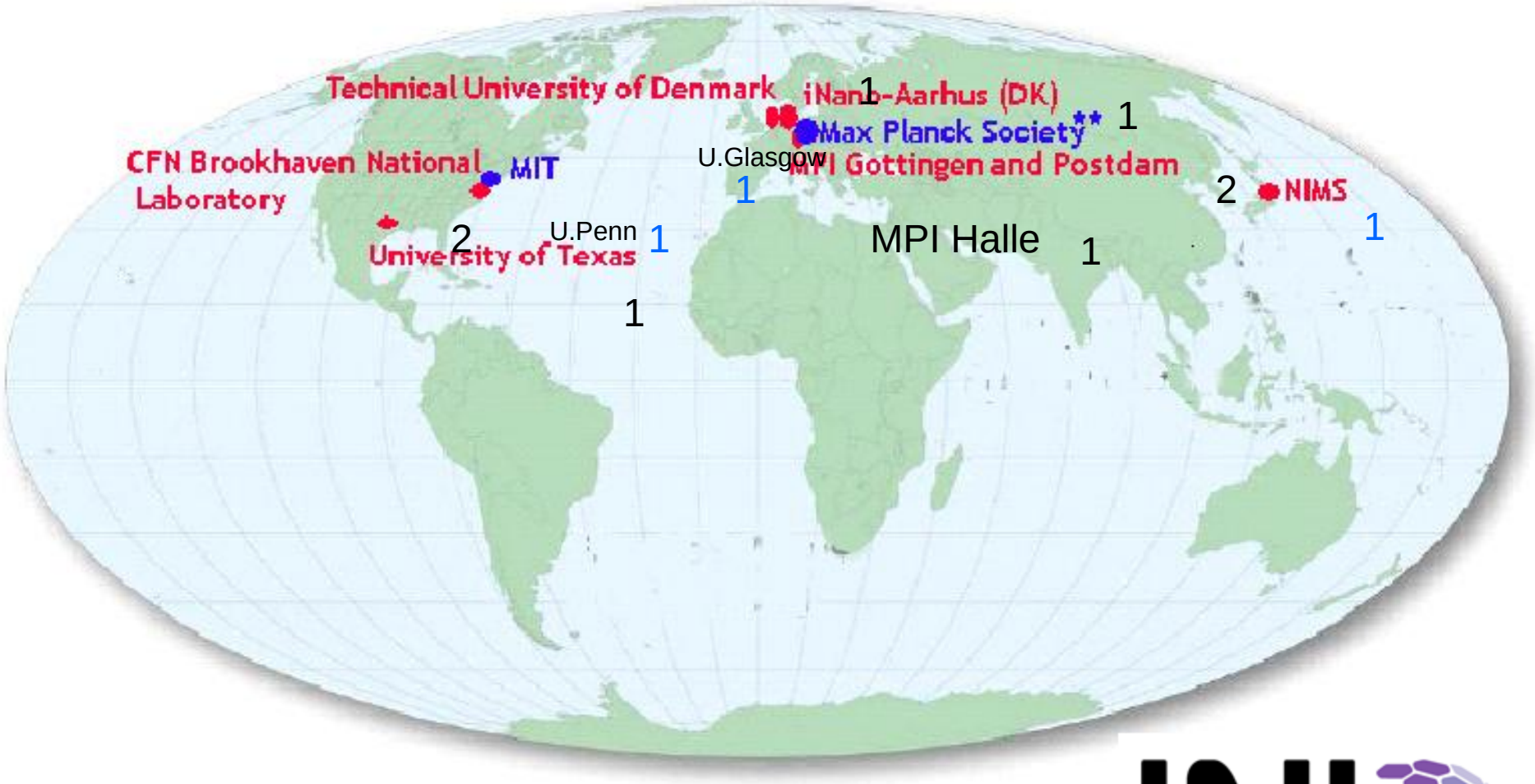
- Central computing facility

  interface with existing SC facilities

- PI labs (40 , wet and dry)

INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY

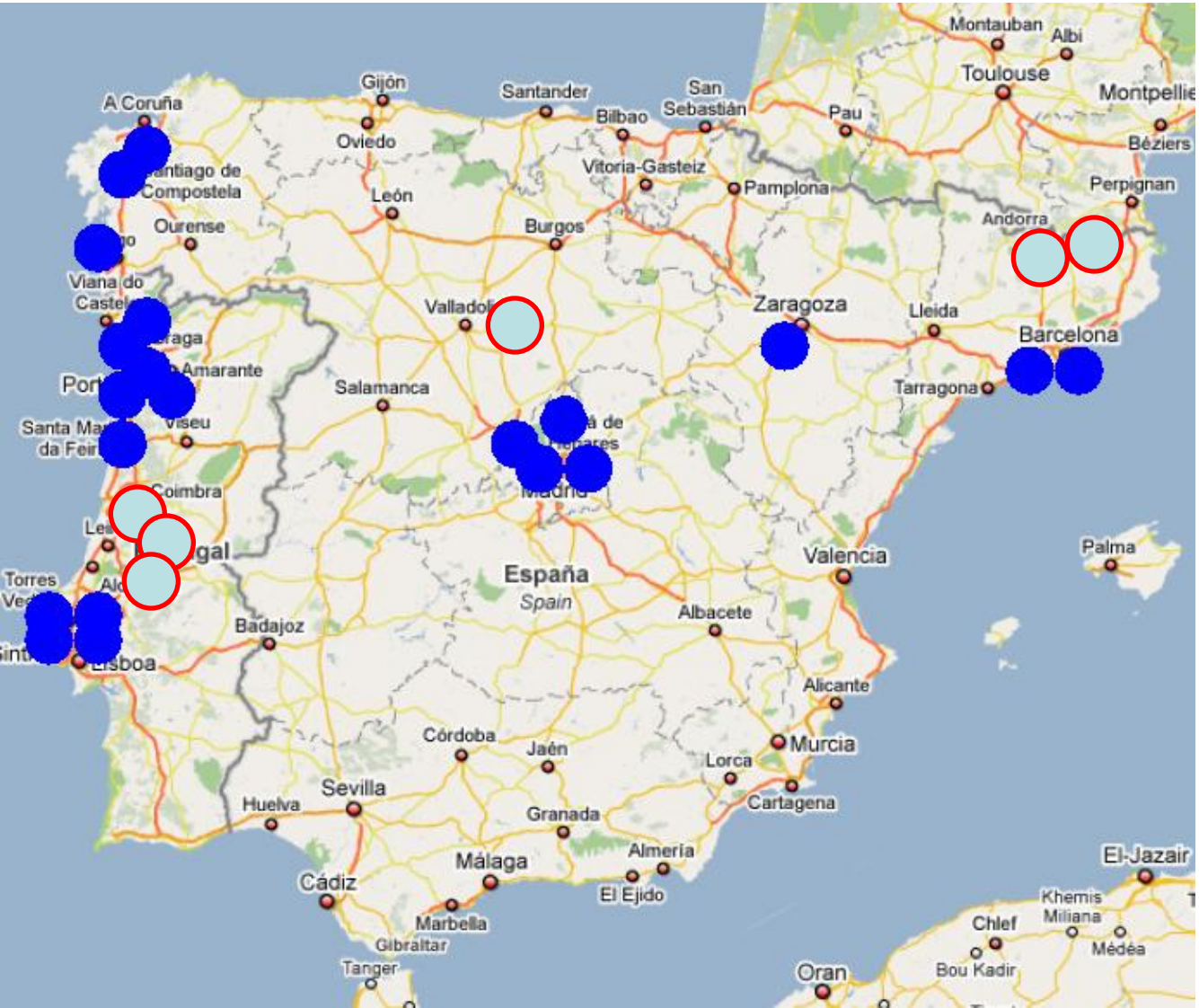
Post Docs



10 Collaboration Agreements signed

INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY

PhD students ● and technicians ○



18 PhD students Carrying out their thesis in 18 Research groups

9 Portuguese Laboratories And 9 Spanish Laboratories

Covering different research areas and topics

INL
INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY

Increase Portugal-Spain Capacity & Cooperation Joint Projects

72 applications, 10 approved projects with 36 Portuguese research teams + 36 Spanish research teams

INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY