

Connecting Portugal

Mobilizing the Information and Knowledge Society

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President **Knowledge Society Agency**

Ministry of Science, Technology and Higher Education, **Portugal**



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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



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Knowledge Society Agency at OECD

Represents Portugal as:

- ❖ Bureau of ICCP – Information Computers and Communication Policy Committee
- ❖ Chair of WPIIS – Working Party on Indicator for the Information Society
- ❖ Bureau of WPIE – Working Party on Information Economy
- ❖ Steering Committee of HL Meeting “The Internet Economy: Generating Innovation and Growth”, 28-29 June 2011



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Knowledge Society Agency on Internet Governance

Represents Portugal at UN:

- ❖ IGF – Internet Governance Forum
- ❖ CSTD – Commission on Science and Technology for Development
- ❖ CSTD WG on Improvements of the IGF

Represents Portugal at ICANN:

- ❖ GAC – Governmental Advisory Committee

Responsible for “Portugal IGF”:

- ❖ Information Society Forum – Internet Governance



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Knowledge Society Agency in EU

Represents Portugal next to DG Information Society and Media:

- ❖ HLG on Digital Agenda for Europe (2010-2020)
- ❖ HLG on Internet Governance
- ❖ ICT National Research Directors Forum
- ❖ Future Internet Forum
- ❖ National ICT Directors WG on FET Flagships
- ❖ AAL Joint Program General Assembly
- ❖ ICT CIP – ICT component of the Competitiveness and Innovation Program
- ❖



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Knowledge Society Agency Main Operational Projects

Incubated eGovernment and developed transversal large scale projects

- ❖ Citizen's Portal (2004-2007)
- ❖ Enterprise Portal (2006-2007)
- ❖ Full Creation of Enterprises Online (2006)
- ❖ e-ID Citizen Card (2005-2007)
- ❖ Public Administration Interoperability Platform (2006-2007)

spinned off to AMA – Agency for Public Services Modernization, 1st May 2007

Incubated the National Public eProcurement Program

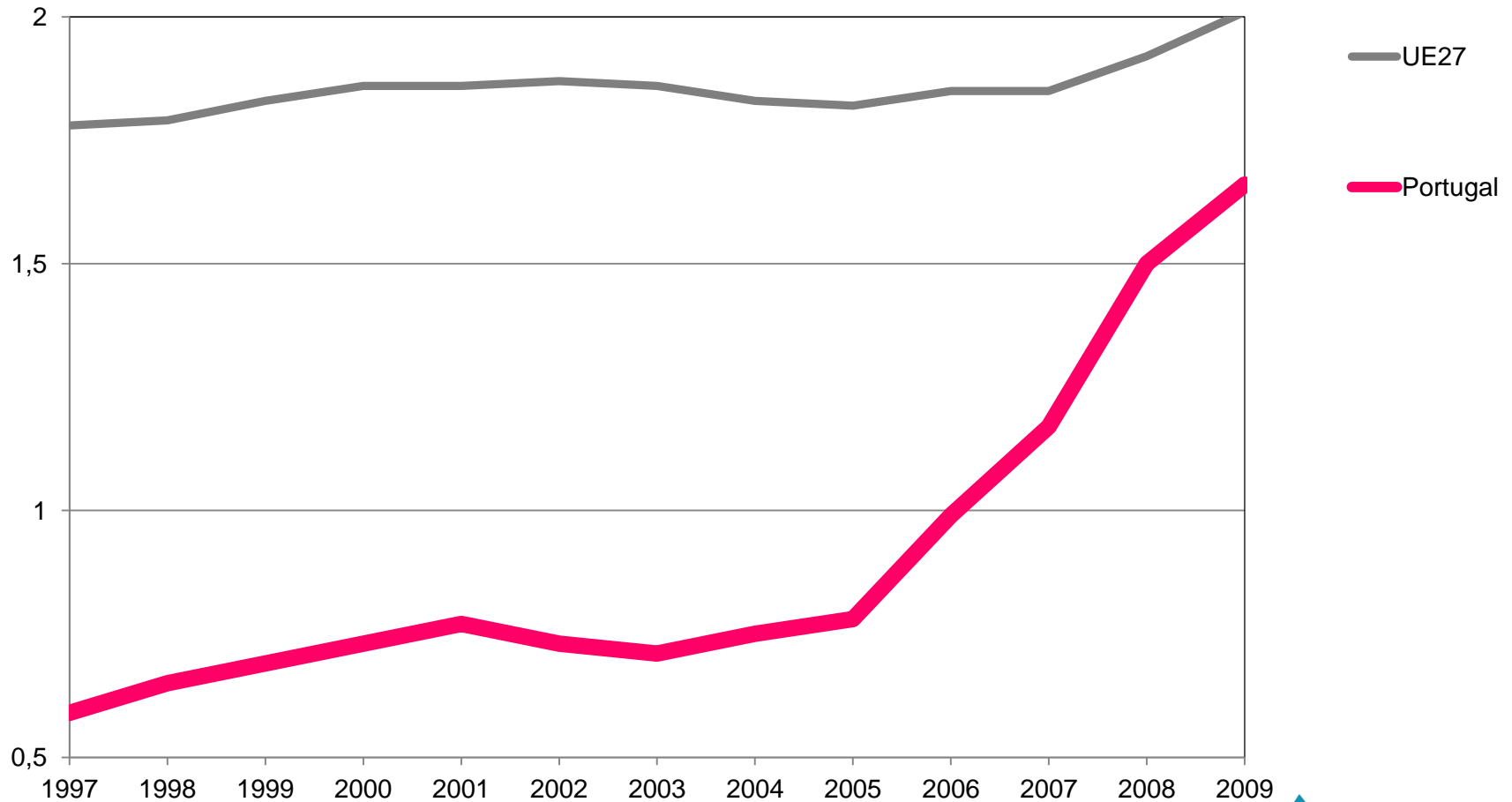
spinned off to National Agency of Public Procurement in Ministry of Finance, 9th May 2007

Now other major challenges – shift towards **knowledge and innovation**:

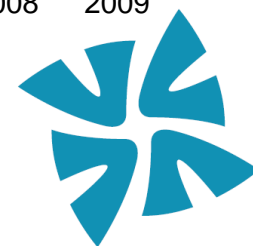
- ➔ **e-Science**
- ➔ **International partnerships in S&T** with worldwide leading institutions
- ➔ **Health and biomedical sciences information** for citizens on the Web
- ➔ **Emerging Technologies**, such as **Future Internet** and **Nanotechnology**

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

Evolution of R&D Intensity, in Portugal



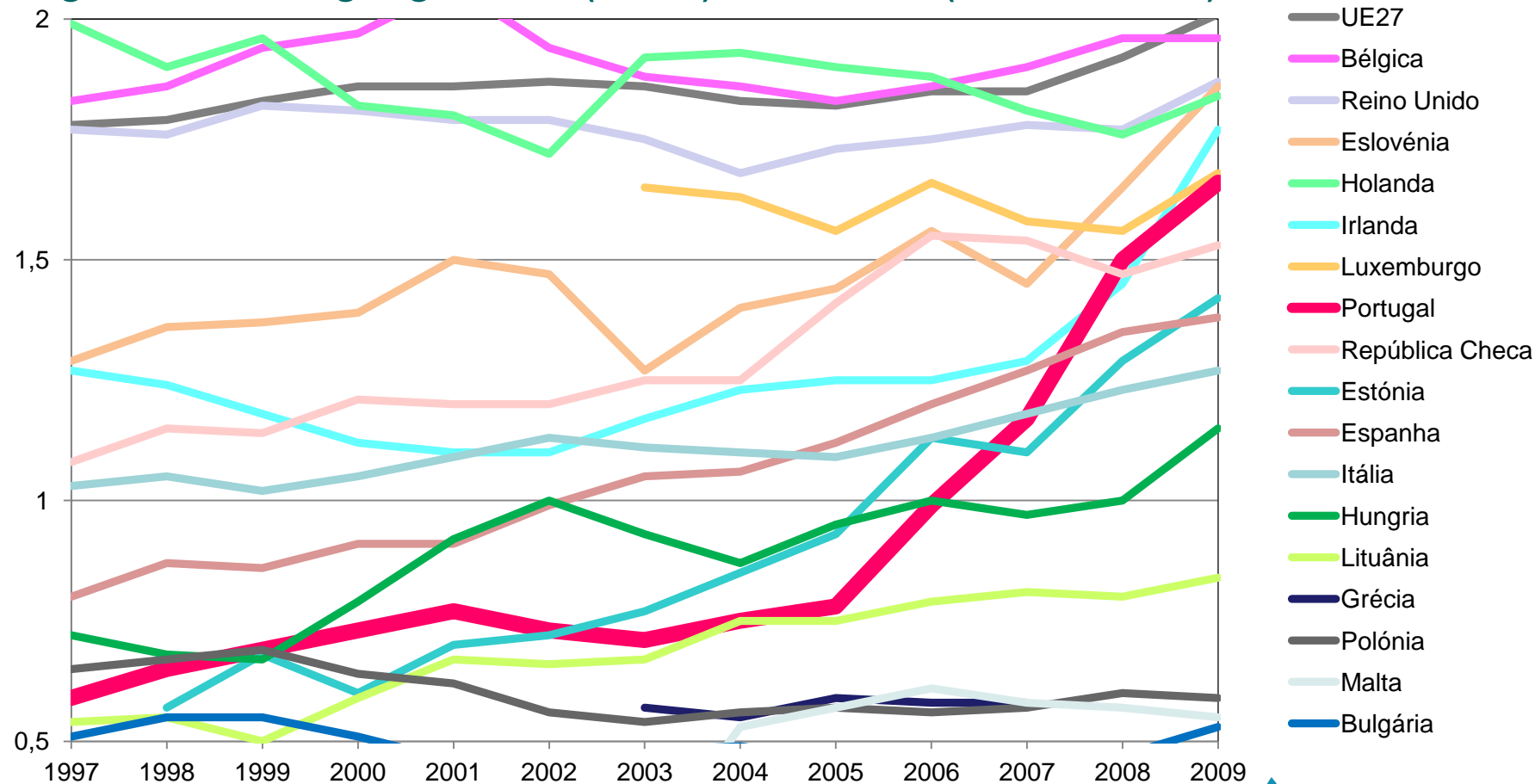
Source: EUROSTAT



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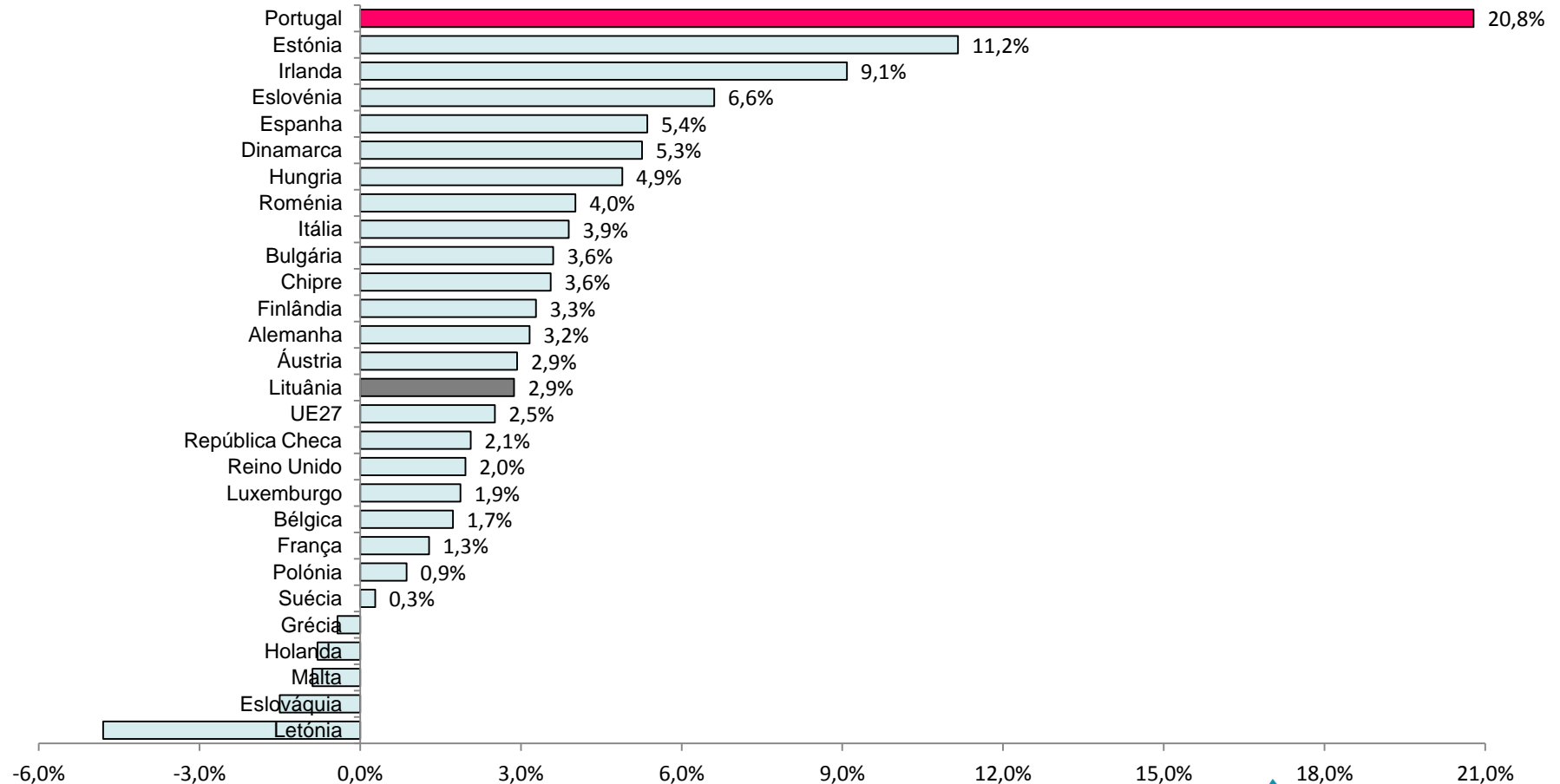
Evolution of R&D Intensity, in Portugal

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

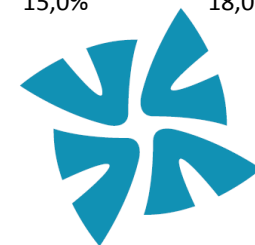


Source: EUROSTAT

Average Annual Growth of R&D Intensity 2005-2009

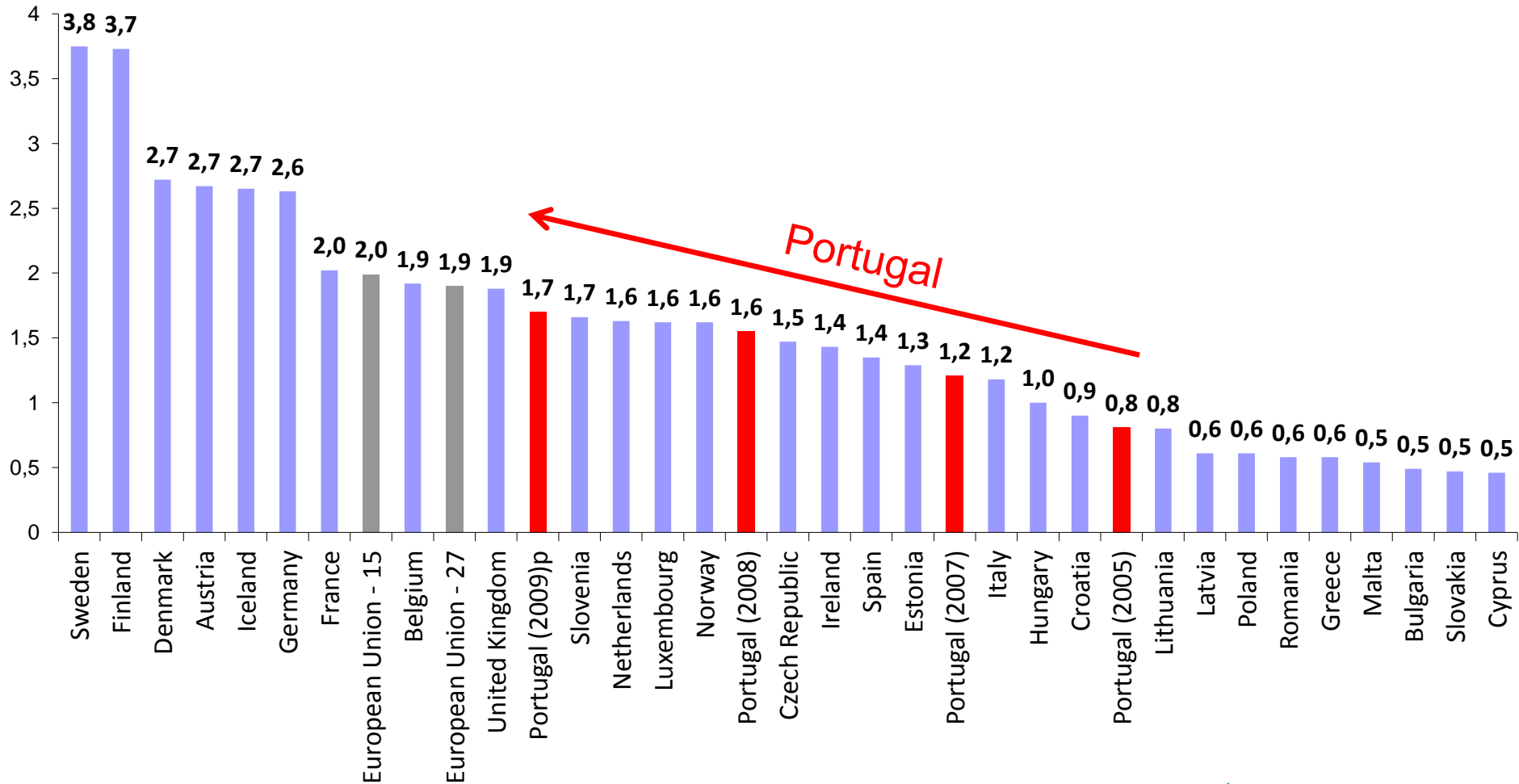


Source: EUROSTAT



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Evolution of R&D Intensity, in EU



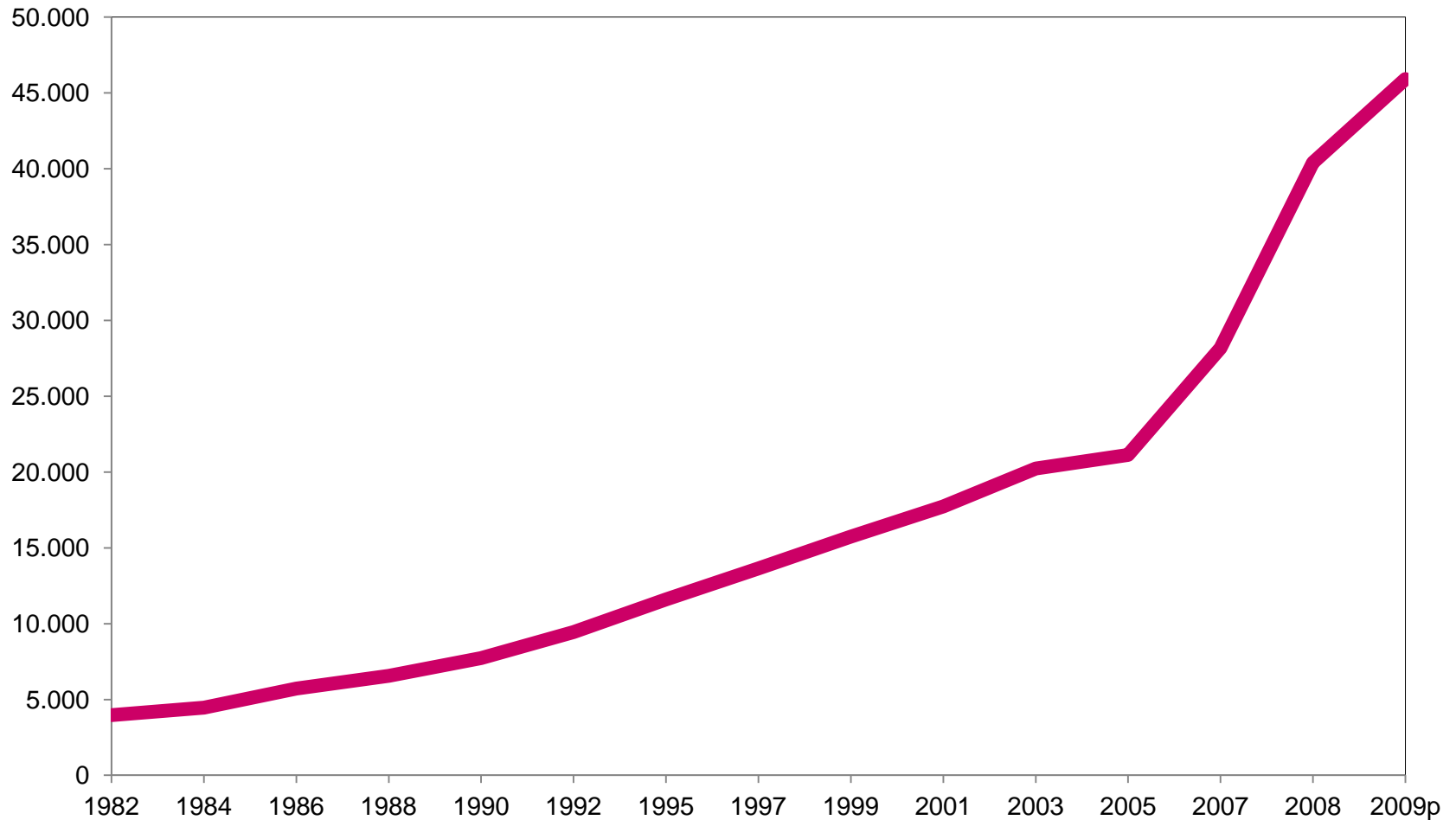
Note: Data for 2008, except for Portugal whose data are for 2005, 2007, 2008, 2009
 Source: Eurostat 2010.



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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)

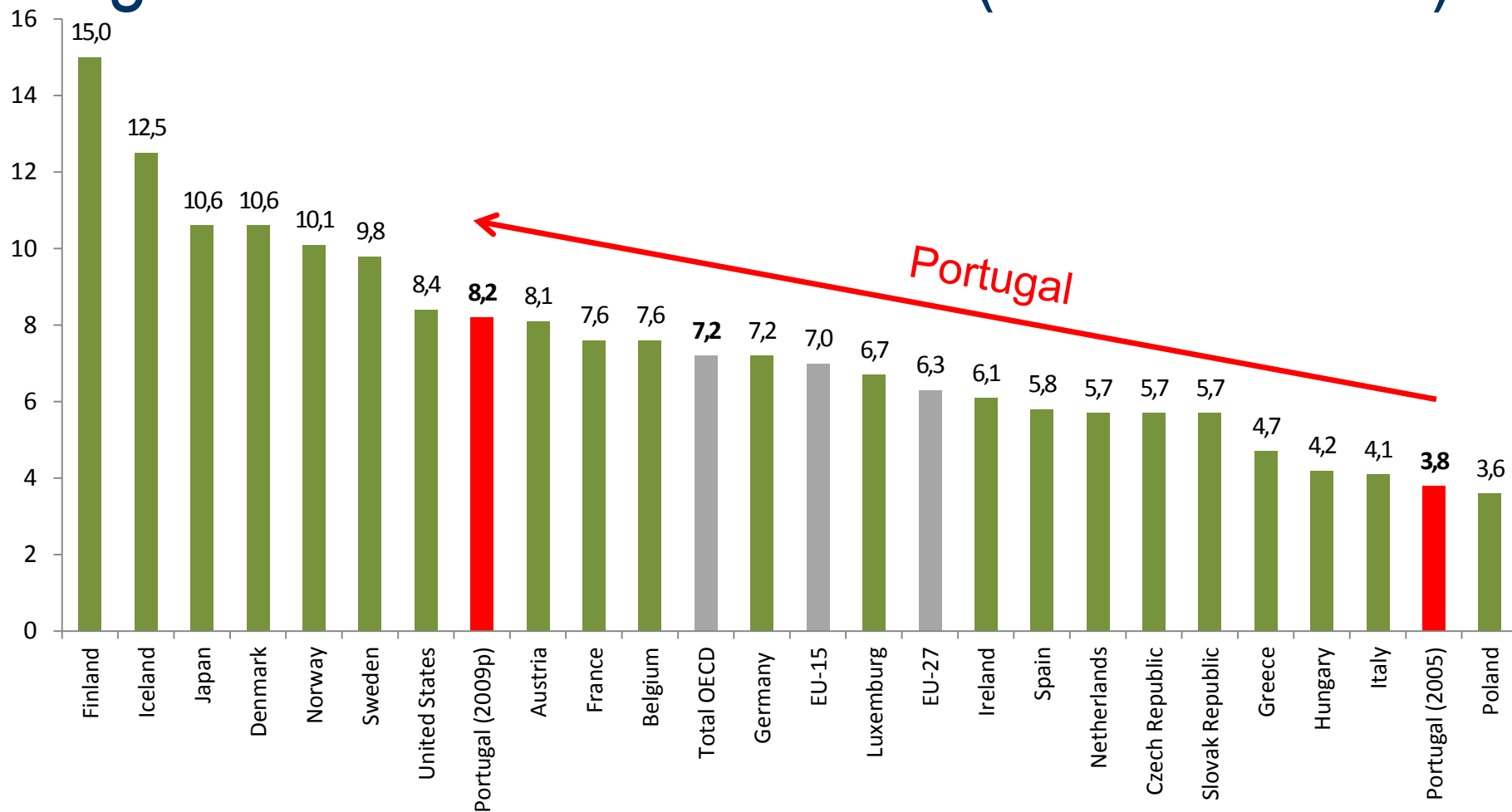


Source: EUROSTAT



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High Growth in Researchers (% labor force)



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



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In this Context of High S&T Growth
Strong National e-Science Strategy

National platforms provided by NREN,
with distributed services for research and higher education,
with high economies of scale,
at zero cost for public user institutions.

Infrastructure • Content • Distributed Computing • Cooperative Work at a Distance

National e-Science Strategy Infrastructure

- **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
- **e-U: Virtual Campus** wireless access integrating all Higher Education *campi*

National e-Science Strategy

Content

- **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
- **RCAAP: Scientific Open Access Repository of Portugal**, presently with 29 institutions, including all 14 public universities, and >48,200 documents, protocol w/ Brazil
- **ZAPPIENS.PT**, HD scientific, educational and cultural video repository under Creative Commons and DRM licensing

National e-Science Strategy

Distributed Computing

- **INGRID: National GRID Initiative** (1,800 CPUs, 1 PetaByte of disc memory, 2 PetaBytes of magnetic tape robot memory, national node at FCCN w/ other nodes throughout Portugal), integrated w/ Spanish GRID (IBERGRID), and part of the EGI – European Grid Initiative
- **IBERCIVIS: Voluntary Computing at the service of science** jointly w/ Spain

National e-Science Strategy

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
from any computer
- **National platform for scientific and educational digital content** being developed for **Medicine and Future Internet**,
to be further extended

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

INL – International Iberian Nanotechnology Laboratory

International research organization (1st in Iberian Peninsula in any area, 1st in World explicitly dedicated to Nanotechnology).
Decided jointly by Portugal and Spain in Nov 2005.
Building inaugurated in Jul 2009. Research initiated by end 2010



General Concept

200 researchers, 400 people. Scientific staff recruited worldwide.

Open to membership of other countries from any continent

Founding requisites:

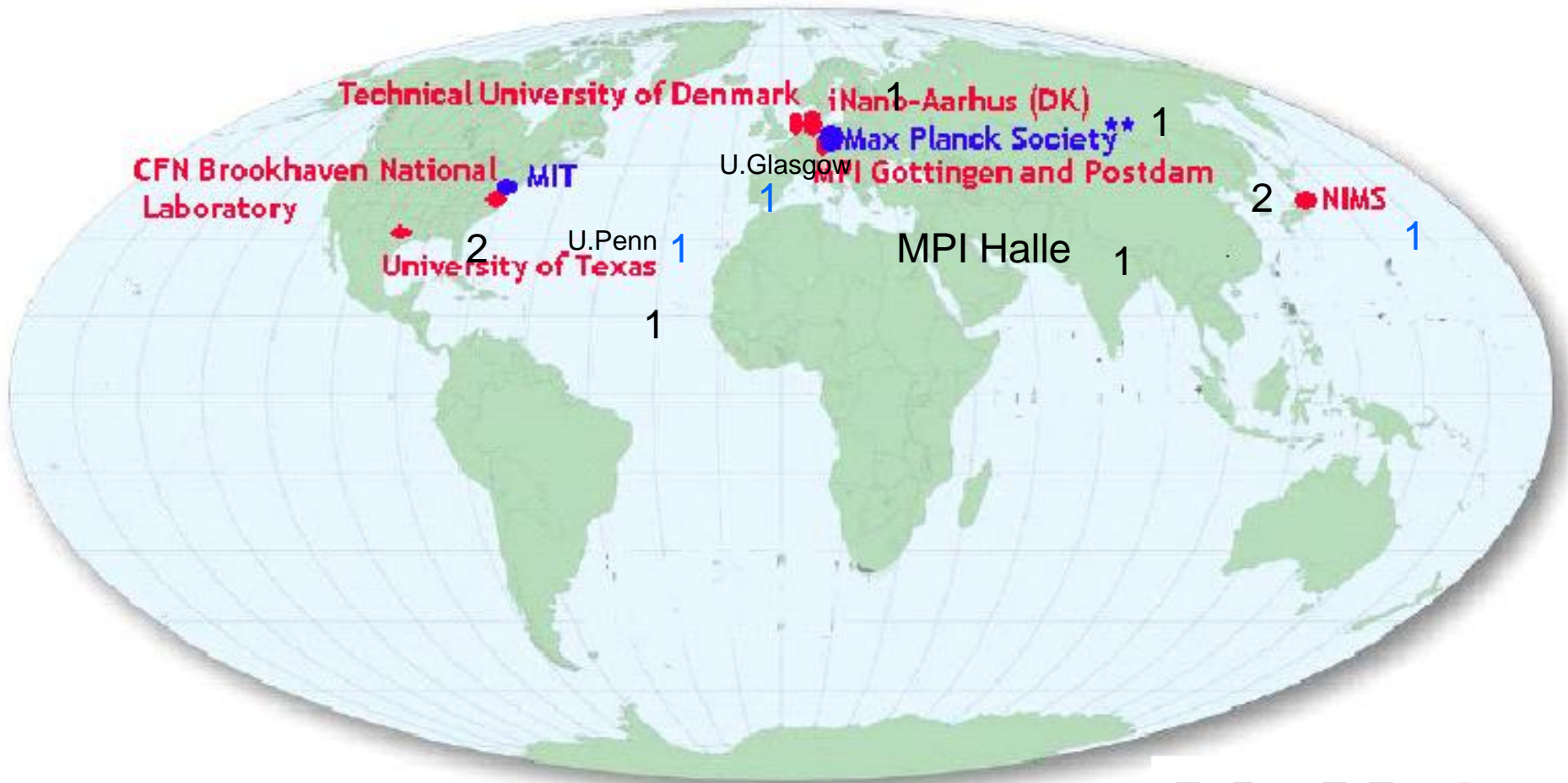
- Assure **world class research excellence** in all areas of activity: **Nanomedicine** (drug delivery, nanotechnology for diagnostics) • **Environmental Applications** • **Food and Water Quality Control Applications** • **Electronic Nanosystems** (NEMS/MEMS, Spintronics, Photonics, Organic electronics) • **Nanomachines and Nanomanipulation** • **Nanotechnology Safety and Impact in Society**
- Develop **partnerships with the industry** and foster the transfer of knowledge to 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



Post Docs



10 Collaboration Agreements signed

National Thematic R&D Networks and Multistakeholders Fora

Aligning National Effort in ICT Research and
Information Society Policies

National Thematic R&D 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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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

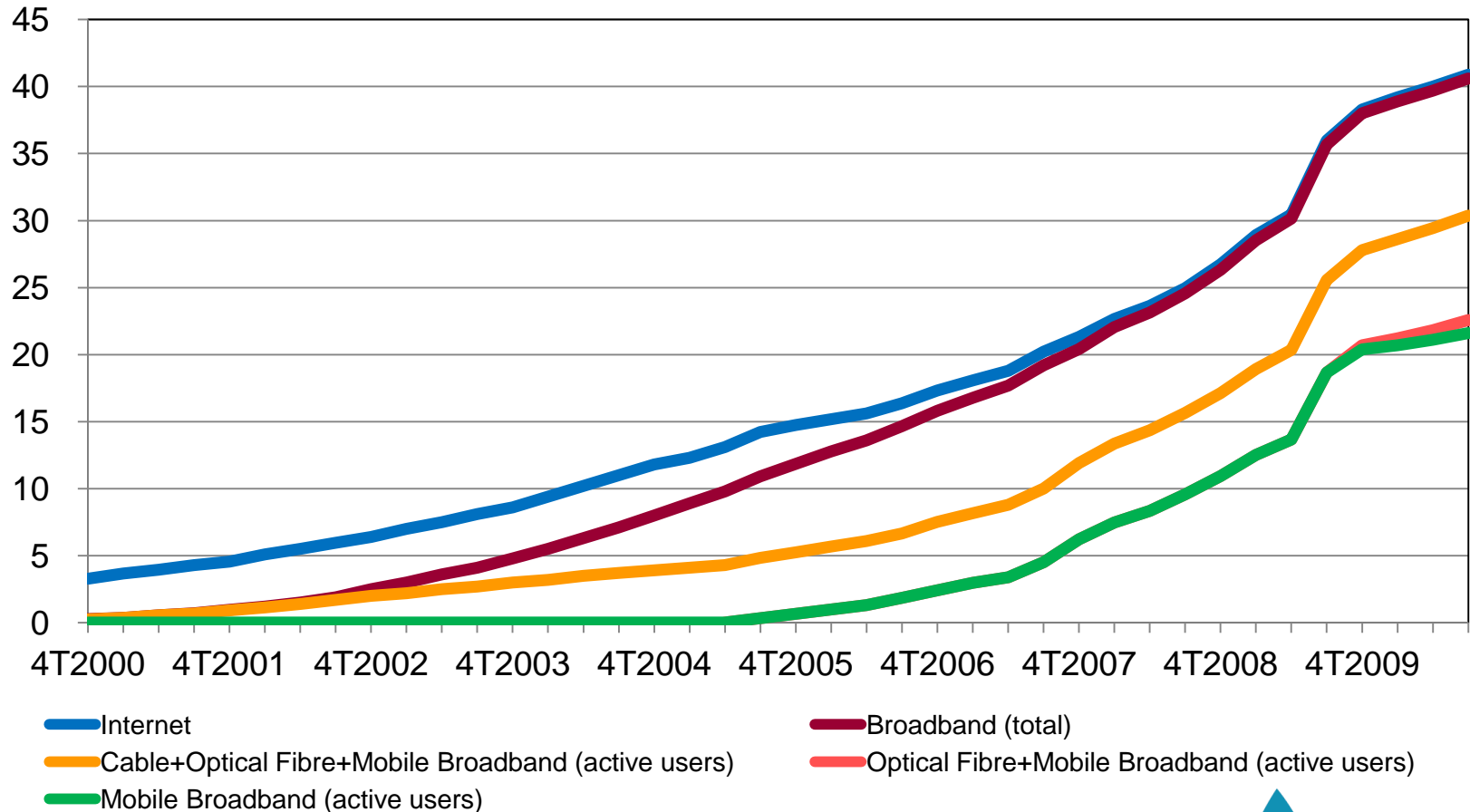


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High Increase of Broadband Access

Mobile and High Speed Fixed Access

Internet and Broadband Penetration in the Population (% subscribers in total population, 3Q 2010)

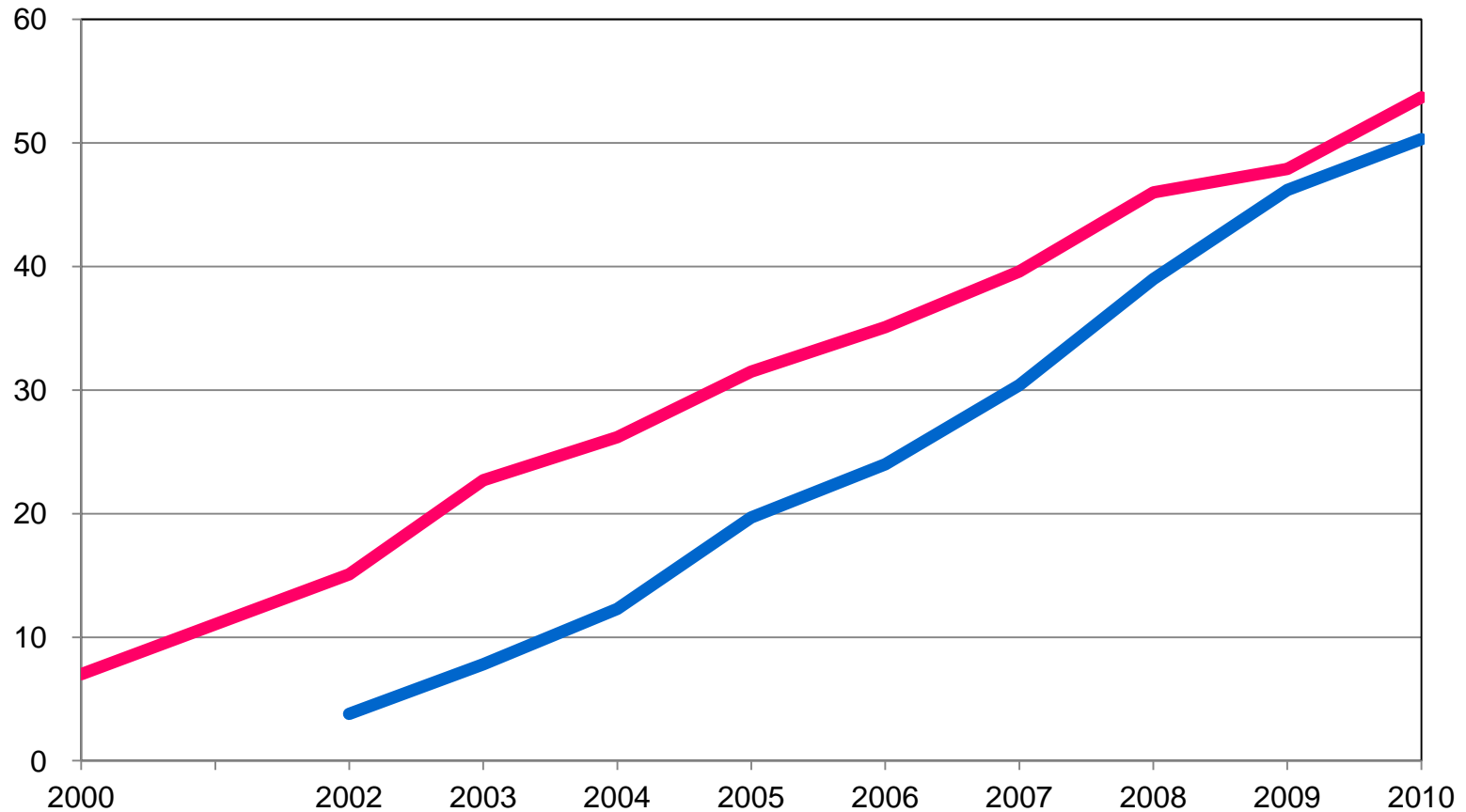


Source: ANACOM



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Broadband Penetration in Households (% , 1Q)



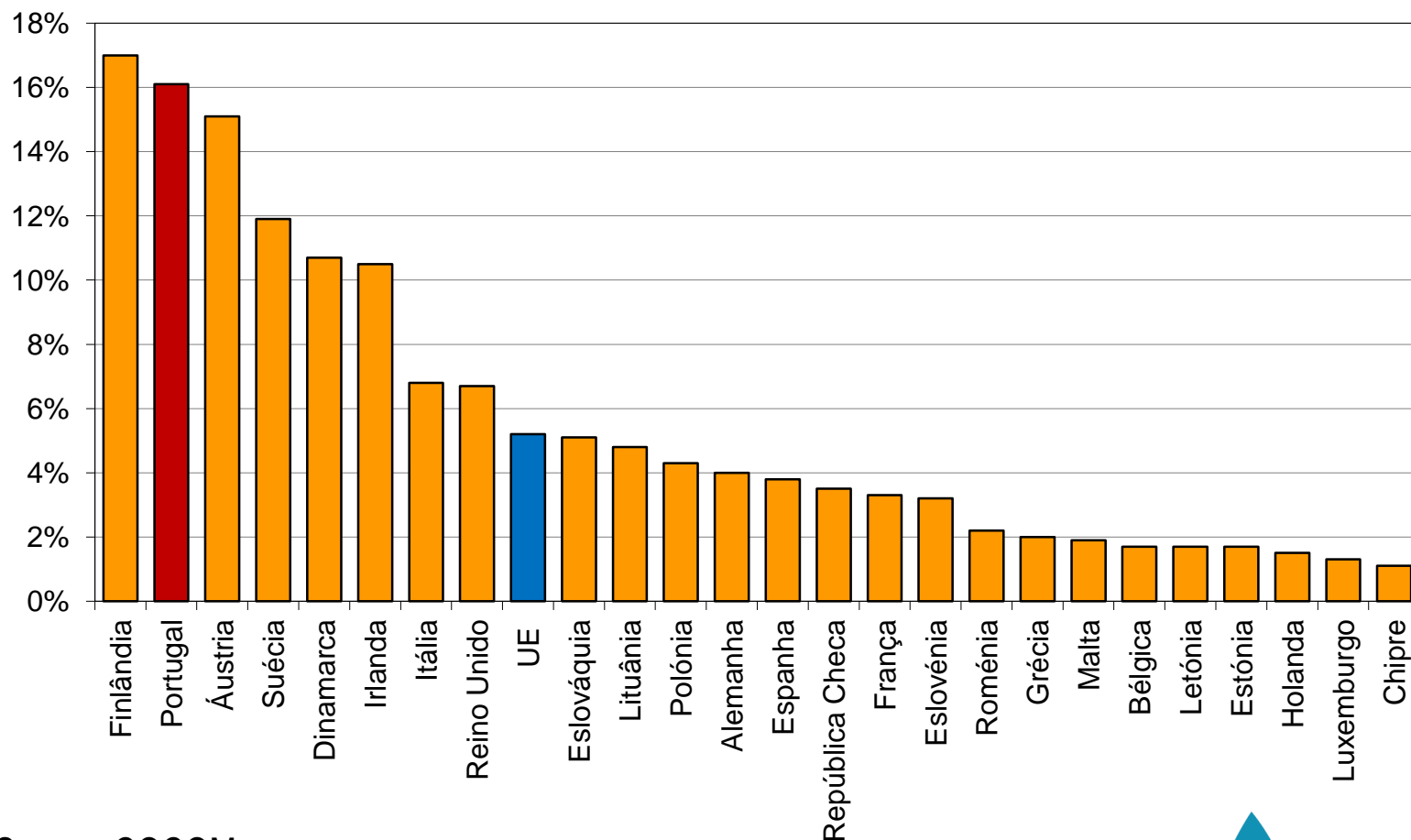
Source: EUROSTAT

Internet Broadband



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Mobile Broadband Penetration in the Population dedicated data service (cards/modems/keys) – 1st Jan 2010



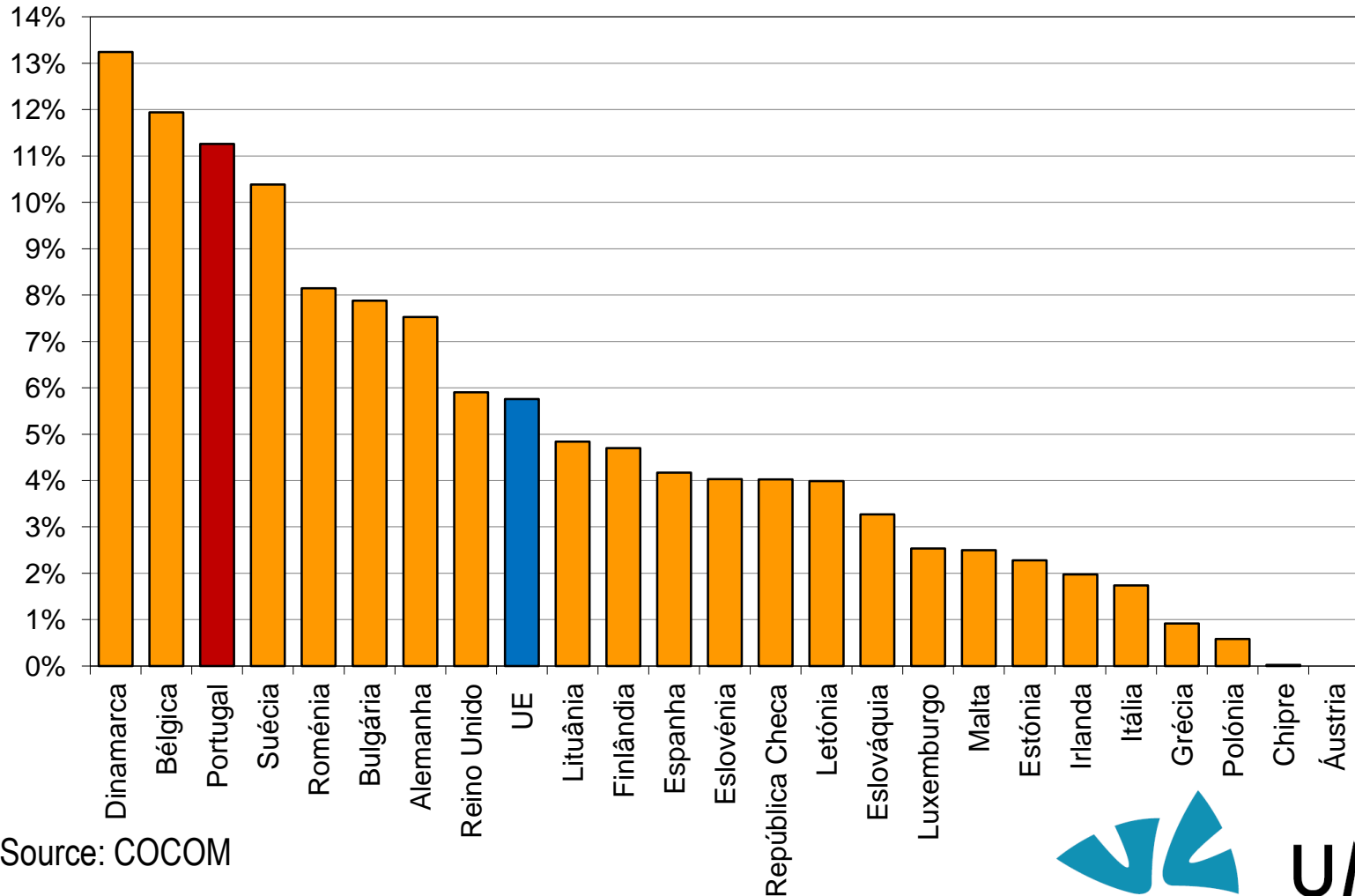
Source: COCOM



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High Speed Fixed Broadband Penetration ≥ 10 Mbps in the population – 1 Jan 2010



Source: COCOM



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Regular Internet Users in Portugal

% regular Internet users by educational attainment (1Q 2010)

→ 96% people with higher education

average UE27 2009 = 92%

→ 92% people with upper secondary but without higher education

average UE27 2009 = 74%

→ 34% people without upper secondary education

average UE27 2009 = 48%



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Networks and Information Systems Security

Networks and Information Systems Security Initiatives

- **National CSIRTs Network:** Based on **CERT.PT** (in operation since 2002 at the Portuguese NREN), involving: the 3 internationally certified CSIRTs of the academic system, 6 telecom operators and ISPs, 1 bank, the Joint Chief of Staff of Armed Forces. A for central government CSIRT is being planned.
- **Government PKI:** National eID, Government members electronic signatures, dematerialized legislative process
- **R&D on security and Critical Infrastructures Protection:** **R&D Thematic Network**, creation of **CyLab Portugal**, **Executive Master on Networks and Information Security**, all in partnership with Carnegie Mellon University
- **Safer Internet Project:** to promote safe use of the Internet, to raise the society awareness of risks associated to Internet use and knowledge on how to manage them



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Multi-Program Approach to Foster eSkills

Multi-Program Approach to Foster eSkills in Portugal

- Youth education in schools: Education Technological Plan
- Adult education: New Opportunities Program
- Open training and use in telecenters: Internet Spaces Network
- National eSkills certification system: since 2001 Basic Skills Diploma ($\approx 6^{\text{th}}$ grade ICT level). Now planned 2 more levels: Intermediate ($\approx 9^{\text{th}}$ grade ICT level), Advanced ($\approx 12^{\text{th}}$ grade ICT level)
- Professional training and certification in polytechnics and universities in partnership with industry: ICT Academies
- Professional training courses in polytechnics and universities: CET – Technology Specialization Courses
- Advanced training in ICT: ICT curricula modernization, Executive Masters in International Partnerships

ICT Academies in Polytechnics and Universities

professional training and certification in partnership with industry

Presently 62 in partnership with following companies:

- Microsoft
- Cisco Networking
- Sun Microsystems → Oracle
- SAP
- SAS, Business Intelligence Software
- LPI – Linux Professional Institute
- ...

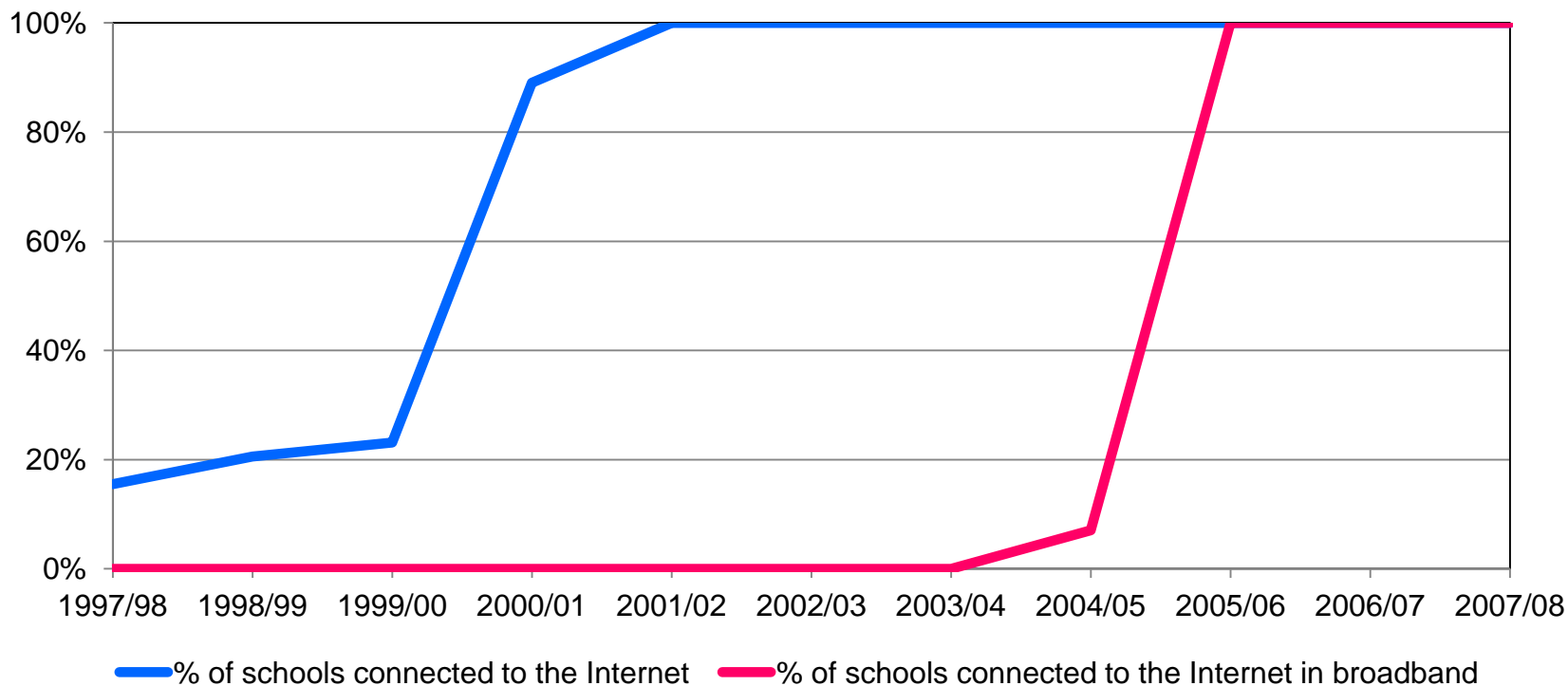


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Priority to the Use of Internet and Computers in Schools

Early Connection of All Schools to the Internet

(% of public basic and secondary schools connected through ISDN and through Broadband, end of each school year)



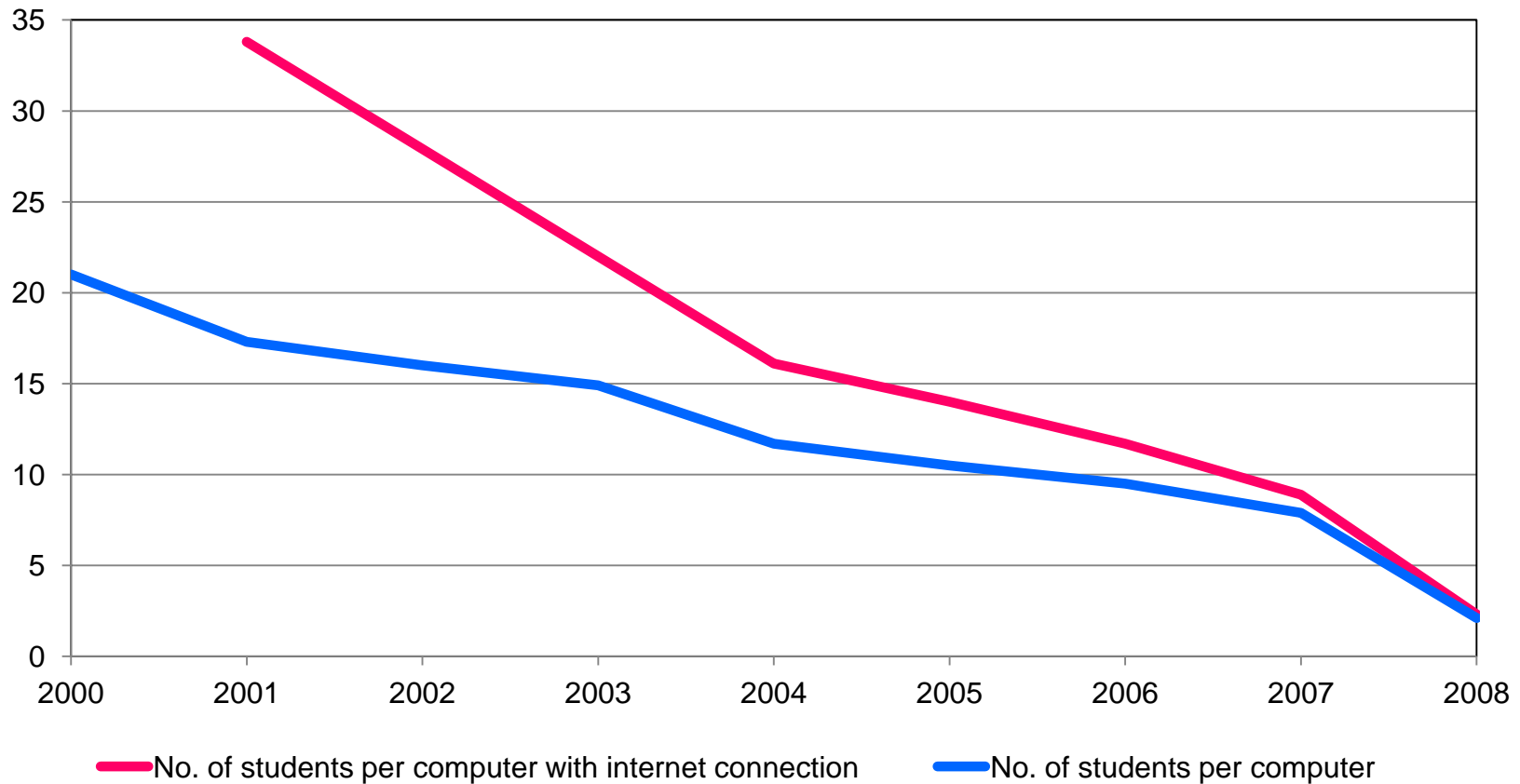
Sources: GEPE - Gabinete de Estatística e Planeamento da Educação,
FCCN - Fundação para a Computação Científica Nacional.



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Number of Students per Computer with Internet Connection in Schools (1st to 12th grade)



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Education Technological Plan

- Generalize laptops for students and teachers: >1M deployed.
- High speed Internet in schools: ≥ 48 Mpbs in >93% of 5th-12th grade schools; all schools w/ broadband since Jan 2006
- Technological Kit for schools: 2 students/computer with Internet, 1 projector/lecture room and 1 interactive board/3 lecture rooms, in 5th-12th grade schools
- School Portal: educational content, collaborative work
- Training and certification of eSkills: teachers, students, school employees; massively
- ICT Internships: in industry for technology track students
- ...

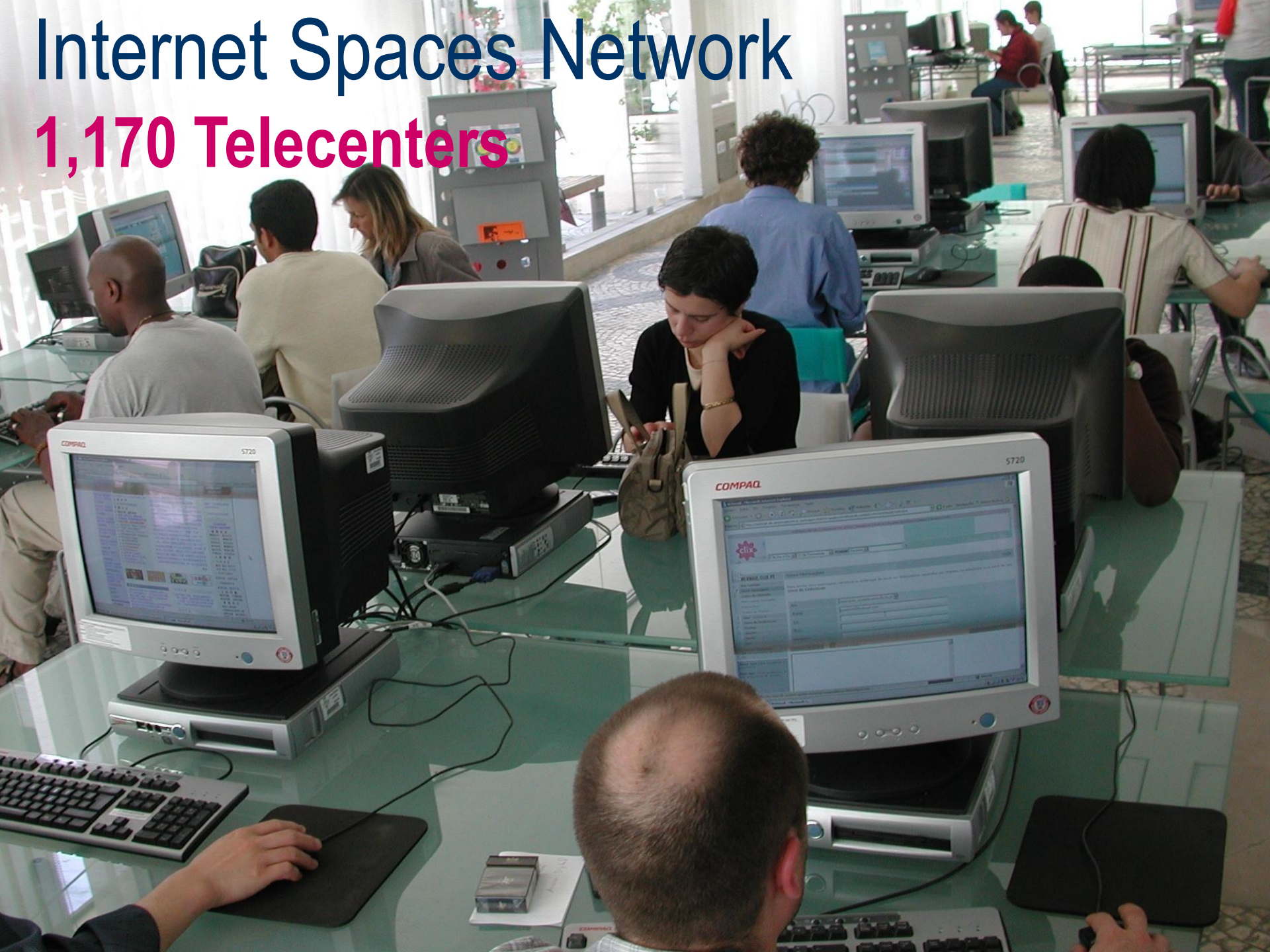


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Internet Spaces Network

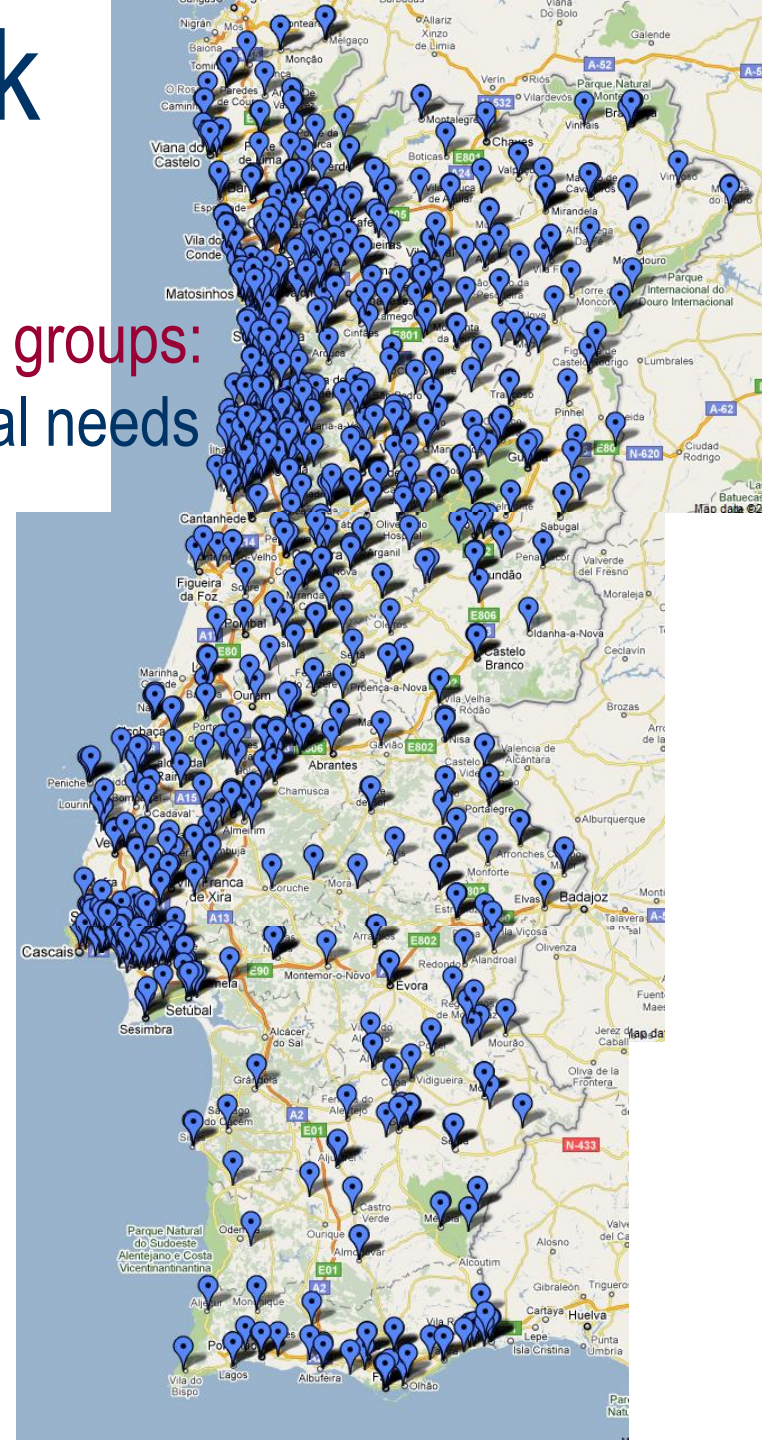
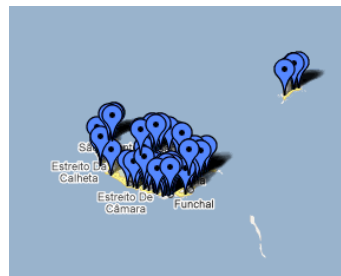
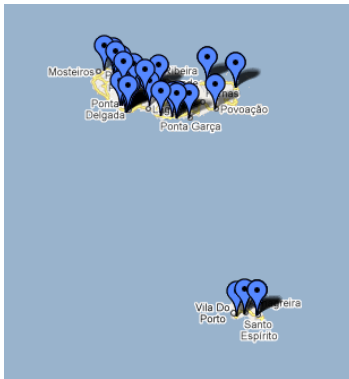
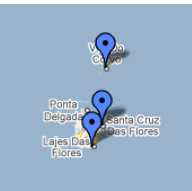
1,170 Telecenters



Internet Spaces Network

1,170 Telecenters

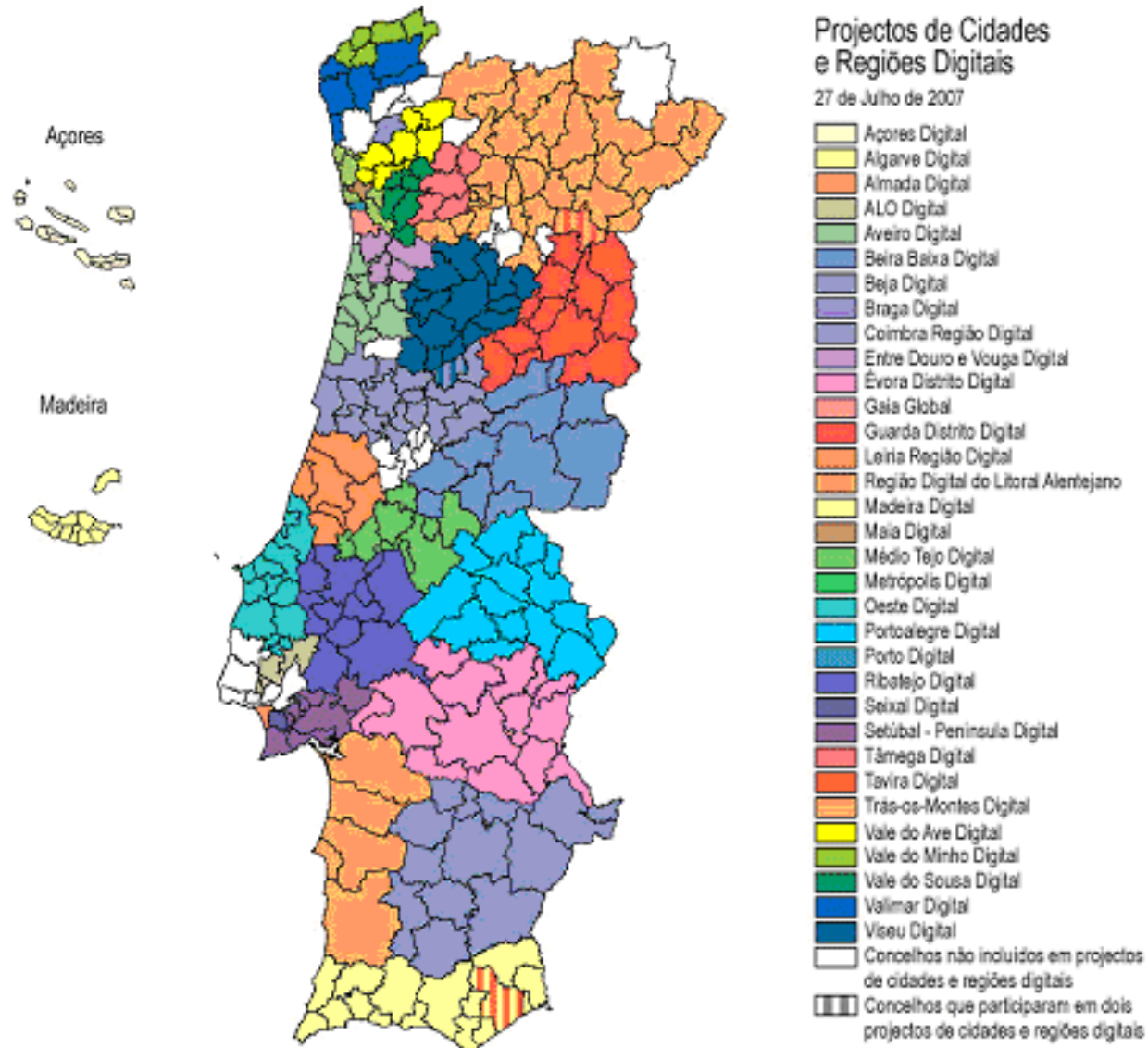
eSkills development actions for special target groups:
aged, parents, immigrants, people with special needs



Digital Cities and Regions – Rural NGNs

Raising ICT Capacity Throughout the Country

33 Digital Cities and Regions, 1999-2009

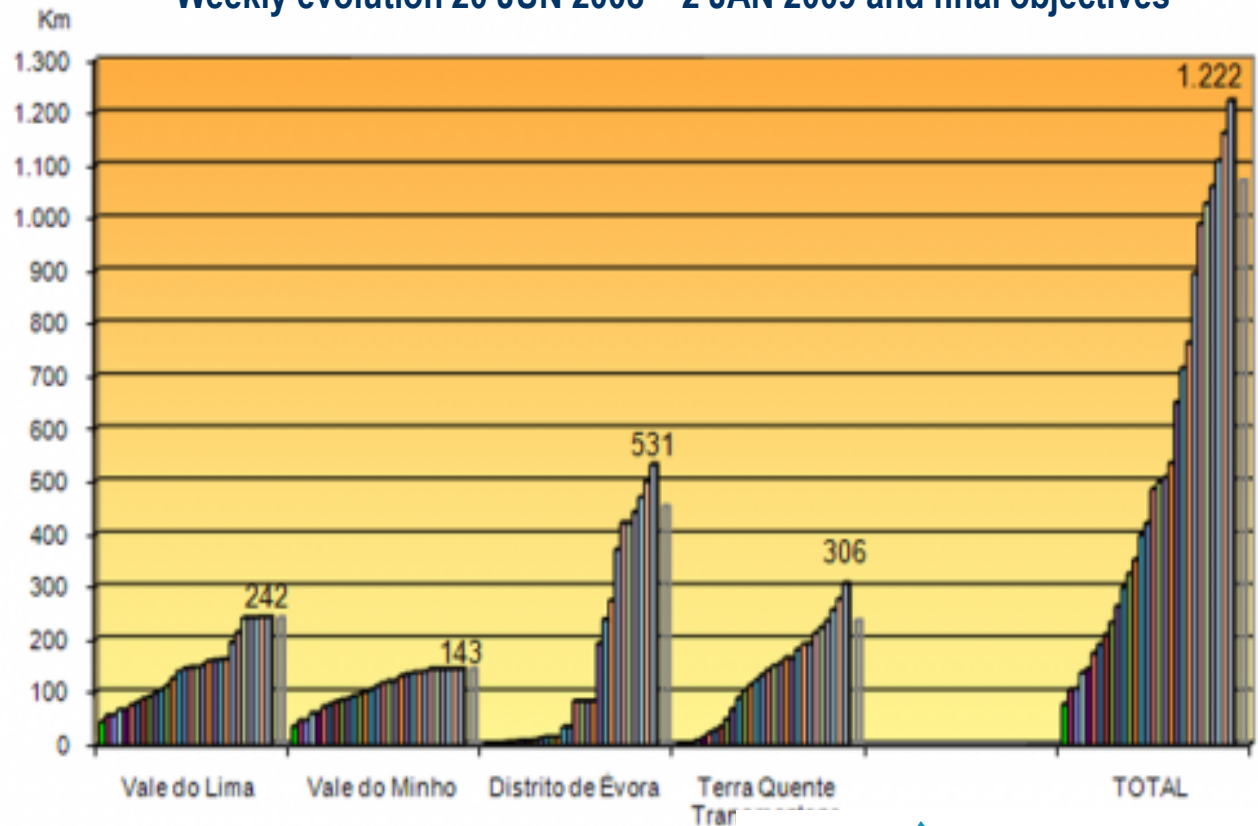


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4 Next Generation Community Networks, 2008



Length of ducts for optical fibre cables
Weekly evolution 20 JUN 2008 – 2 JAN 2009 and final objectives

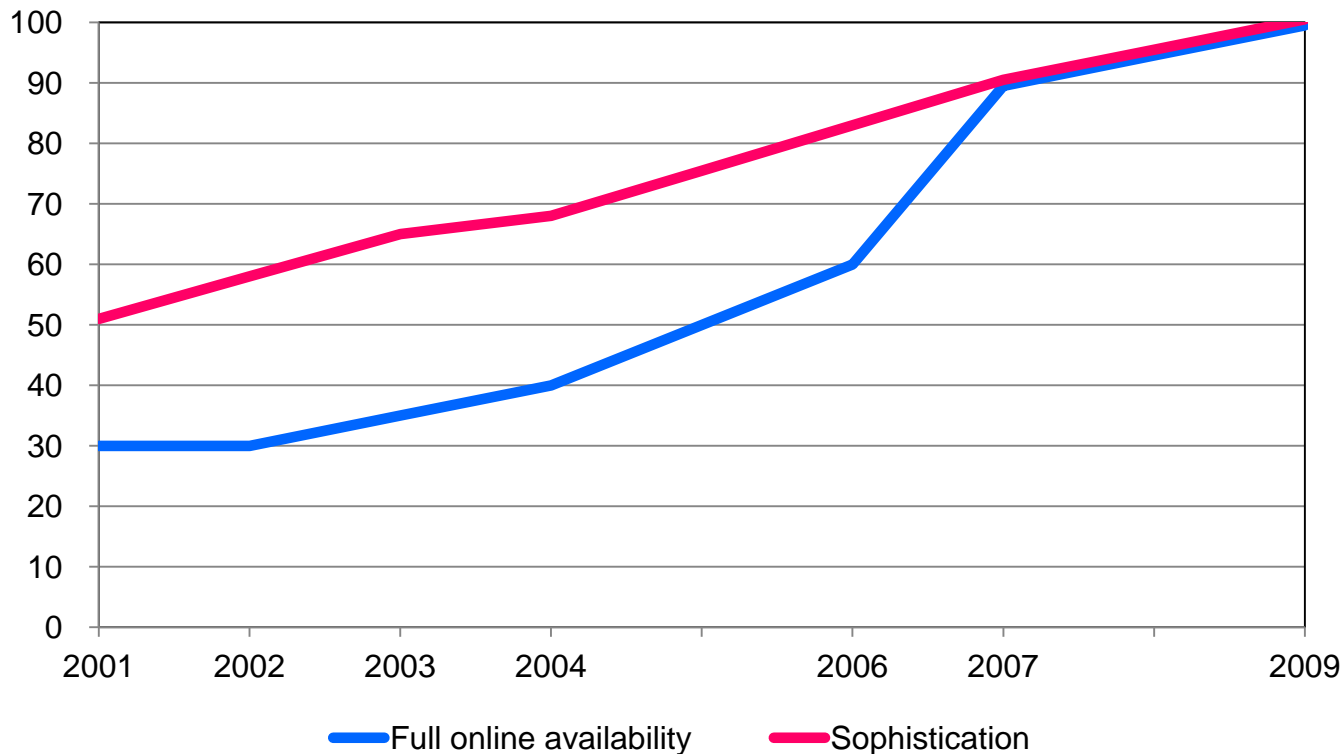


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eGovernment

Basic Public Services Online in Portugal

Complete availability and sophistication, 2001-2009



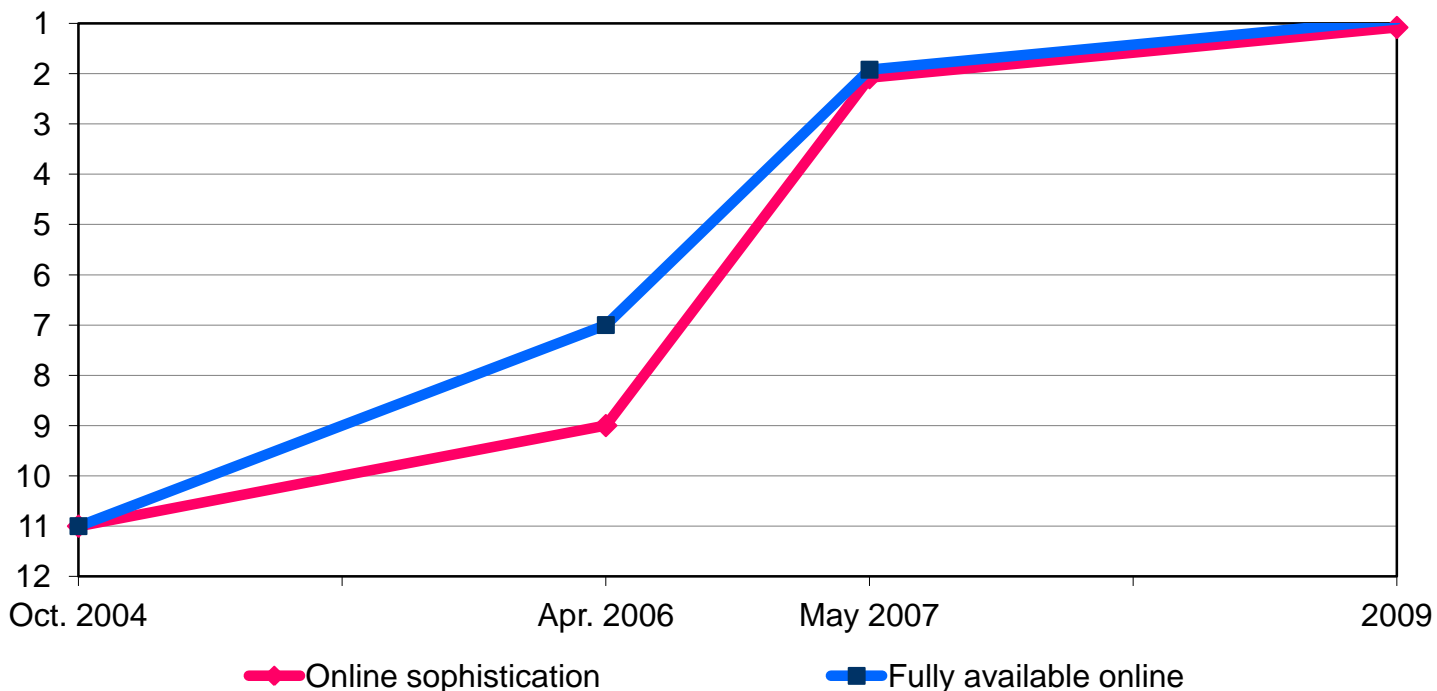
Note: Data of October of each year, except Apr 2006, May 2007, Nov 2009
Source: Capgemini reports prepared for DGINFSO of the European Commission



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Basic Public Services Online in Portugal

Evolution of Portugal ranking in basic public services online complete availability and sophistication within EU27



Source: Capgemini reports prepared for DGINFSO of European Commission



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5 General Practical Rules for Success in the Knowledge Society

- Develop human capital
- Foster partnerships and knowledge networks
- Aim at outcomes, establish clear targets and measure
- Leave room for bottom up creativity and flexible organizational adjustments
- Promote internationalization



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