

Recent High S&T Capacity Growth in Portugal

Meeting with Director-General INFESO

Brussels, 18th January 2011

Luis Magalhães

President of **Knowledge Society Agency**

Ministry of Science, Technology and Higher Education, Portugal



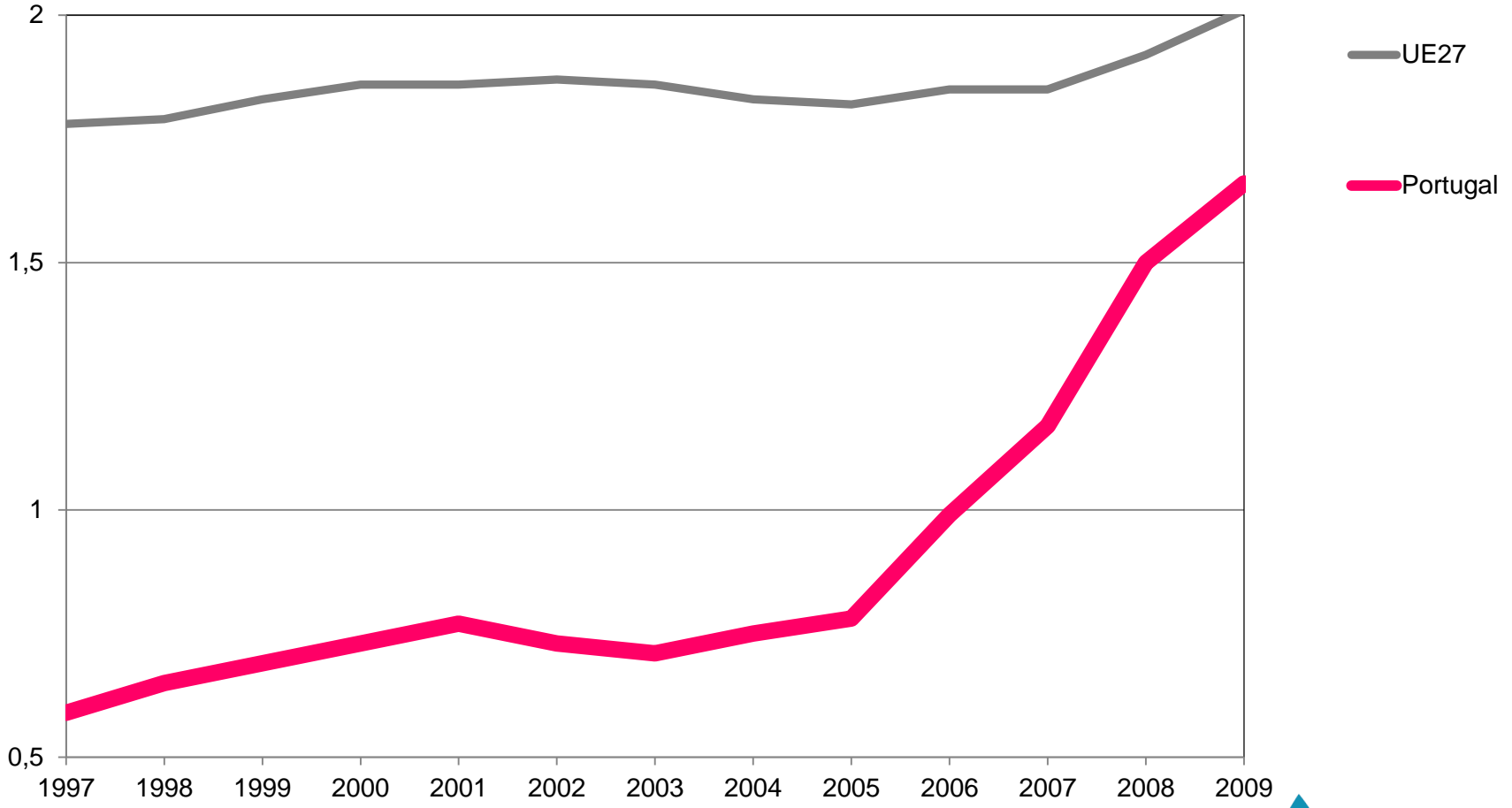
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Context of High S&T Growth in Portugal
Investment in R&D
more than doubling in 2005-2009

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

Highest average growth (21%) of UE27 (total=2,5%) in 2005-2009

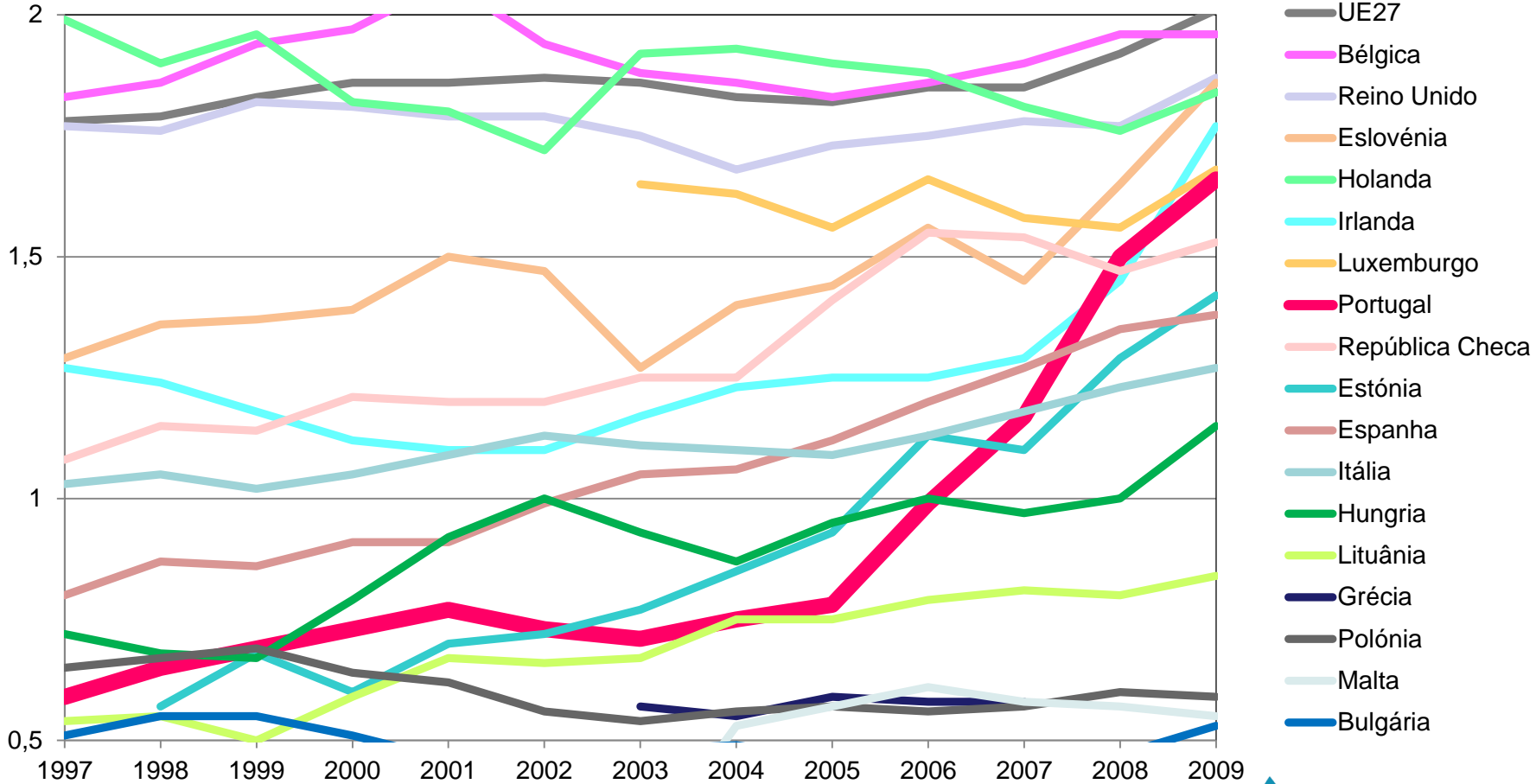


Source: EUROSTAT



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

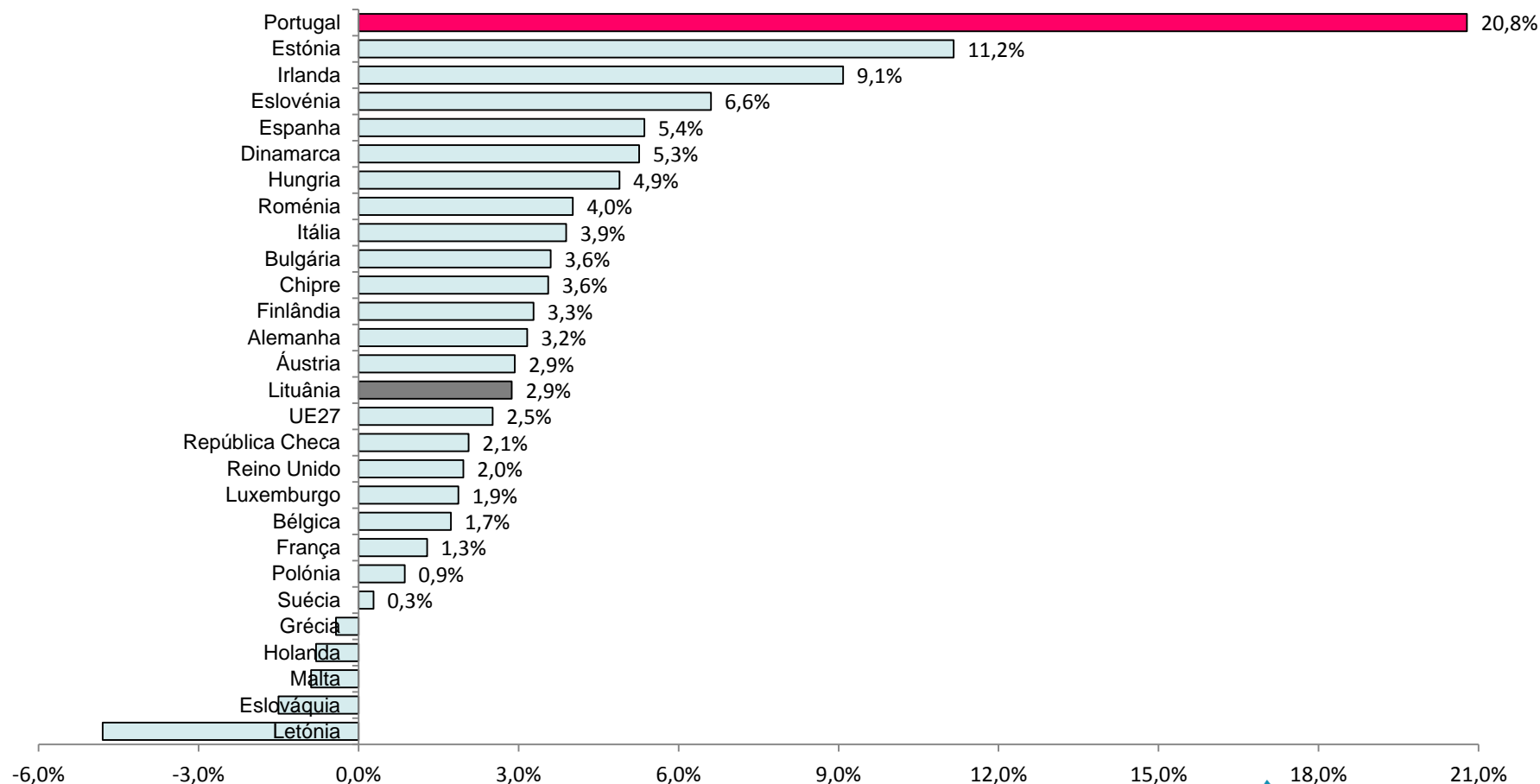
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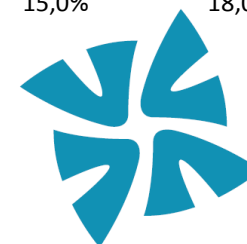
Source: EUROSTAT



Average Annual Growth of % of R&D Expense in GNP, 2005-2009



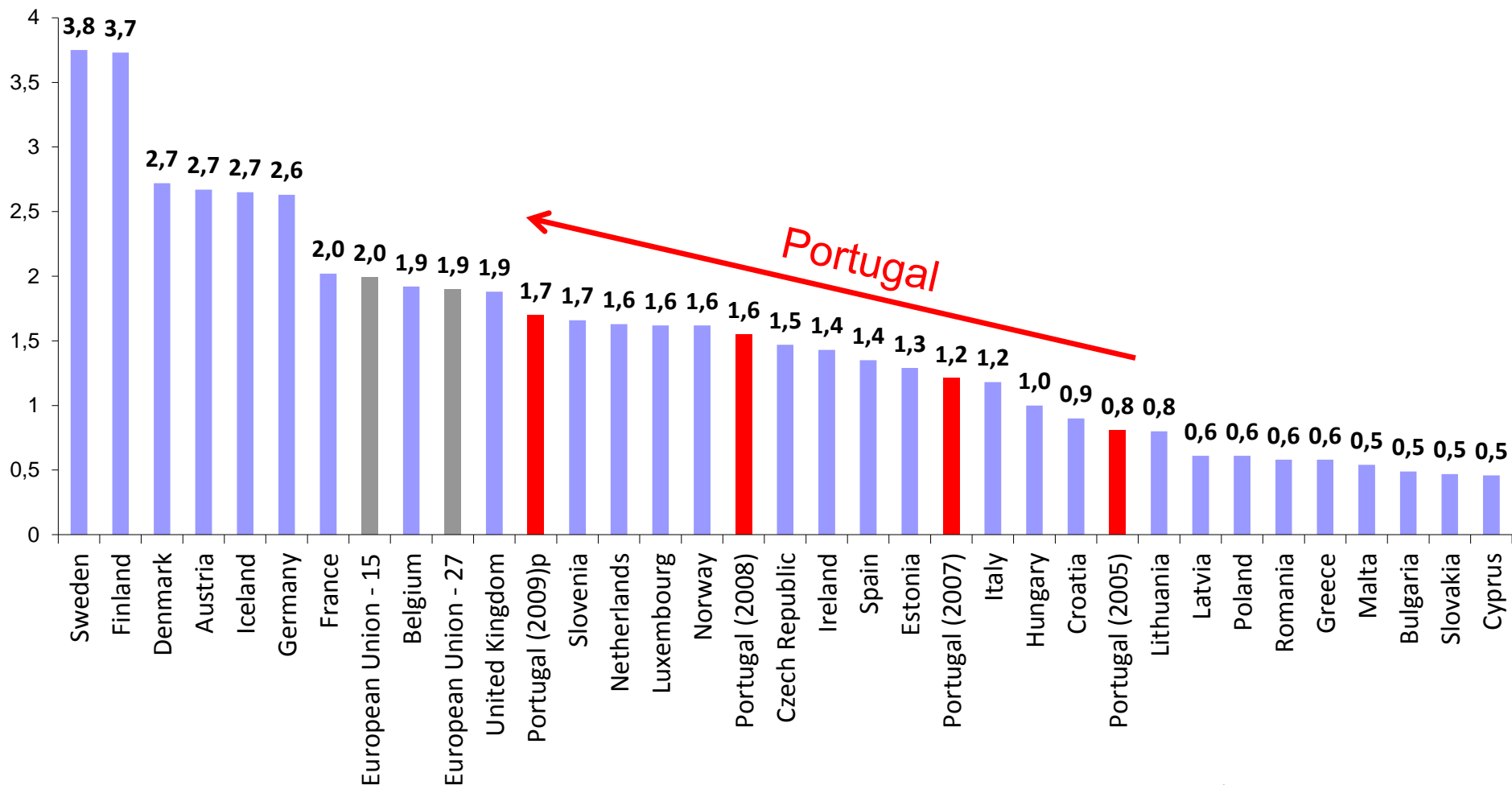
Source: EUROSTAT



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



Note: Data for 2008, except for Portugal whose data are for 2005, 2007, 2008, 2009
 Source: Eurostat 2010.

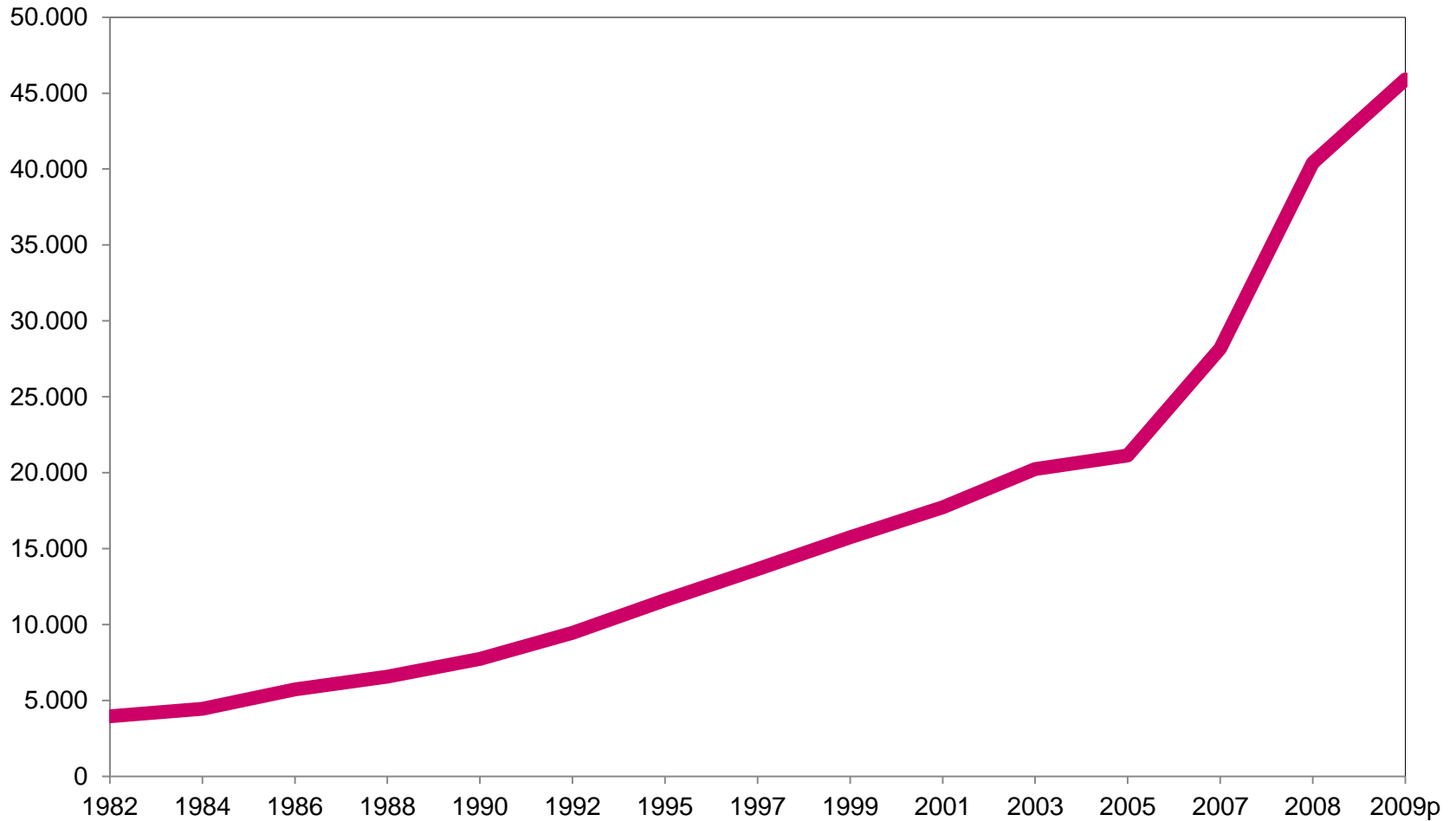


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Context of High S&T Growth in Portugal
Investment in People
more than doubling in 2005-2009

High Growth of Researchers (FTE)

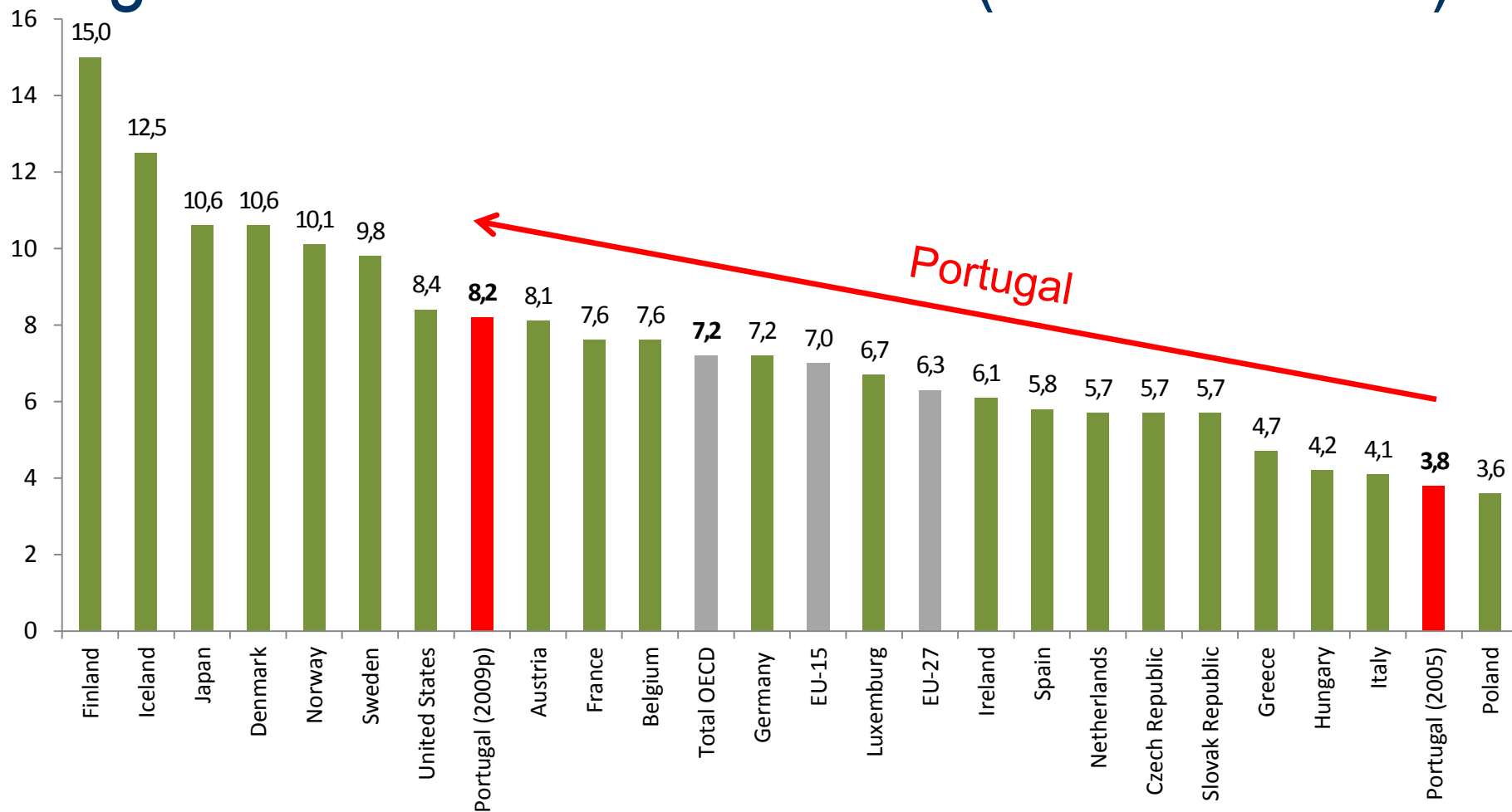


Source: EUROSTAT



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High Growth in Researchers (% labor force)



Note: Data for 2008, except for Portugal whose data are for 2005 e 2009
Source: OECD.



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International Knowledge Networks

Priority to ICT, particularly Future Internet related technologies and applications

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

Harvard Medical School – Portugal Program (beginning 21 May 2009)

Medical Internet Content for Citizens, Medical School Students and Healthcare Practitioners, Clinical and translational research

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 Europe and other continents

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



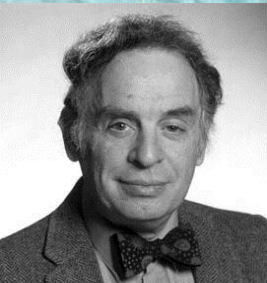
International Advisory Board

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-Planck Institute for Biophysical Chemistry, Göttingen, Germany



Emilio Mendez

Prize *Príncipe de Asturias* of Scientific and Technical Research 1998; Director of the new Center for Functional Nanomaterials at the US DoE Brookhaven National Laboratory; Professor at Dept. Physics and Astronomy, SUNY at Stony Brook, NY, US

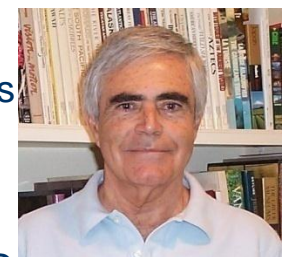


Christopher B. Murray

American Chemical Society's Nobel Laureate Signature Award in 1997, Richard Perry University Professor of Material Science and Engineering at U. of Pennsylvania; former Manager, Nanoscale Materials and Devices, IBM, T.J. Watson Research Ctr., Yorktown Heights, NY, USA

Aristides A. G. Requicha

Editor-in-Chief of the IEEE Transactions on Nanotechnology; Gordon Marshall Professor of Computer Science and Electrical Engineering; Director of the Laboratory for Molecular Robotics, USC, Los Angeles, USA



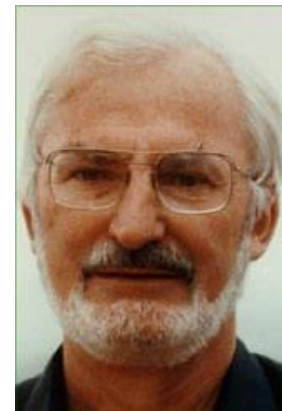
Mihail C. Roco

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



Heinrich Rohrer

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



Conception and Development

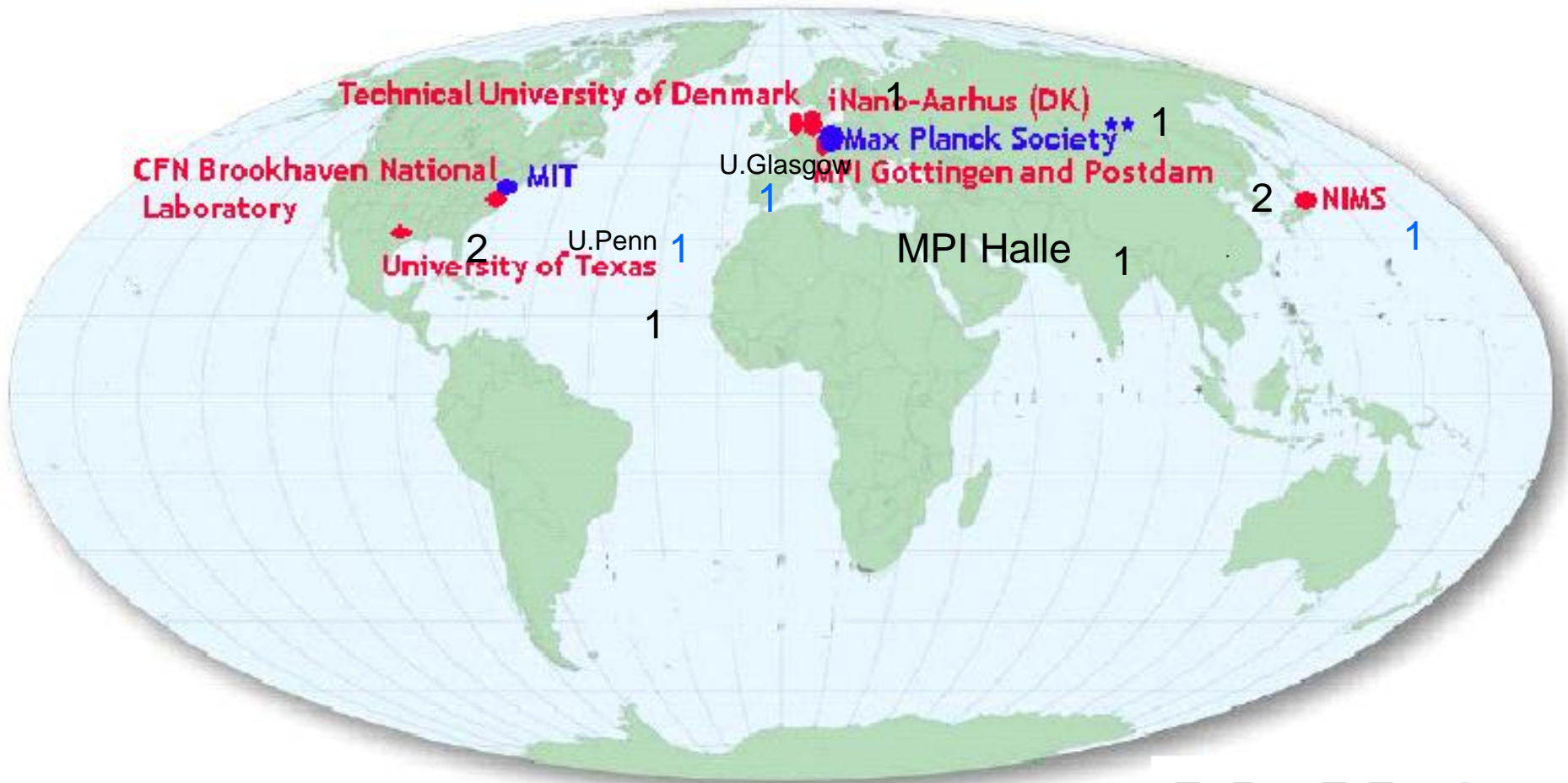
Decided in Nov 2005 • Conceptualized in 2006 • Decision on site in Oct 2006
• Convention w/ Statutes signed at Summit of Nov 2006 • Treaty ratified by the parliaments in 2007 • Basis of Design and preliminary construction project in 2007-08 • Council, Director-General and Deputy Director-General appointed 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 Campus



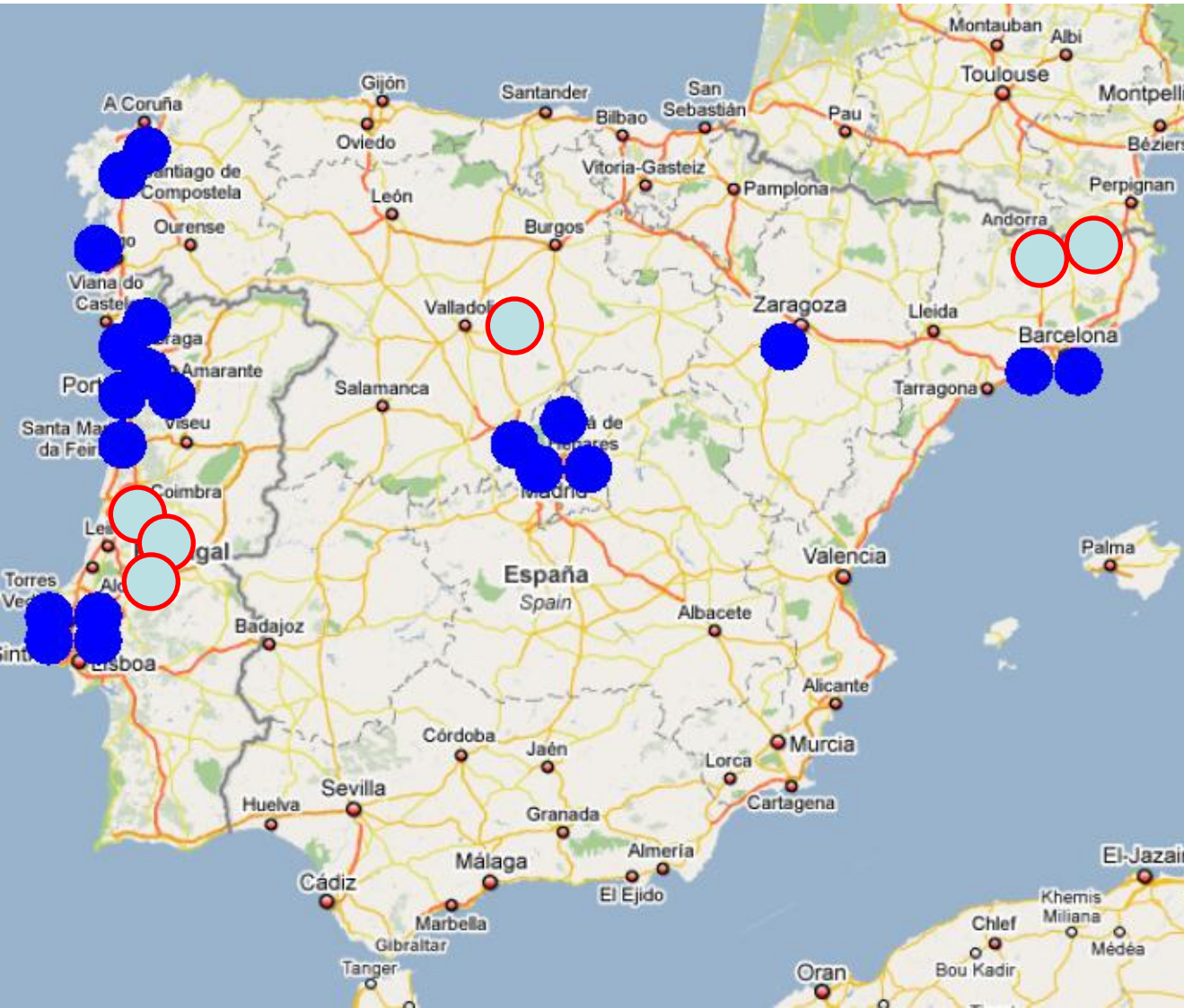
Post Docs



10 Collaboration Agreements signed



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

Increase Portugal-Spain Capacity & Cooperation Joint Projects

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

