Connecting Portugal

Mobilizing the Information and Knowledge Society

LPI Master Affiliate Meeting, Lisbon, Portugal

Forum Tecnológico do Lispolis, Lisboa, 24th-25th September 2010

Luis Magalhães
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

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

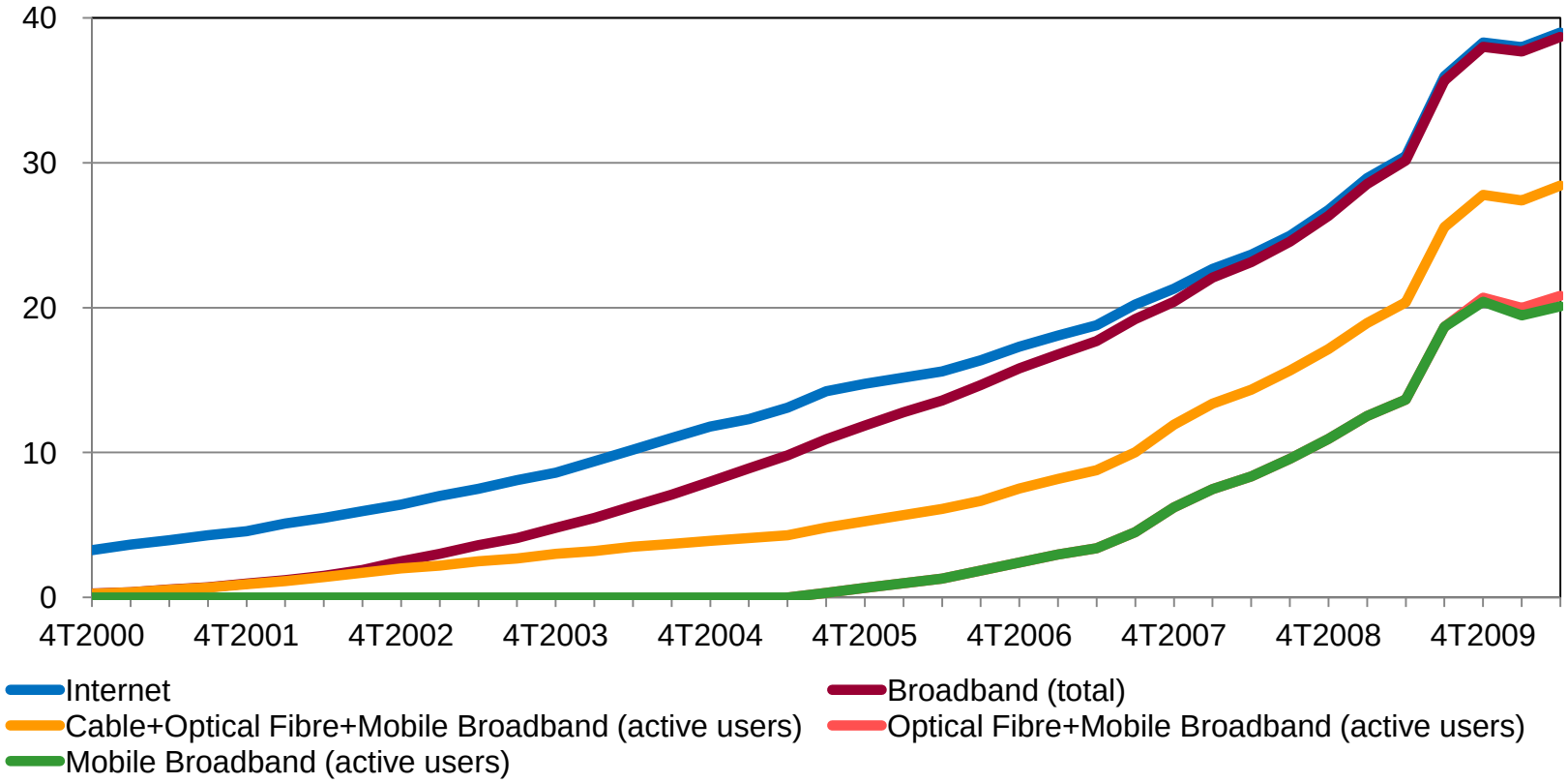
Incubated the National eProcurement Program
spinned off to National Agency of Public Procurement in Ministry of Finance, 9th May 2007

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

High Increase of Broadband Access

Mobile and High Speed Fixed Access

Internet and Broadband Penetration in the Population (% subscribers in total population, 2Q 2010)



Source: ANACOM

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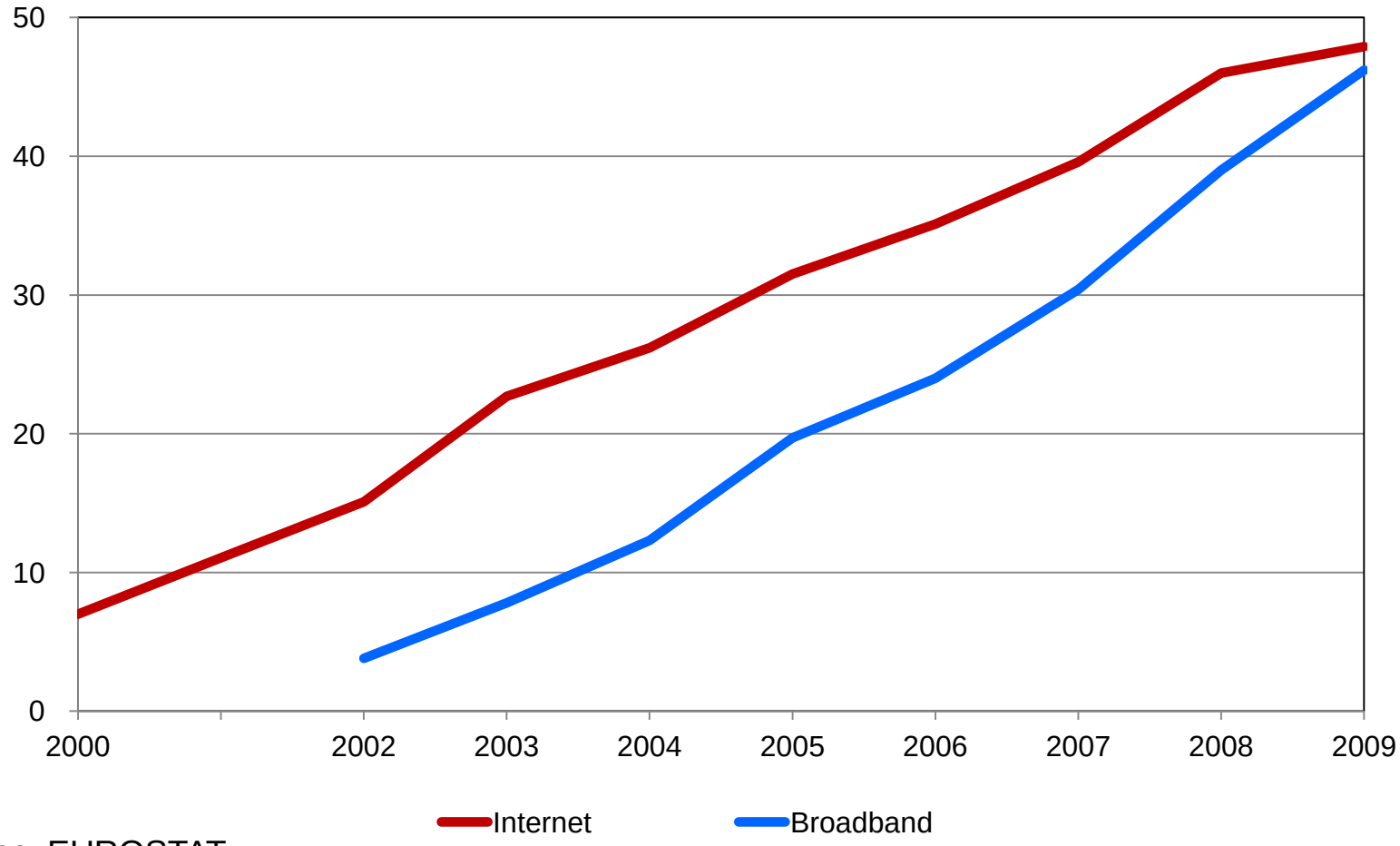
Broadband Penetration in Households (%, 1Q)



Source: EUROSTAT

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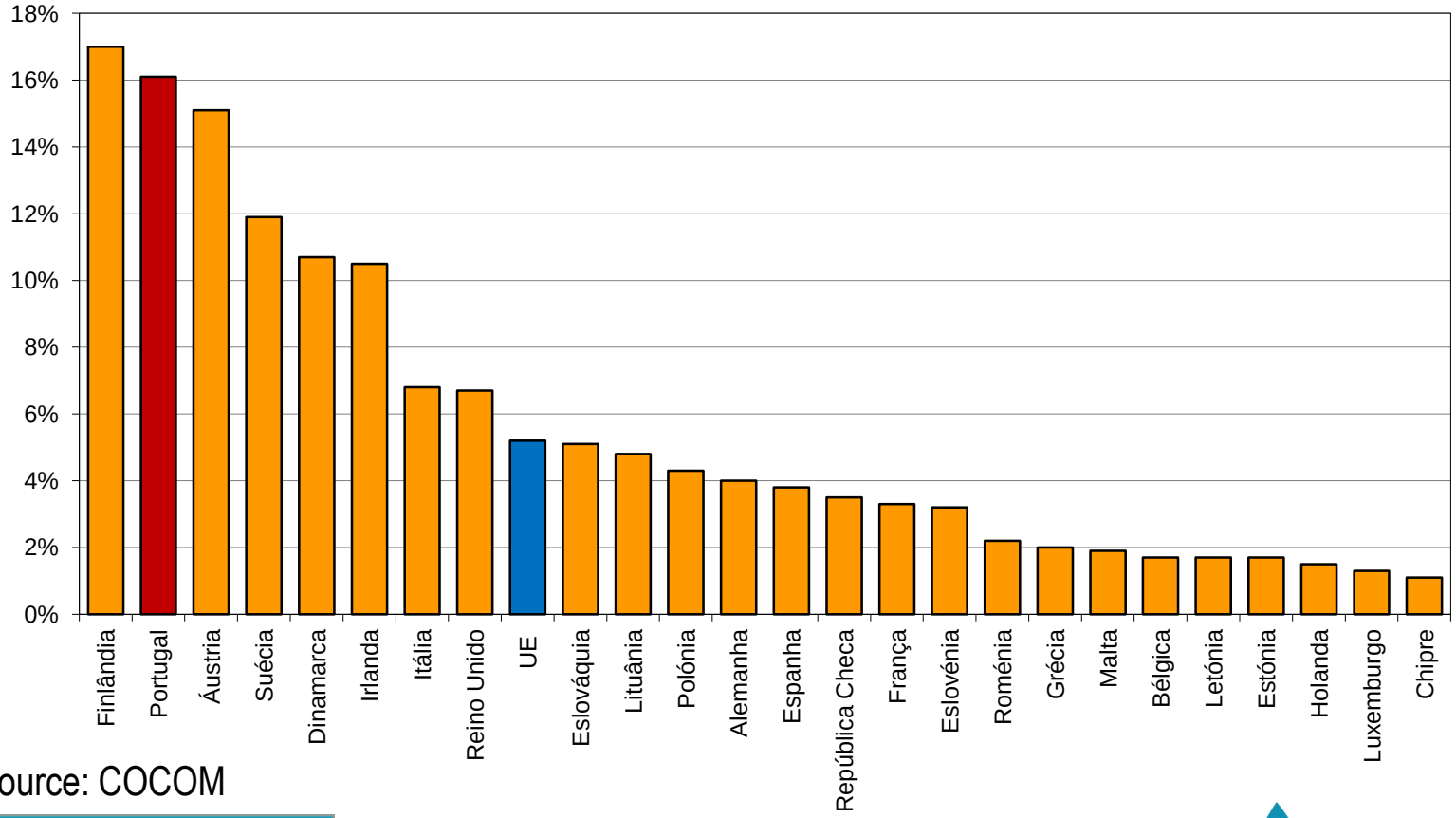
Mobile Broadband Penetration in the Population

dedicated data service (cards/modems/keys) – 1st Jan 2010



Source: COCOM

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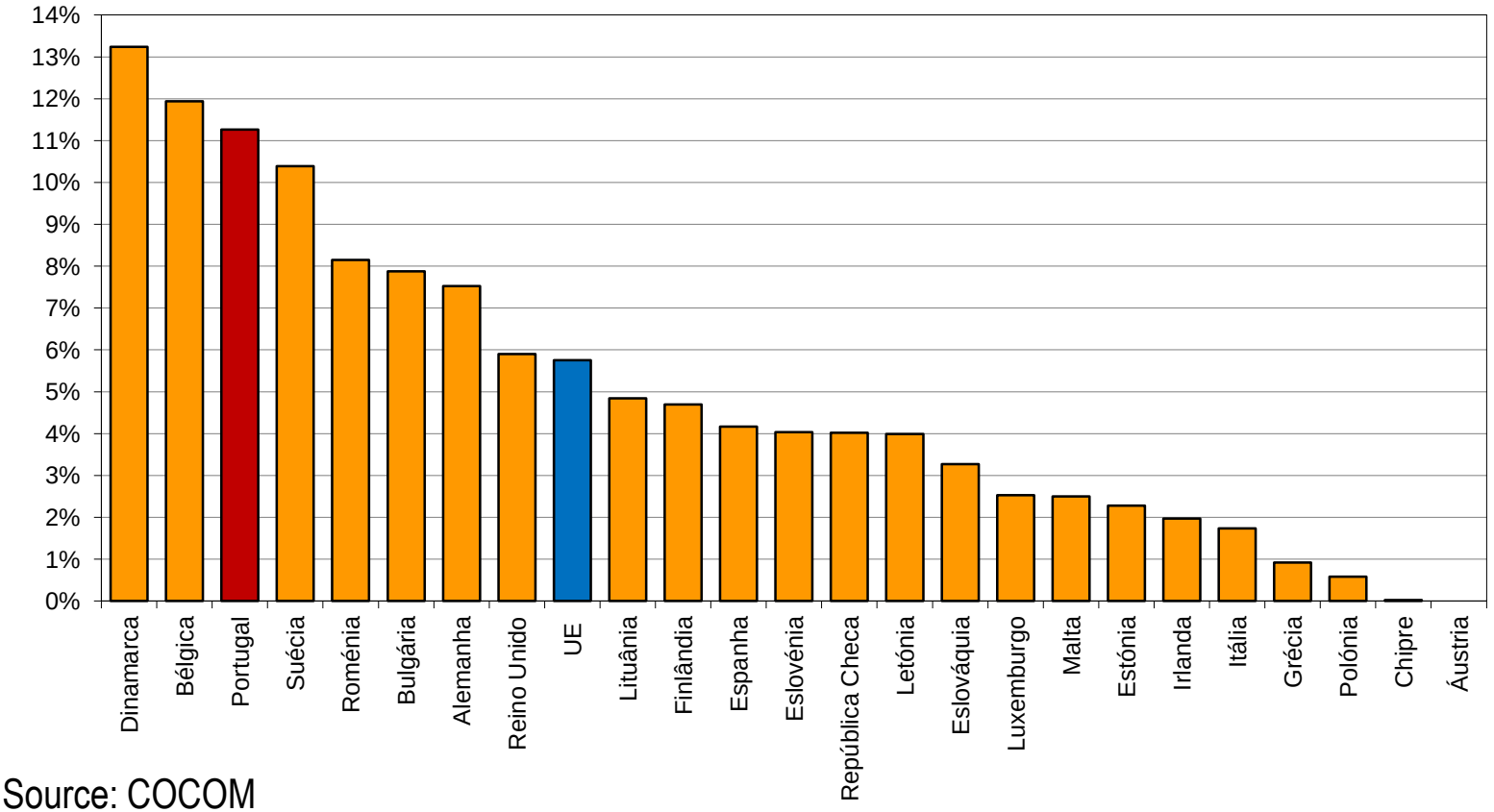
High Speed Fixed Broadband Penetration

≥ 10 Mbp/s in the population – 1 Jan 2010



Source: COCOM

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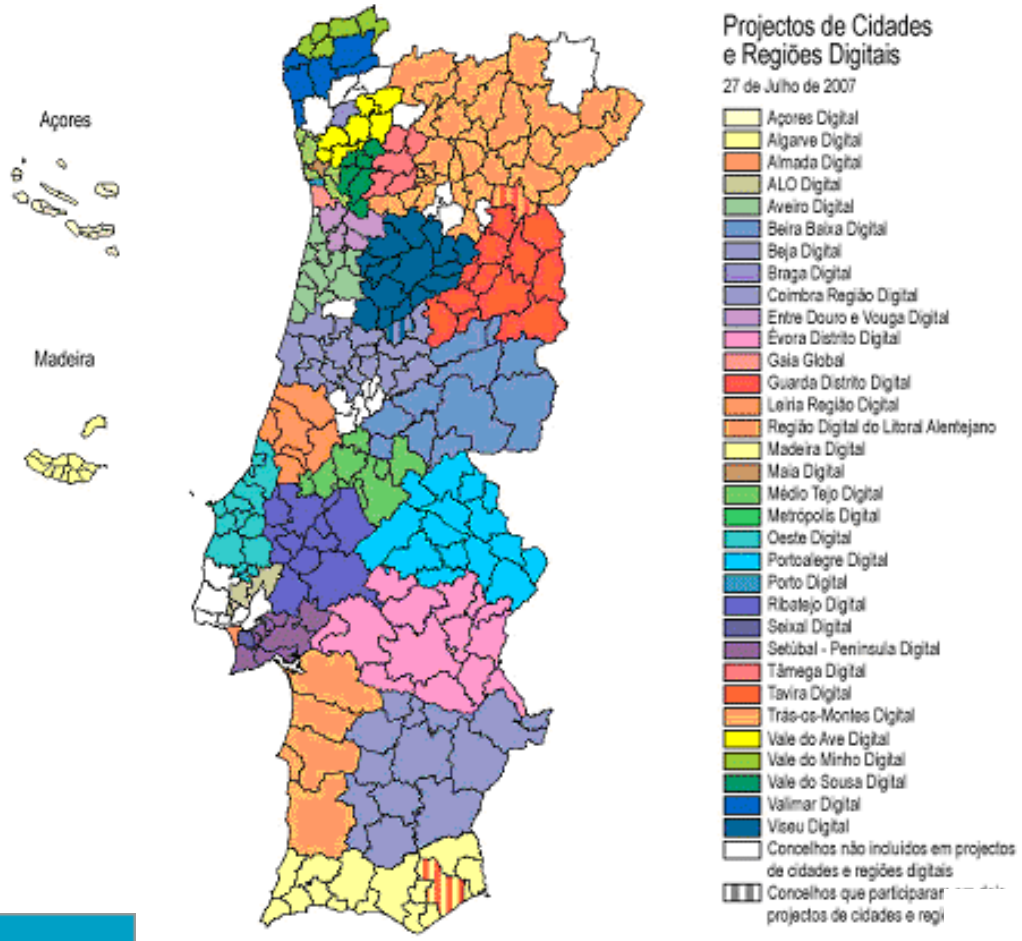
Digital Cities and Regions – Rural NGNs

Raising ICT Capacity Throughout the Country

33 Digital Cities and Regions, 1999-2009



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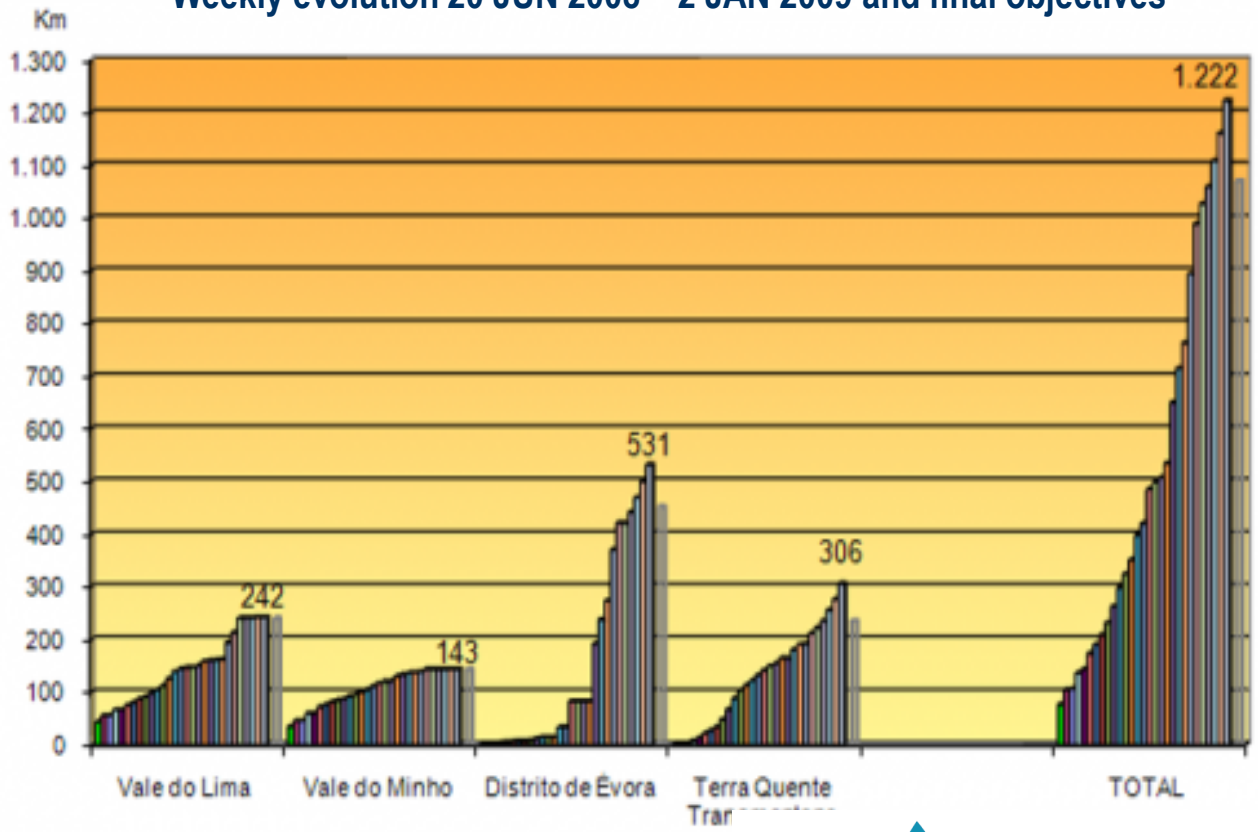
4 Next Generation Community Networks, 2008

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



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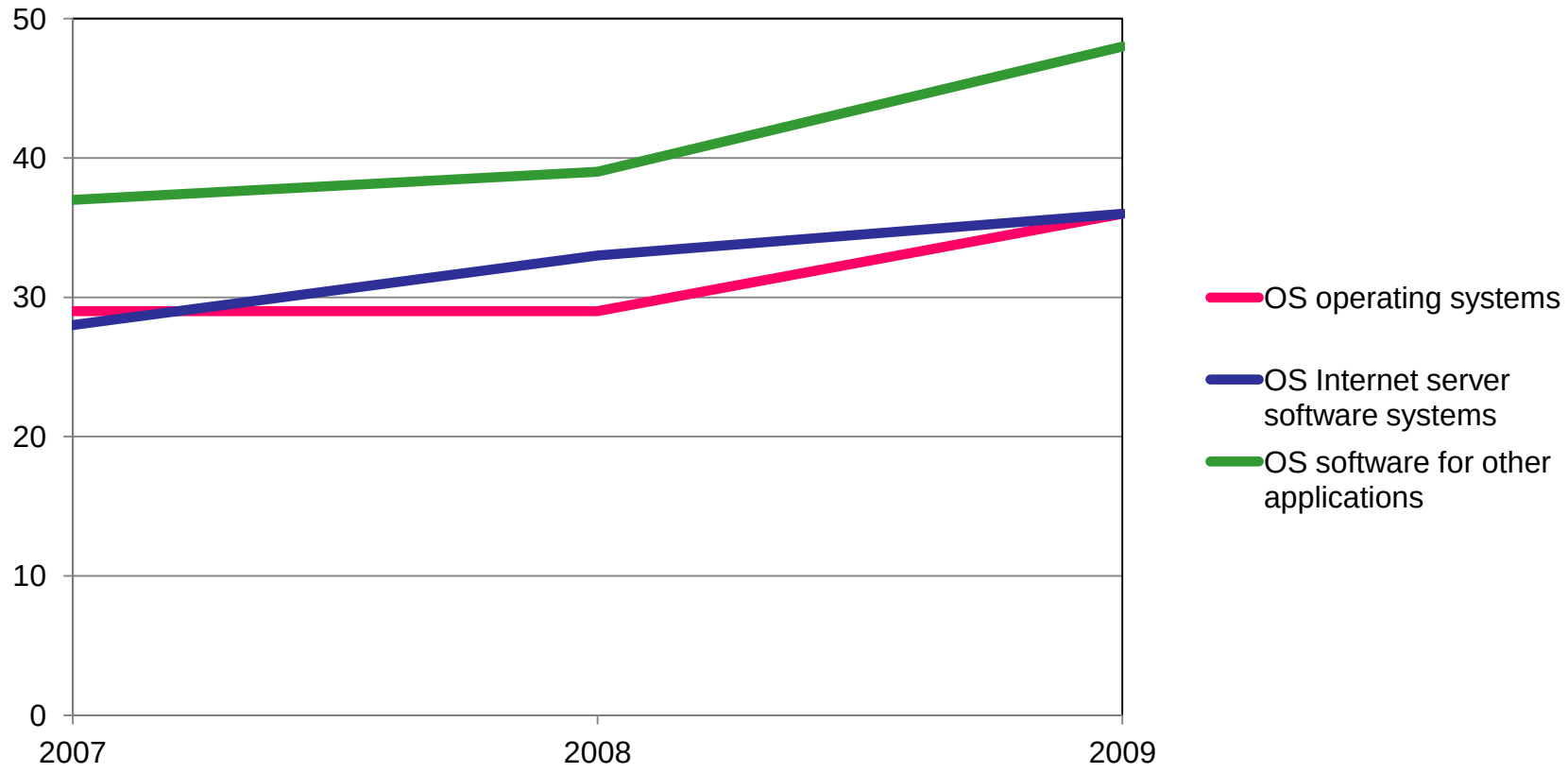
Open Source

In Central, Regional and Municipal Government

Open Source Use in Central Government Organizations (%)



Source: UMIC

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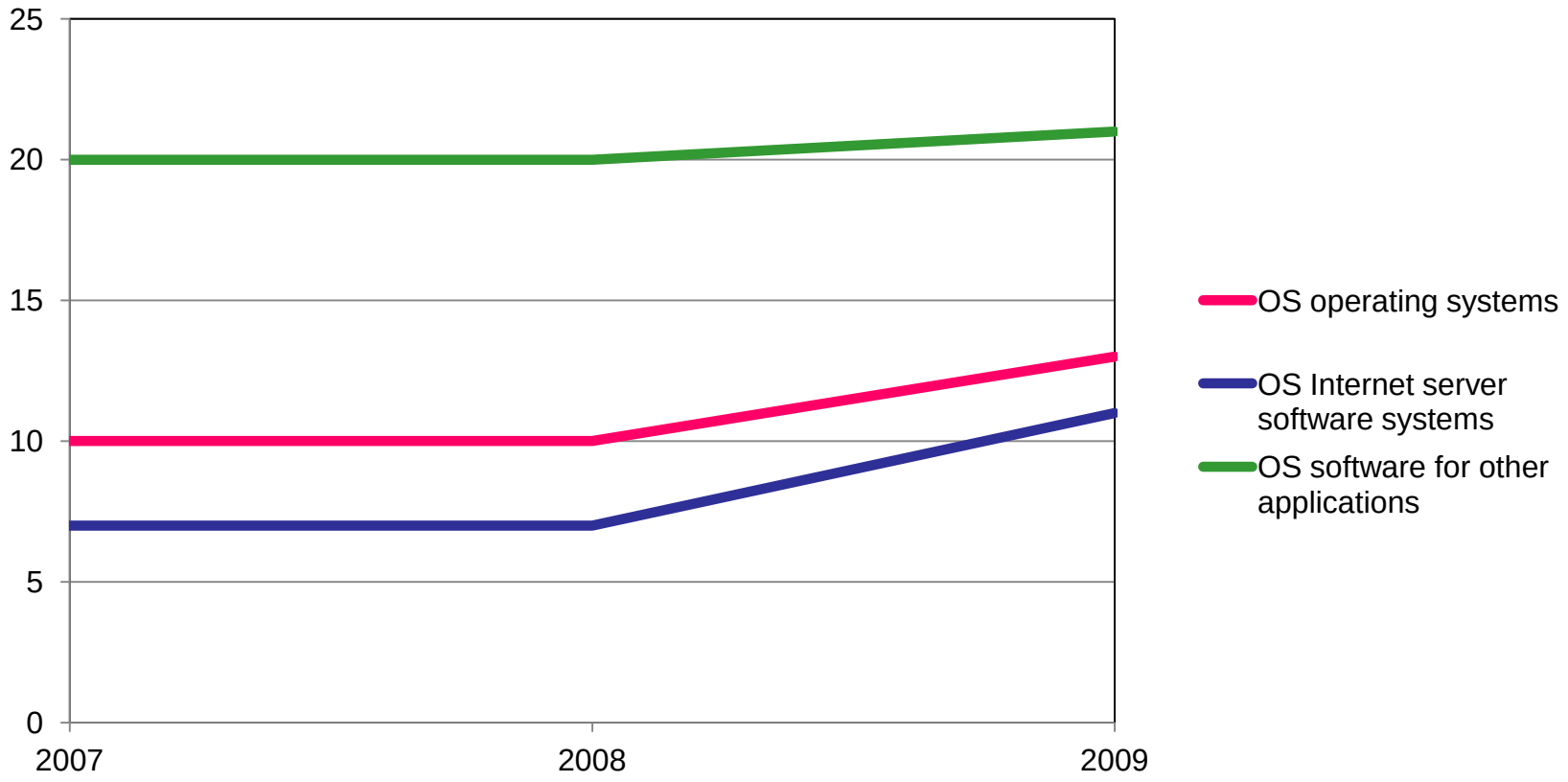
Open Source Use in Regional Government – Azores (%)



Source: UMIC

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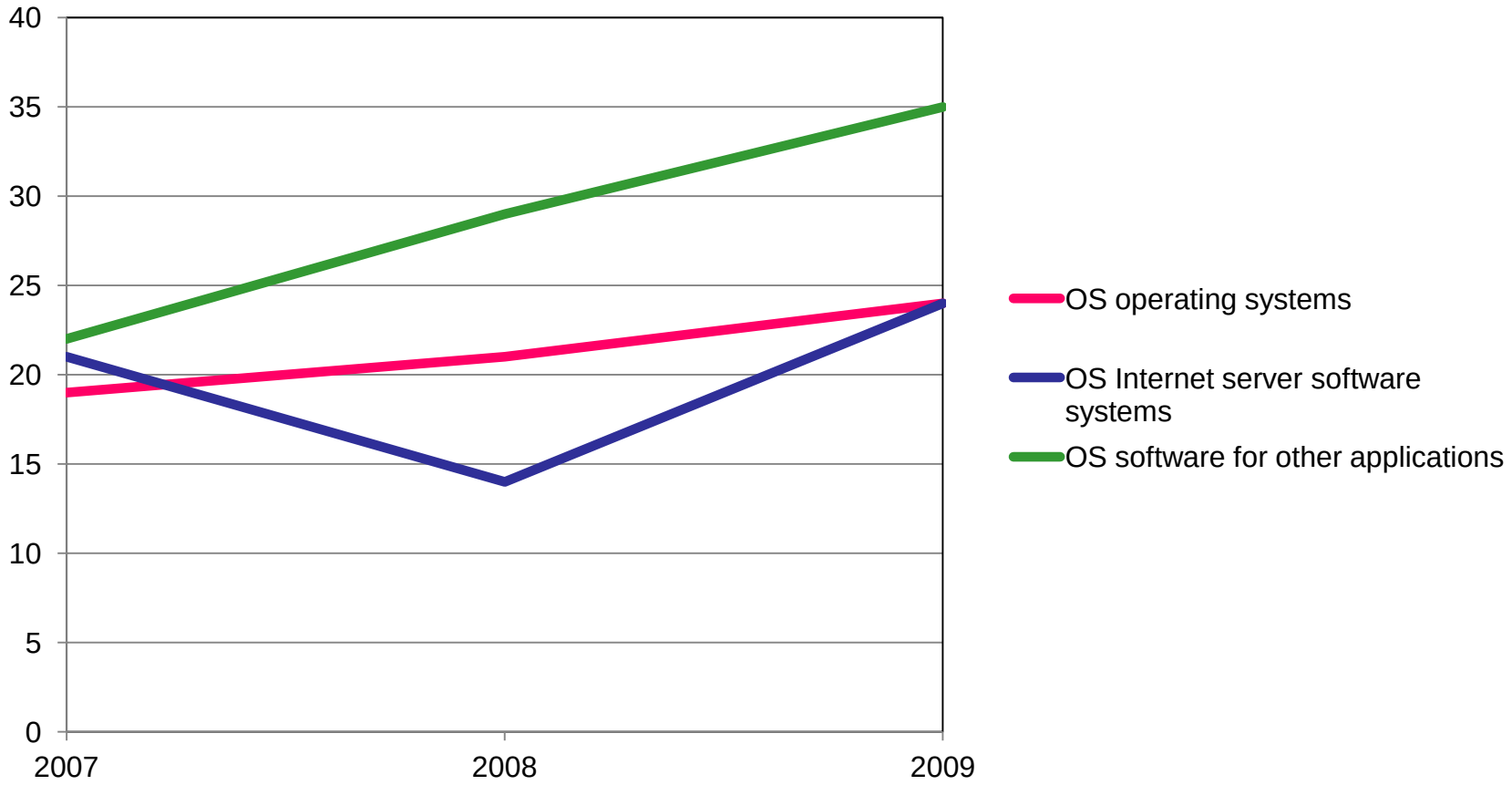
Open Source Use in Regional Government - Madeira (%)



Source: UMIC

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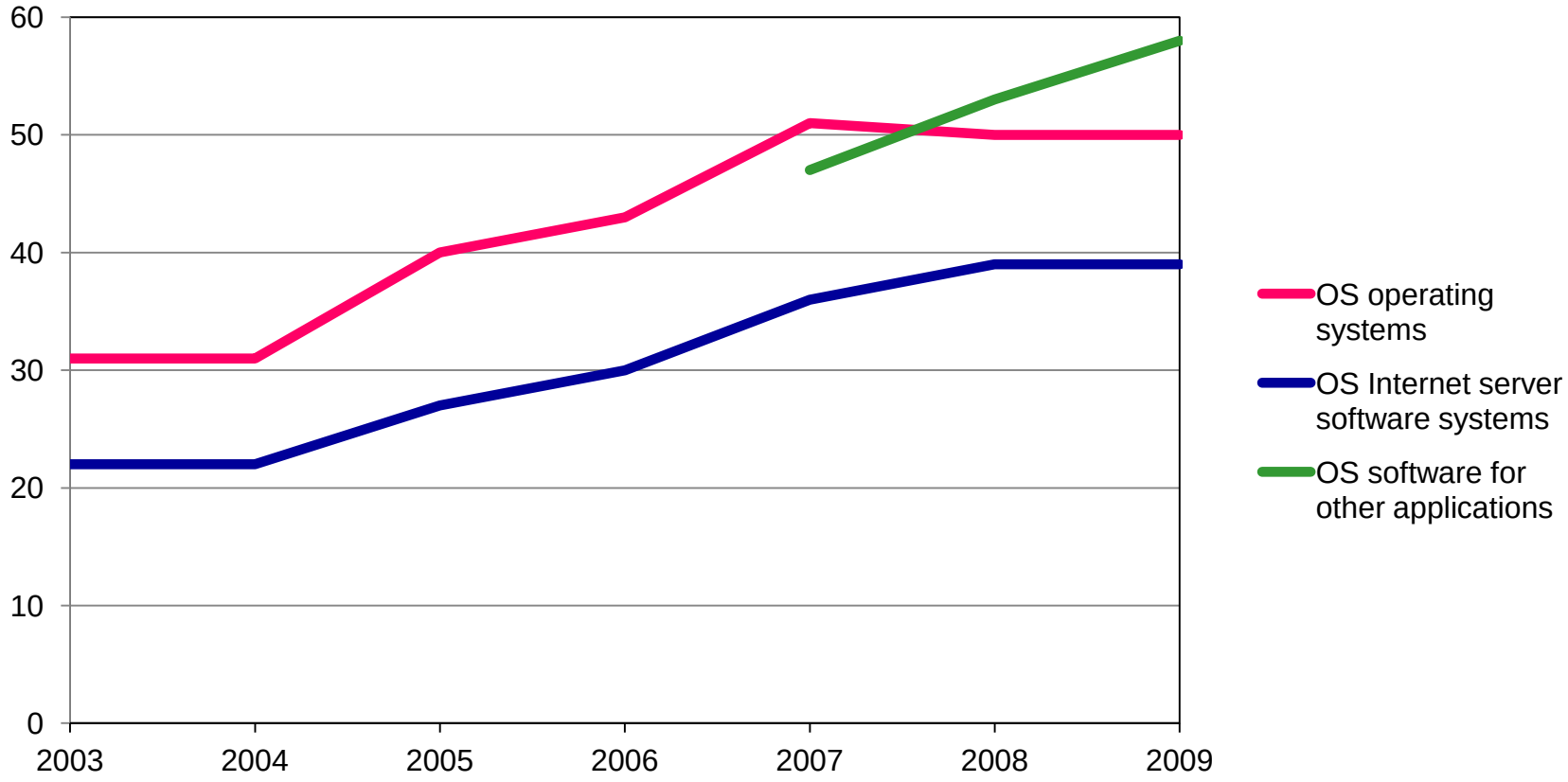
Open Source Use in Municipalities (%)



Source: UMIC

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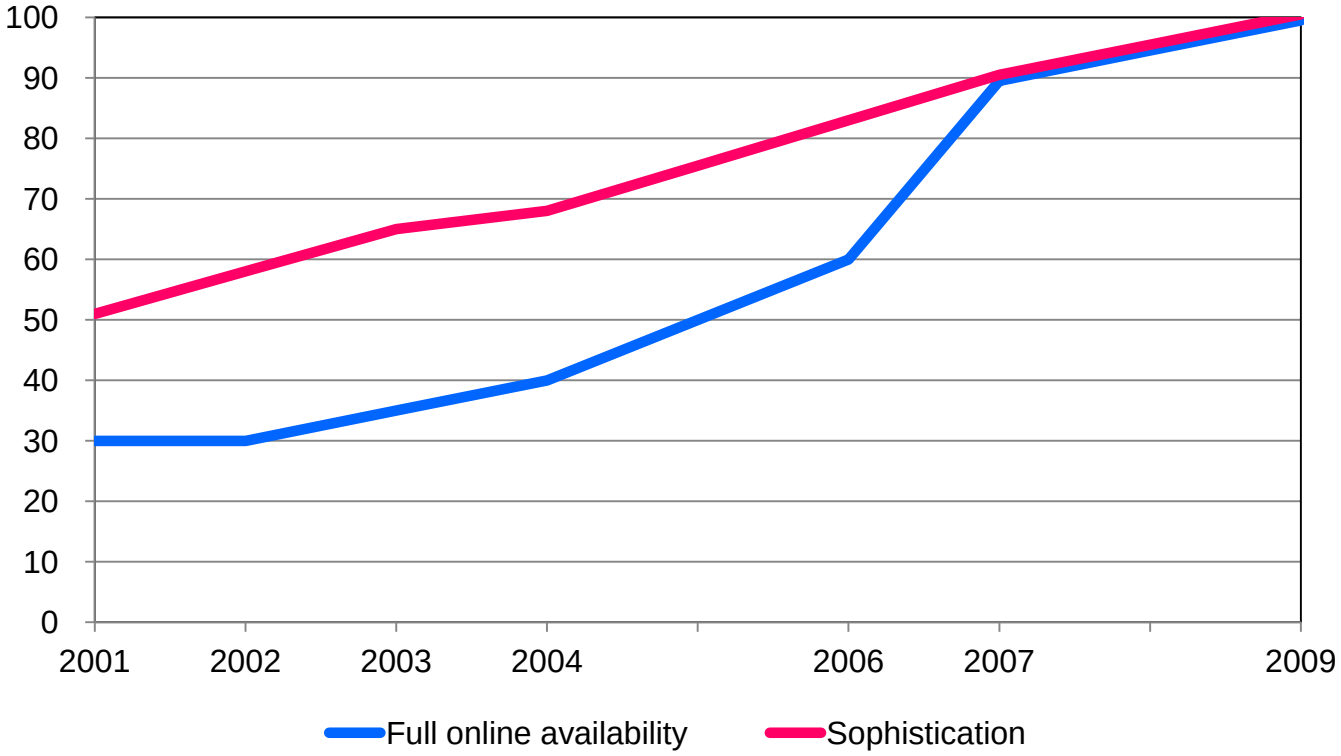
eGovernment

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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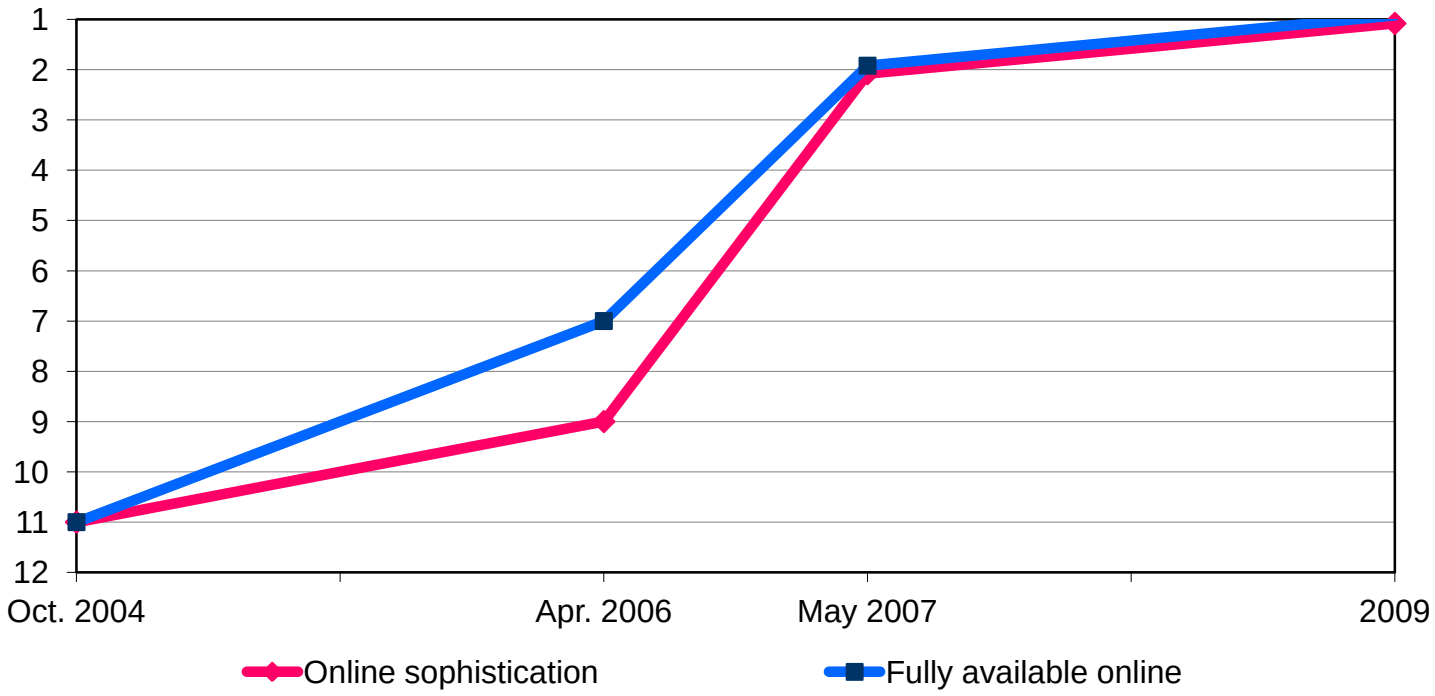
Basic Public Services Online in Portugal

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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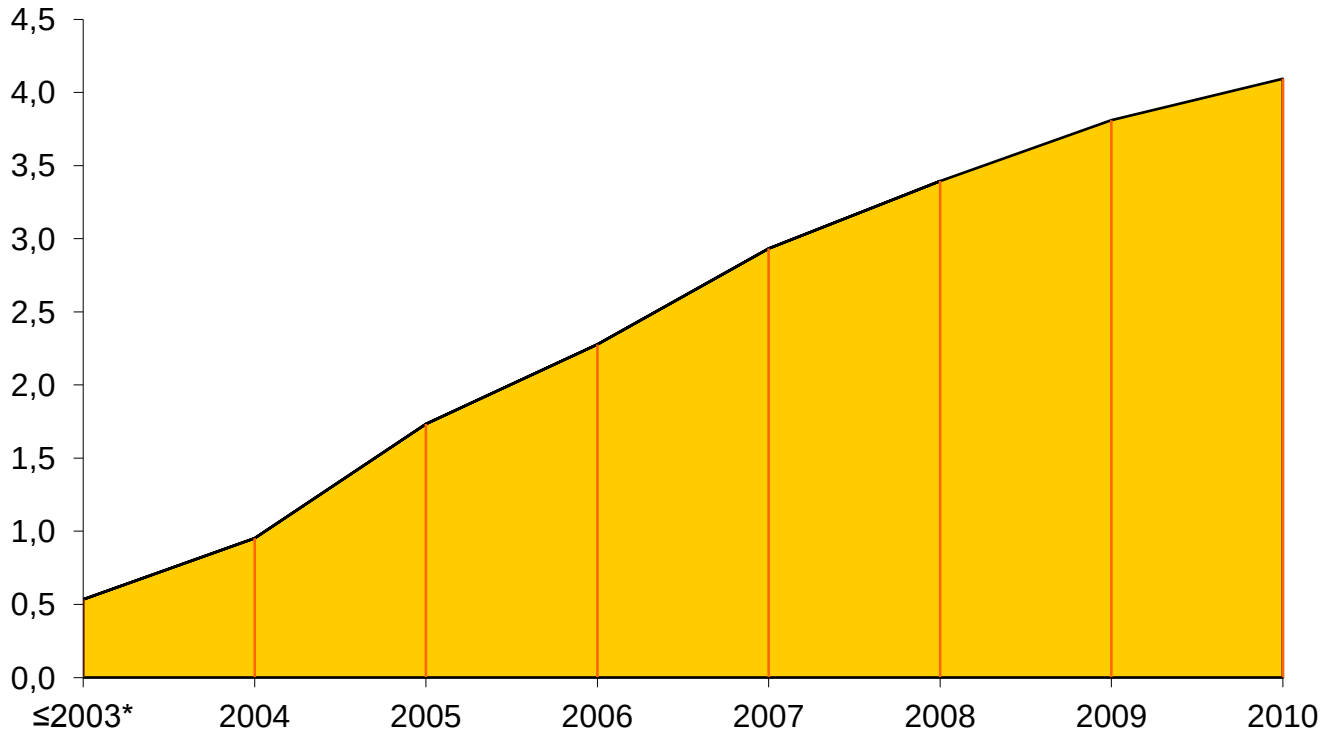
IRS Declarations Submitted Through the Internet

millions of declarations (in 2009, >80% of total declarations)



***Accumulated value**
Source: Ministry of Finance

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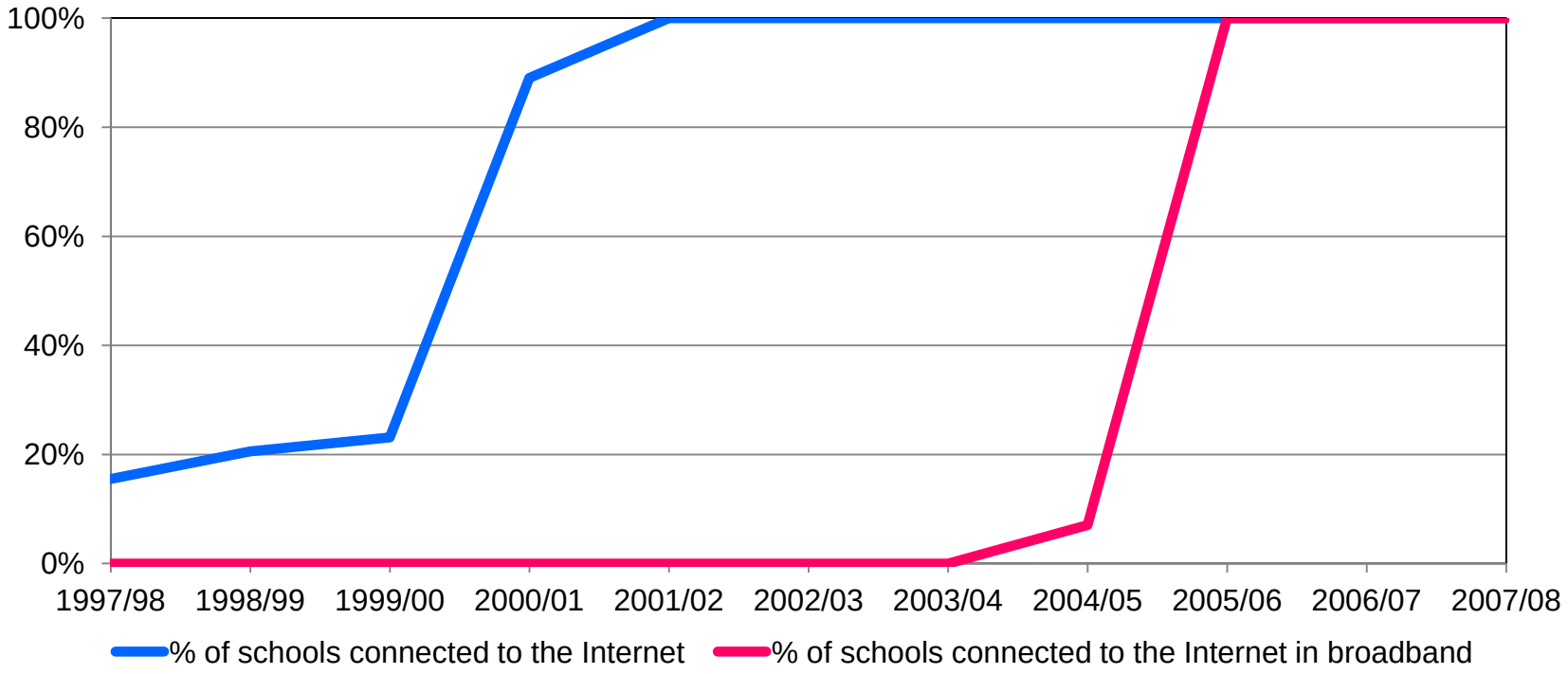
Priority to the Use of Internet and Computers in Schools

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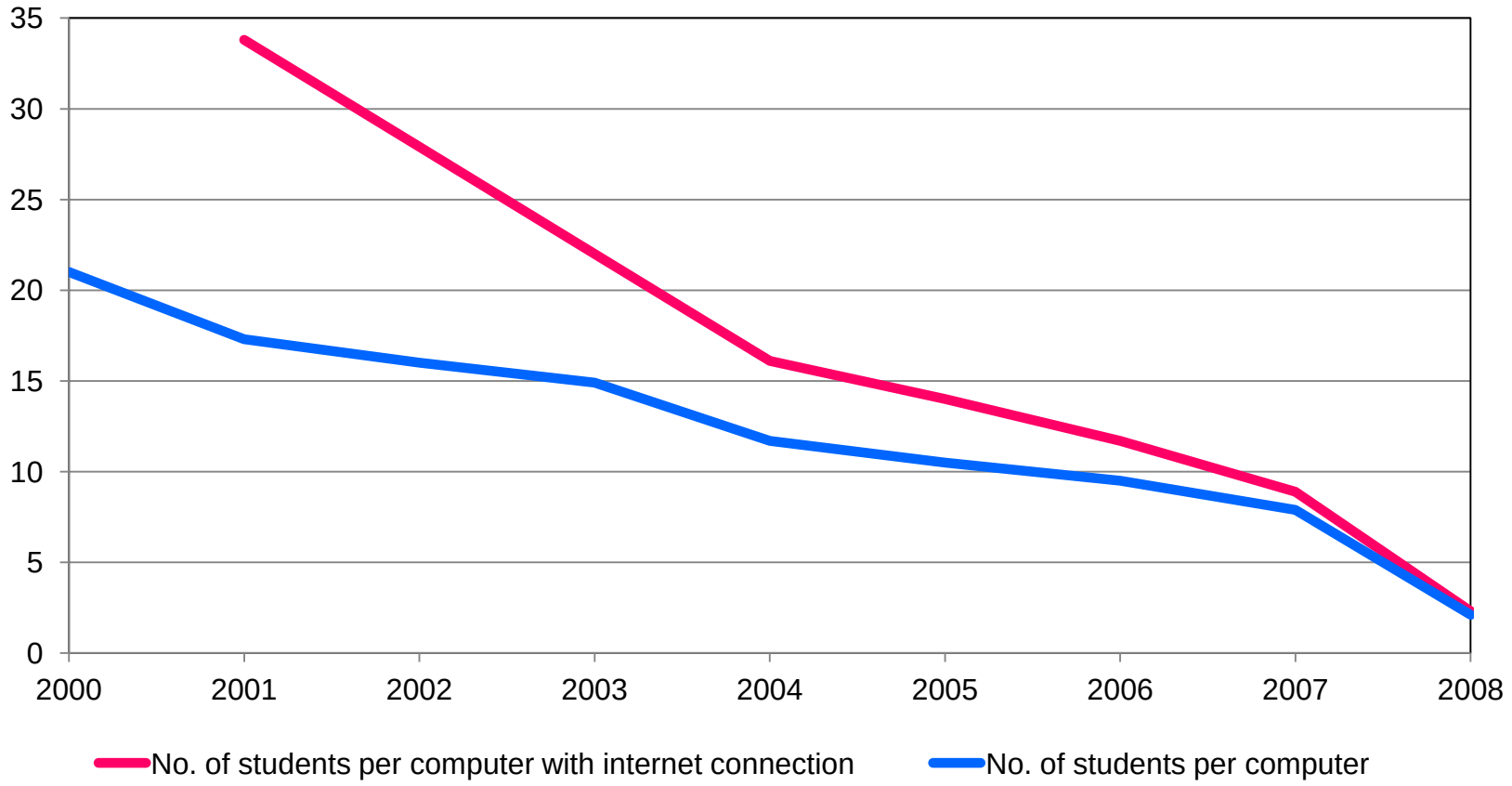
Number of Students per Computer with Internet Connection in Schools (1st to 12th grade)



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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 (≈6th grade ICT level). Now planned 2 more levels: Intermediate (≈9th grade ICT level), Advanced(≈12th 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, Professional Masters in International Partnerships

Regular Internet Users in Portugal

% regular Internet users by educational attainment (1Q 2009)

- 93% people with higher education

  average UE27 2009 = 91%

- 87% people with upper secondary but without higher education

  average UE27 2009 = 71%

- 30% people without upper secondary education

  average UE27 2009 = 43%

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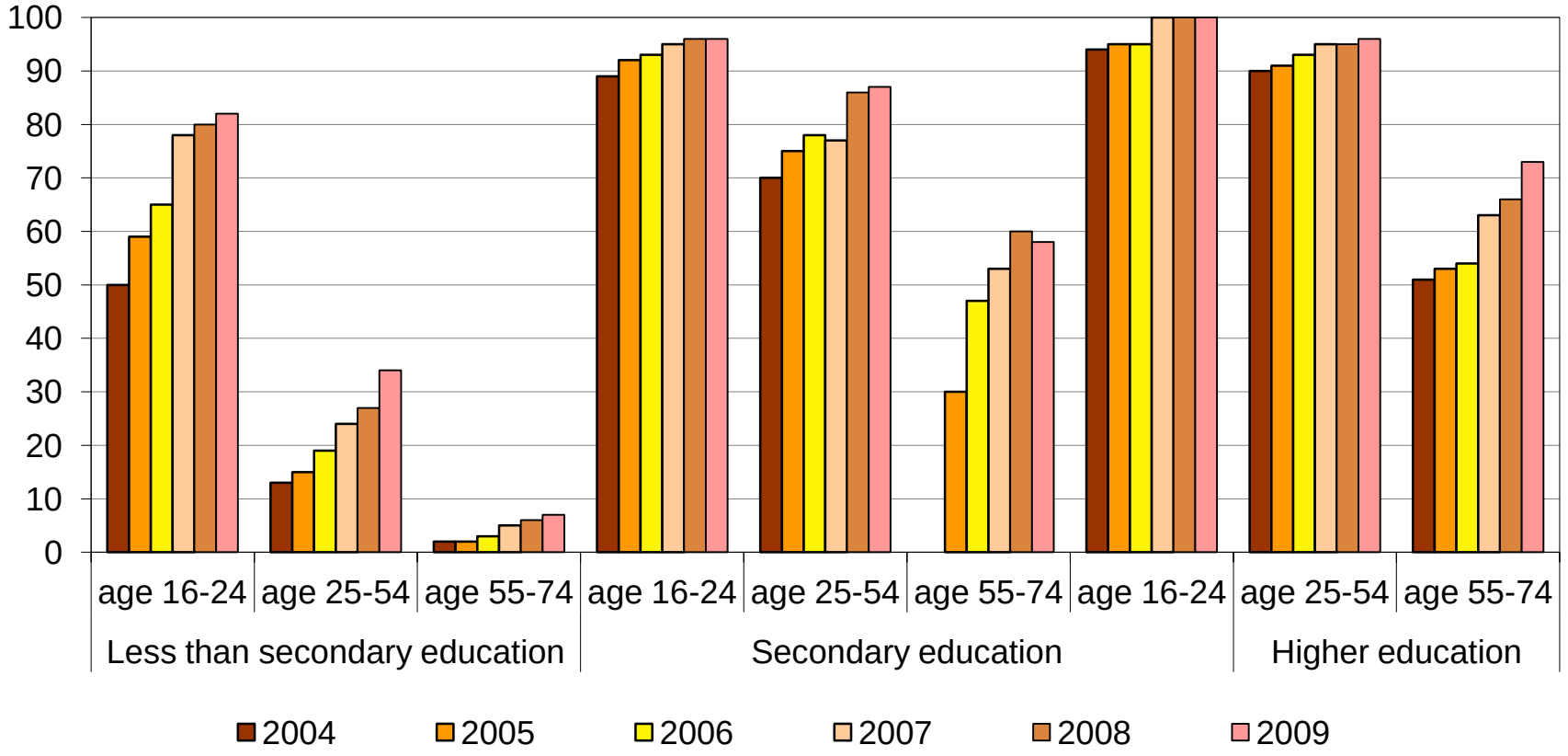
Regular Internet Users in Portugal

by age and educational attainment (1Q, 2009)



Source: EUROSTAT

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Education Technological Plan

- Generalize laptops for students and teachers: >1M deployed.
- High speed Internet in schools: ≥48Mpbs 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/room and 1 interactive board/3 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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New Opportunities Program

education of adults without complete basic education

- In enterprises, enterprise associations, community centers, schools
- Target: 1M people
- Always involving eSkills training
- >200K laptops deployed within the New Opportunities Program

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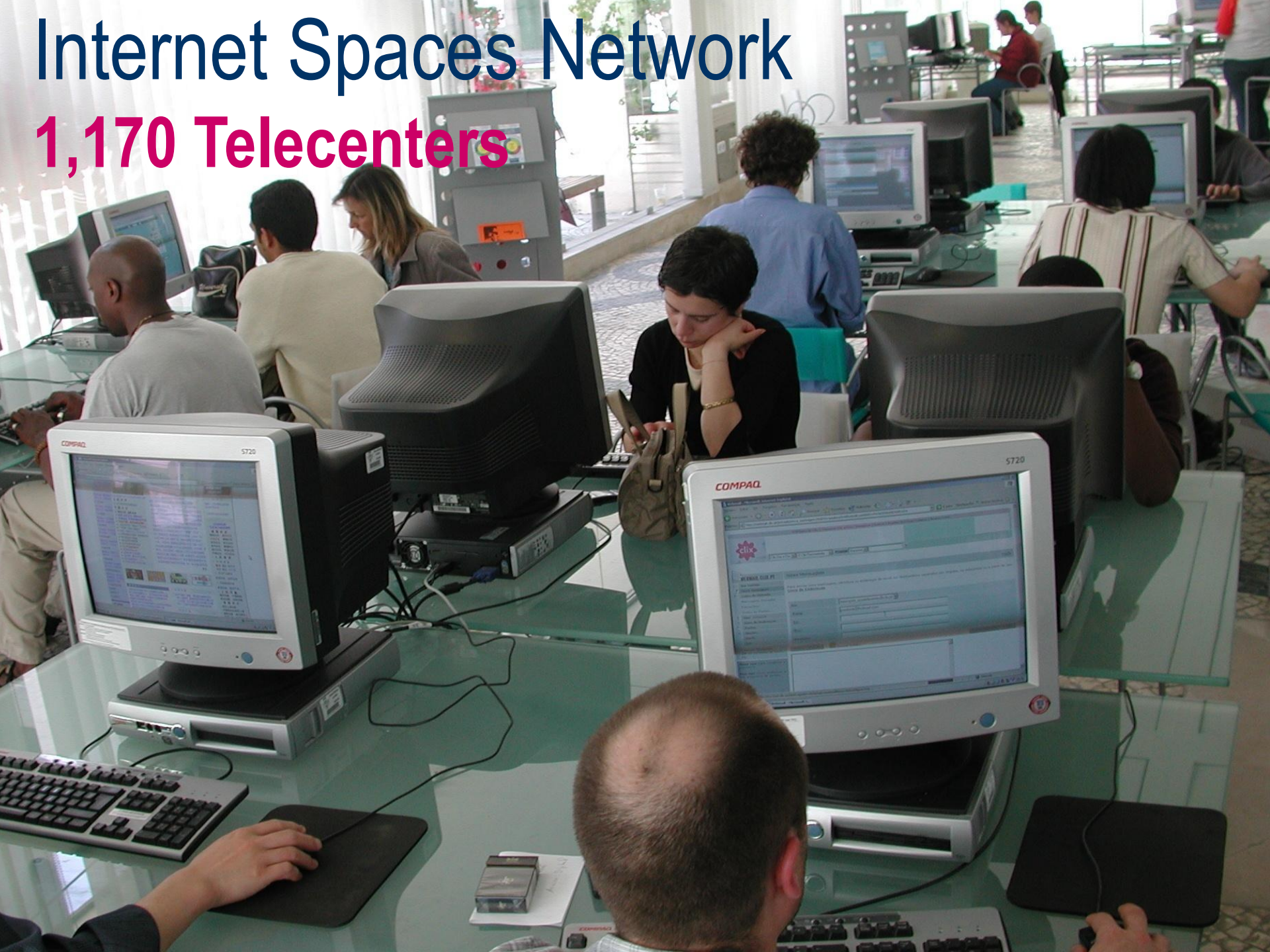
Internet Spaces Network

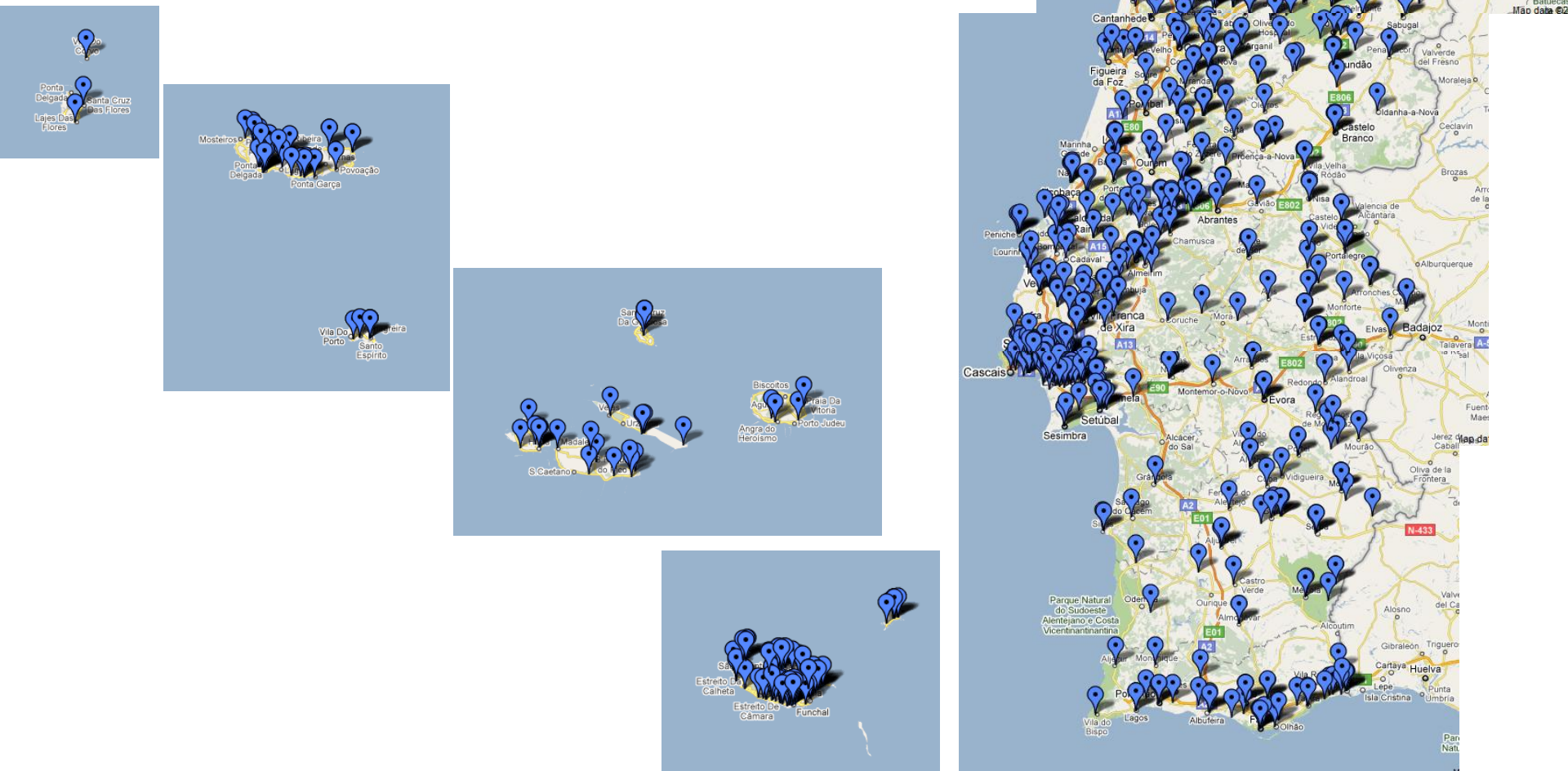
1,170 Telecenters



Internet Spaces Network

1,170 Telecenters

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



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
- SAP
- SAS, Business Intelligence Software
- LPI – Linux Professional Institute
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CET – Technology Specialization Courses
professional training courses in polytechnics and universities

- Level 4 post-secondary education w/ professional certification
- 119 registered CETs in ICT
- in 38 institutions
- in 30 towns
- Examples:

  Multimedia Development
  Network and Information Systems Installation and Maintenance
  Computer Management Applications
  Information Systems Technologies and Programming
  Geographic Information Systems
  Automation, Robotics and Industrial Control
  Software Development and Systems Management
  Network and Information Systems Management
  Mechatronics
  . . .

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International Partnerships

ICT curricula modernization and Professional Masters involving research, industry and university

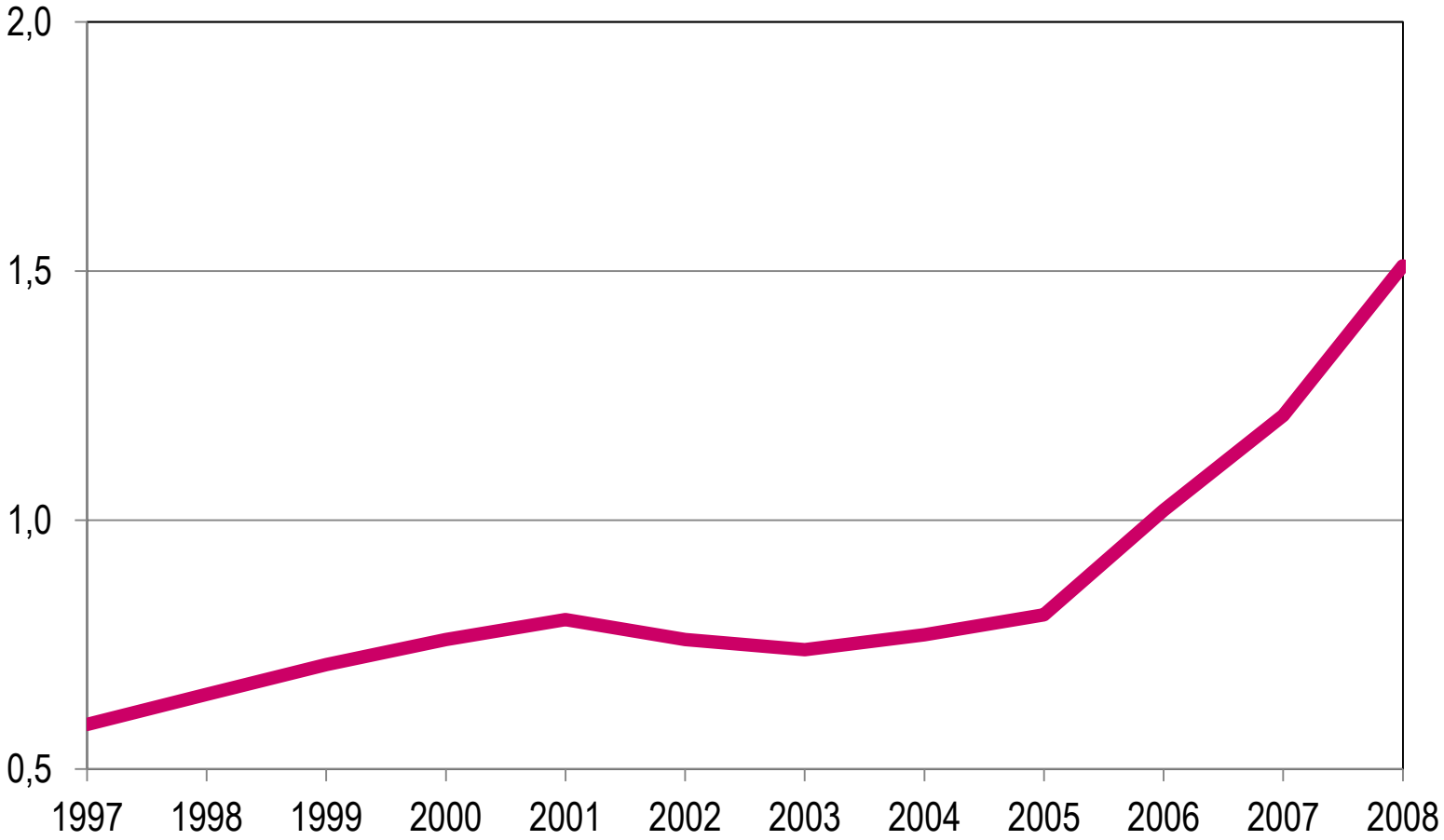
MIT – Portugal Program (beginning 11 Oct 2006)
Engineering Systems: Sustainable energy and transportation systems ● Advanced engineering design and manufacturing in electric car and mobile medical applications

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 ● Language technology ● Software engineering for large-scale dependable systems

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

Context of High S&T Growth in Portugal

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



Source: EUROSTAT

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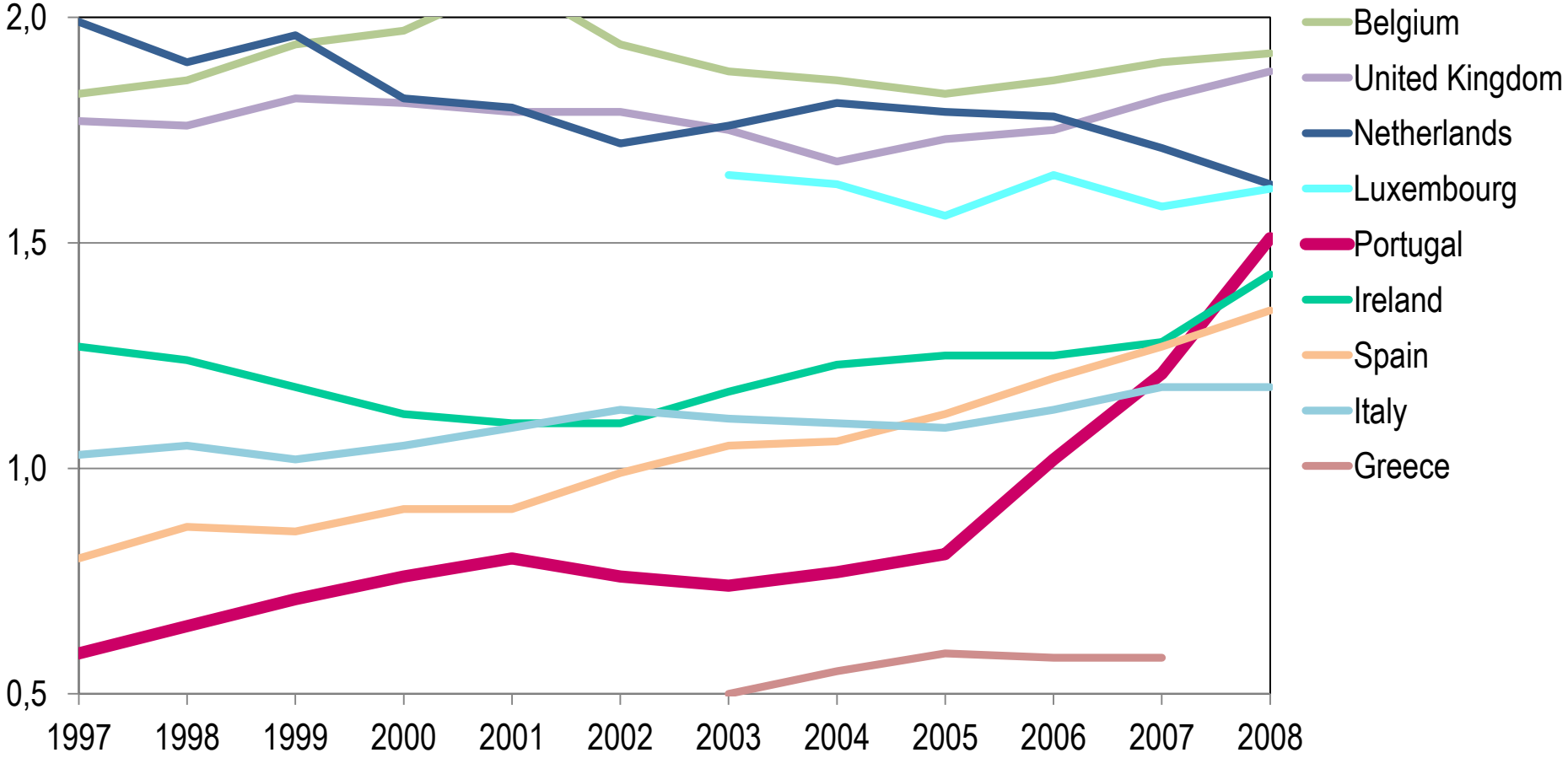
Evolution of R&D Expense in GNP (%), in Portugal

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



Source: EUROSTAT

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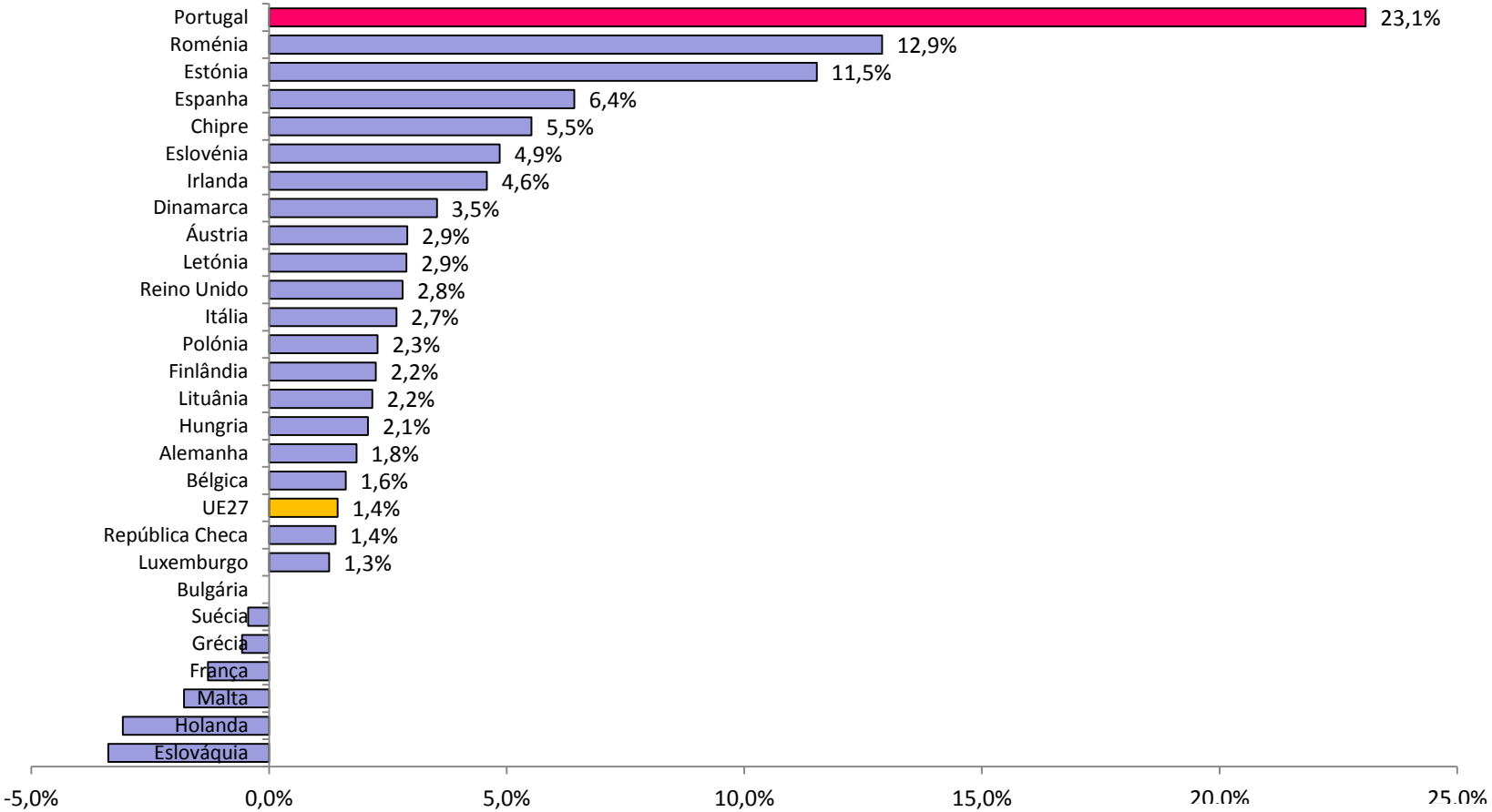
Annual Average Growth of % of R&D Expense in GNP, 2005-2008



Source: EUROSTAT

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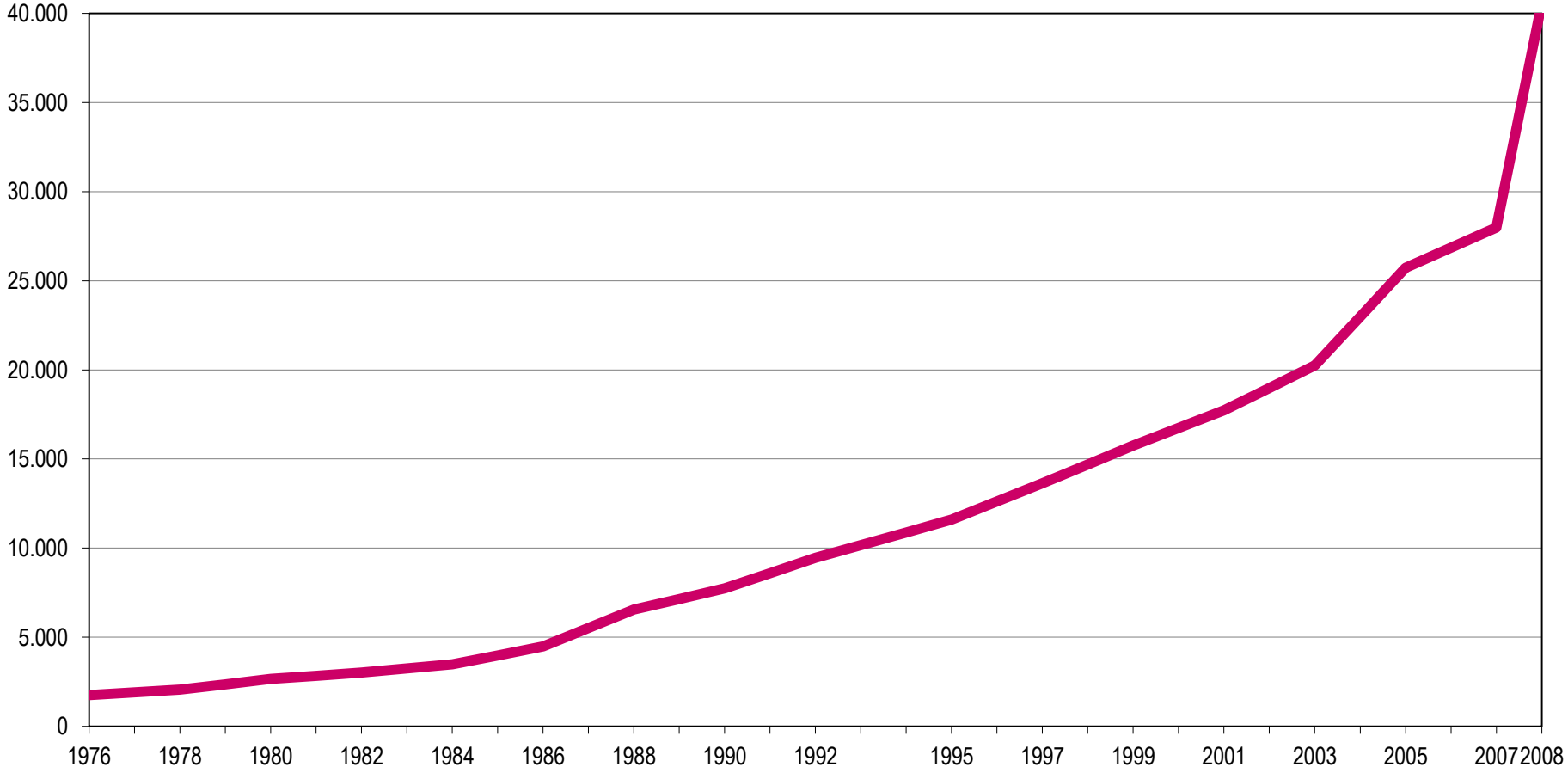
High Growth in Researchers (FTE)



Source: EUROSTAT

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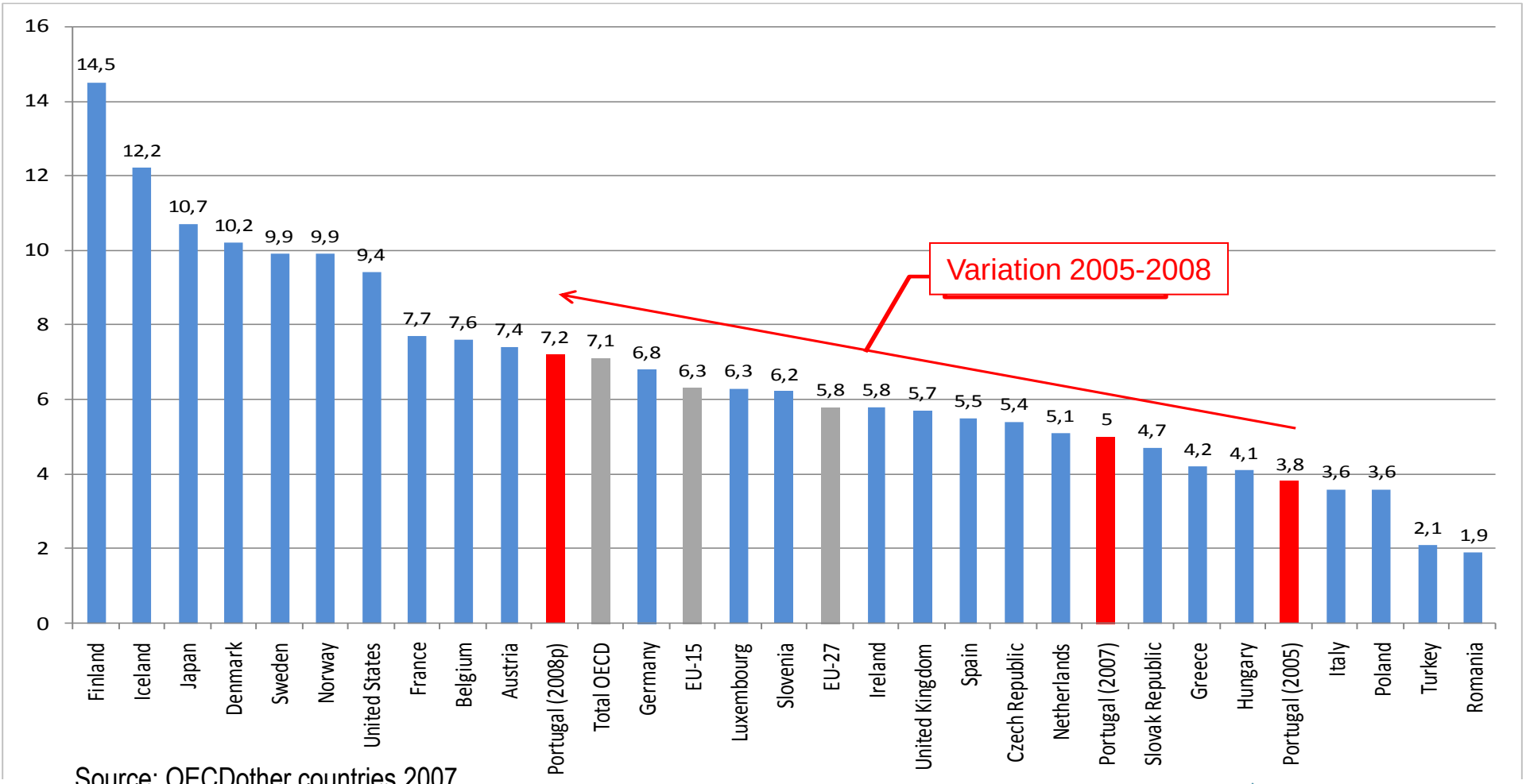
High Growth in Researchers (‰ labor force)



Source: OECDother countries 2007

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In this Context of High S&T Growth

National e-Science Strategy

National e-Science Strategy
Infraestruture

- RCTS, National Research and Education Network as an NGN (presently fiber of FCCN to 85% of Higher Education System, at 10 Gbps, scalable)

- e-U Virtual campus with immediate wireless access integrating all Higher Education

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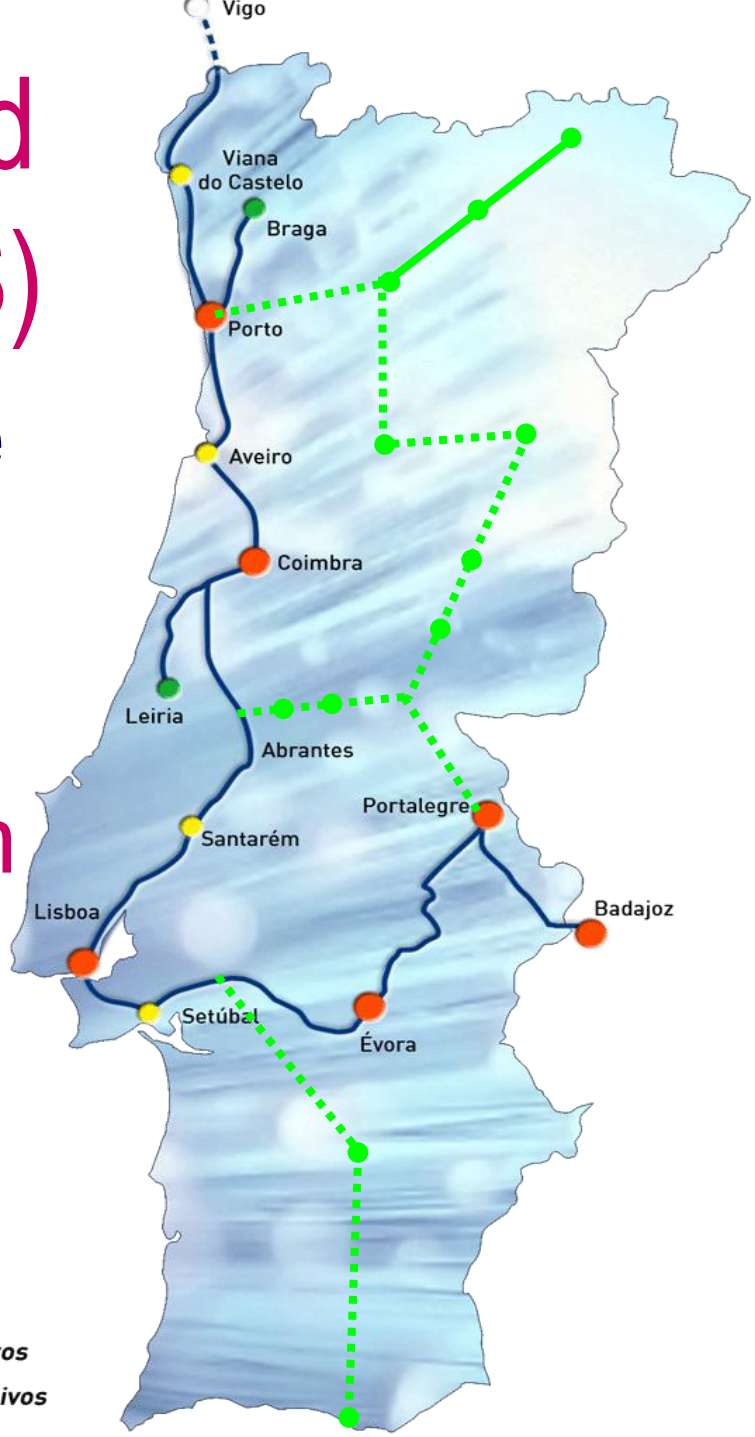
Science Technology and Society Network (RCTS)

>1,000 Km of optical fiber cable of NREN (2005-2009)

Operation at 10 Gbps

~85% of Higher Education

Planned extension to all District Capitals



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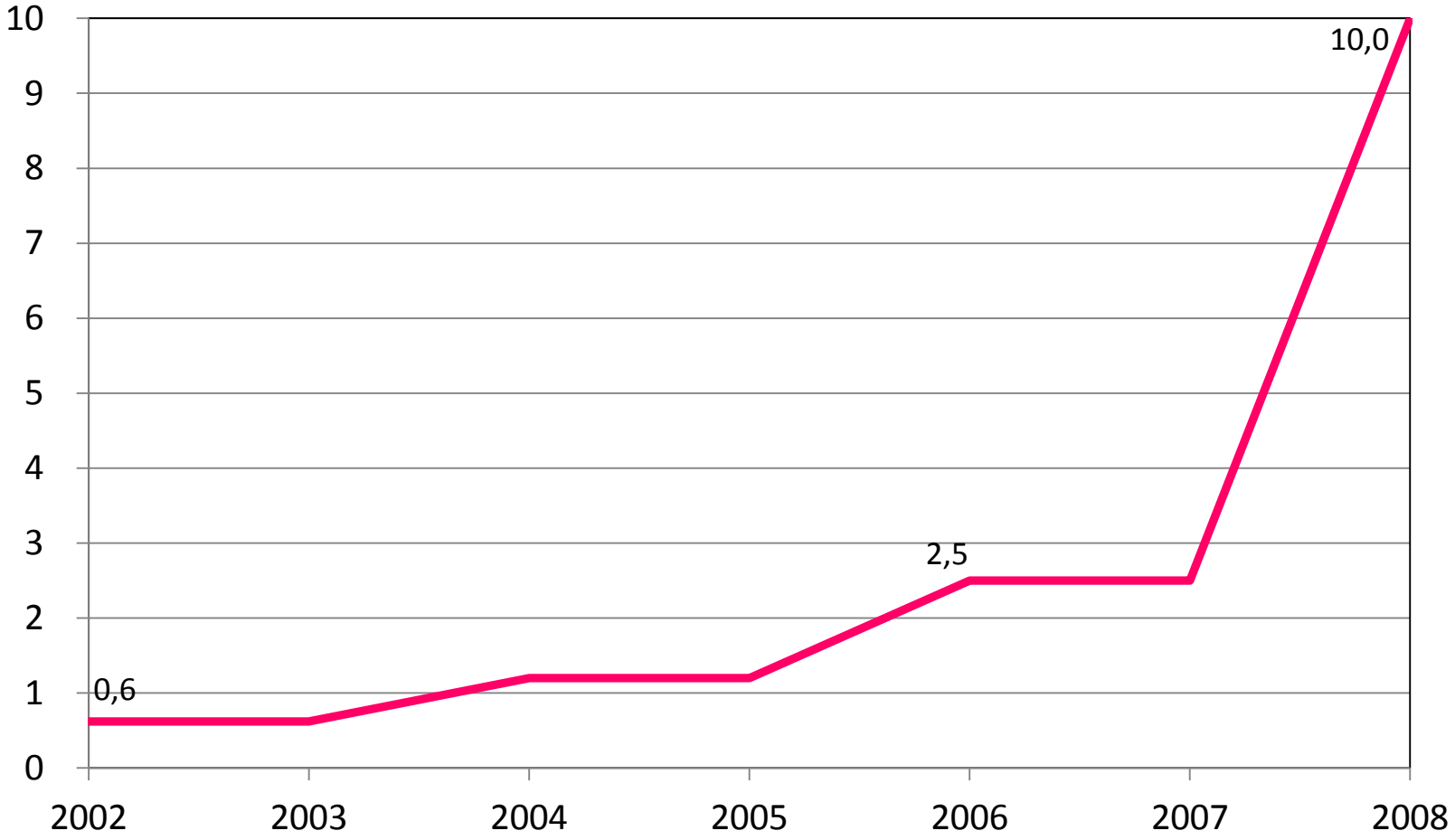
International Connectivity of the RCTS (Gbps)



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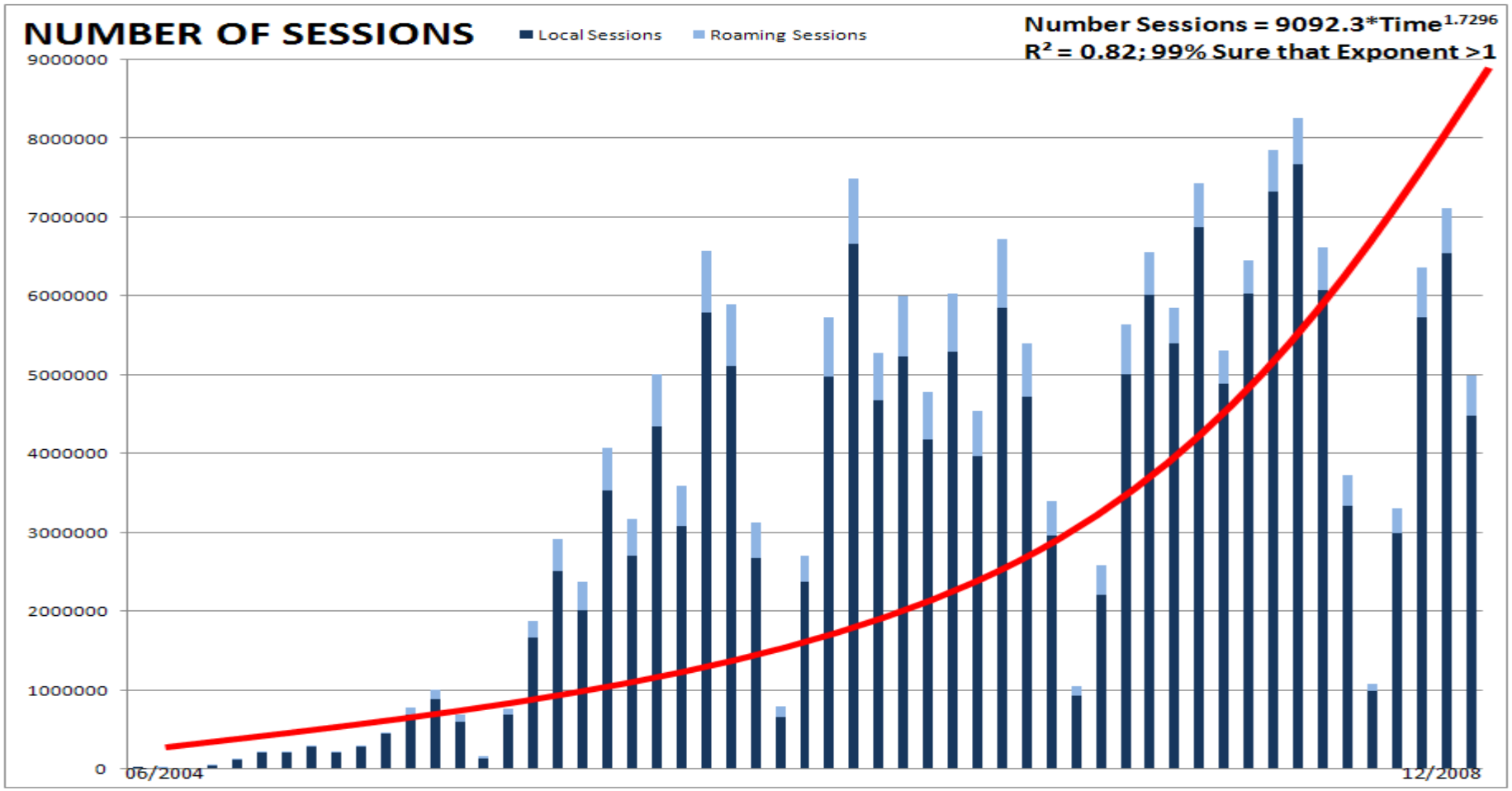
Universidade Técnica de Lisboa

Roaming between *campi*

Number of Sessions in the e-U Wireless Network



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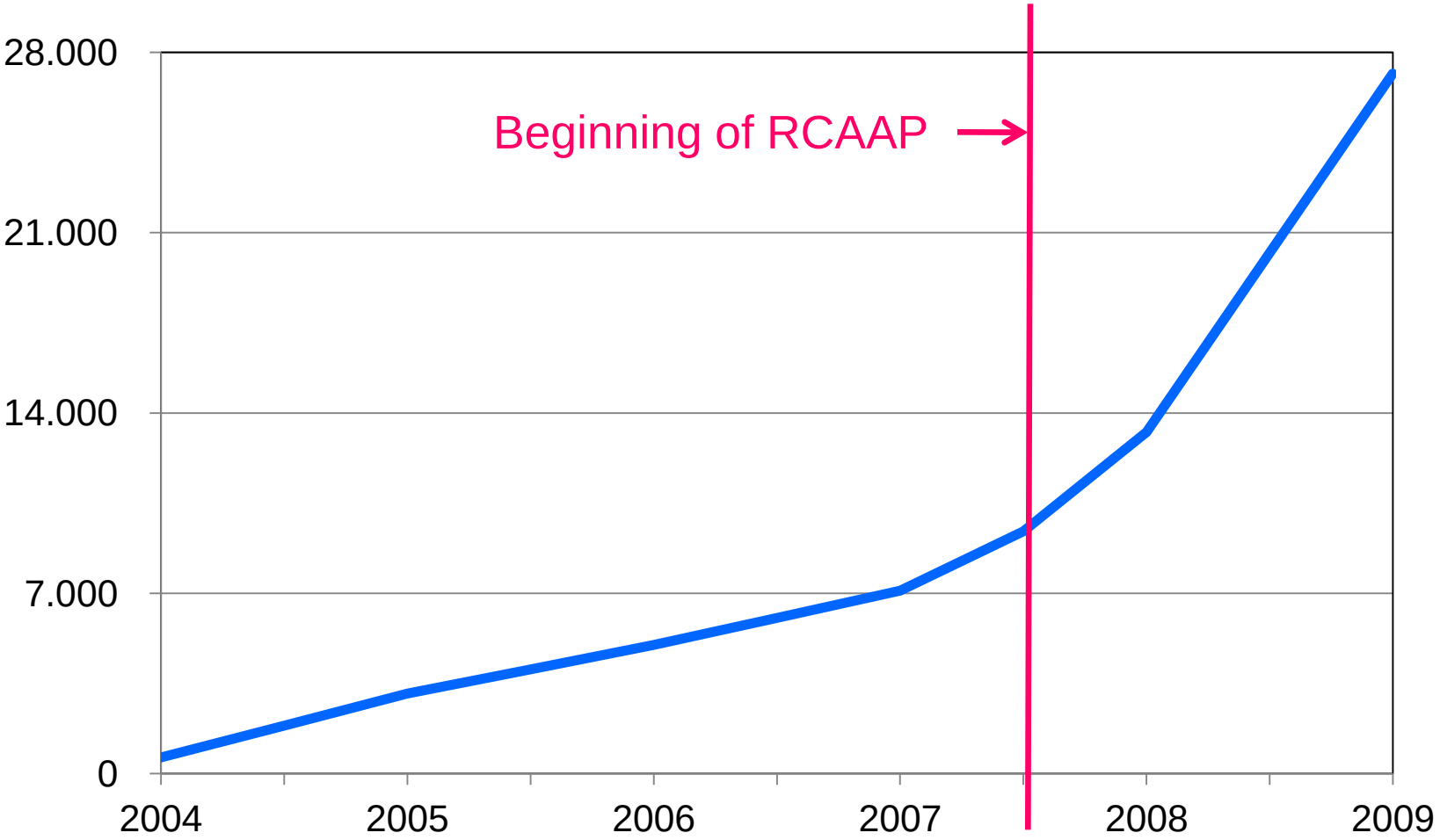
National e-Science Strategy

Content

- b-on Knowledge Library Online, planned in 1999, 17,100 scientific journals, 18,200 e-books, 12,400 proceedings and transactions titles, 10 referential data bases, free access in all research and higher education institutions, national *"big deal"*, 6 million full text downloads in 2009
- RCAAP – Open Access Scientific Repository of Portugal presently w/ 29 institutions, including all the 14 public universities, >46,200 documents, protocol w/ Brazil planned to be extended to the whole CPLP
- ZAPPIENS – HD Videos Open Repository w/ *Creative Commons* licensing and Digital Rights Management

N. of Documents in Open Access Scientific Repositories



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National e-Science Strategy
Distributed Computing

- INGRID National GRID Initiative (1.800 CPUs, 1 PetaByte de disc memory, 2 PetaBytes of robot tape memory), integrated w/ Spain (IBERGRID), and part of EGI – European Grid Initiative. Application projects in meteorology, oceanography, evolution of maritime coast, geophysics, seismology, high energy physics, material science, biology, health, forest fires and civil protection)
- IBERCIVIS – Voluntary Computing for Science, jointly with Spain

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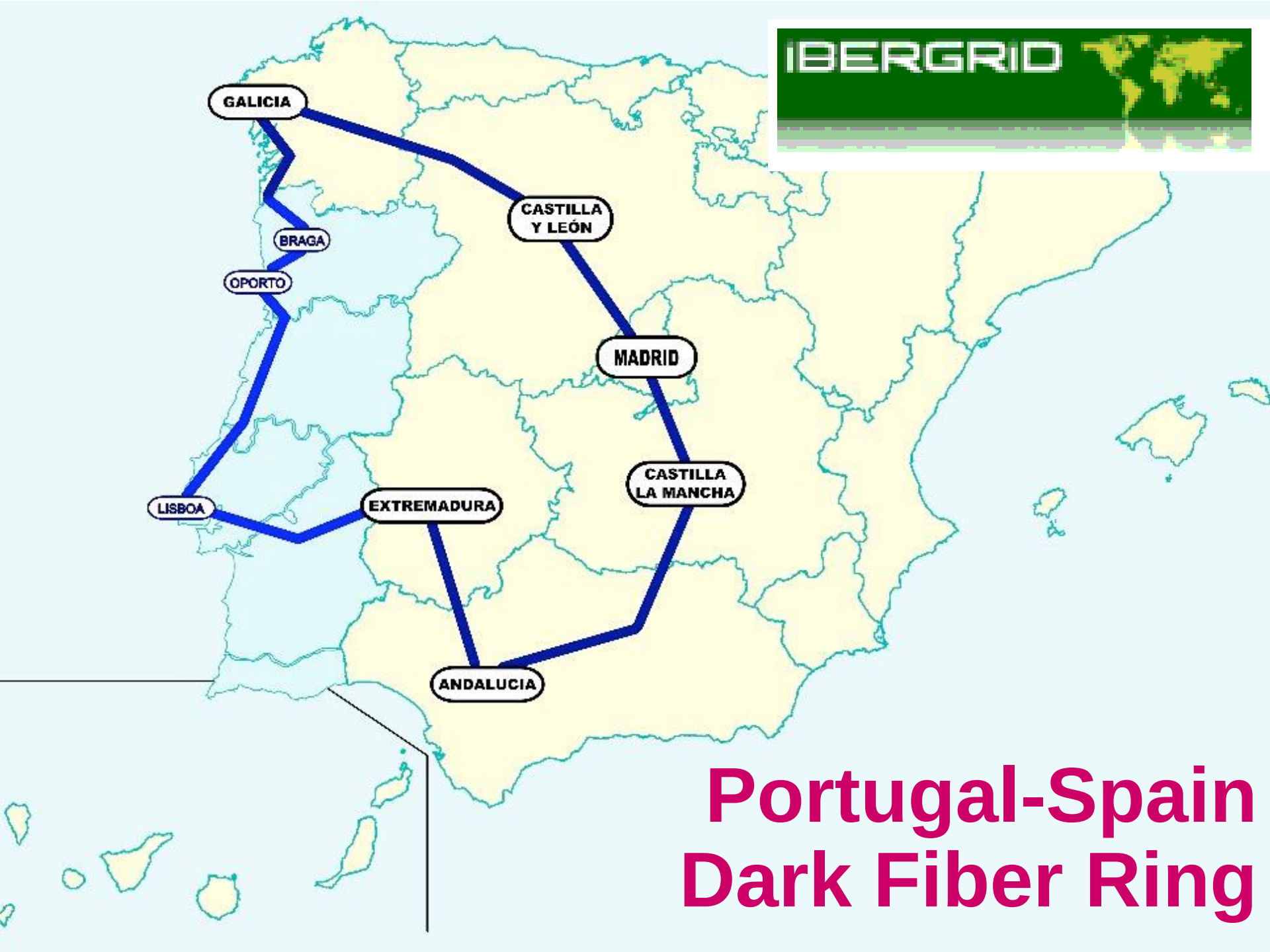

Portugal-Spain Dark Fiber Ring

National e-Science Strategy
Cooperative Work at a Distance

- HD video-conferencing, webcasting and repository of video recordings of scientific meetings
- VoIP for all public Higher Education, presently in operation, soon to provide tele- and video- conferencing services to be easily operated from each personal computer (Project ARARA)
- National platform for scientific and educational content being developed for Medicine and Future Internet, and to be later extended to other areas, to be available in open access

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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 ● Language technology ● 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

Harvard Medical School – Portugal Program (beginning June 2009)
Medical and Biomedical Research Web Content for Citizens, Medicine Students and Practitioners

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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