Connecting Portugal

Mobilizing the Information and Knowledge Society

OWASP Sumit 2011, Campo Real, Torres Vedras, Portugal

Campo Real Resort, Lisboa, 8-11 Feb 2011

Luis Magalhães
President **Knowledge Society Agency**
Ministry of Science, Technology and Higher Education, **Portugal**

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 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
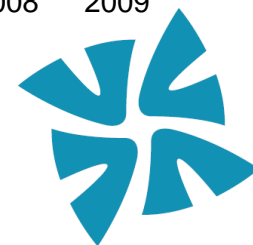- ➔ **Emerging Technologies**, such as **Future Internet** and **Nanotechnology**

Context of High S&T Growth in Portugal
more than doubling in 2005-2009
4-fold increase in private sector

Evolution of R&D Intensity (%), in Portugal
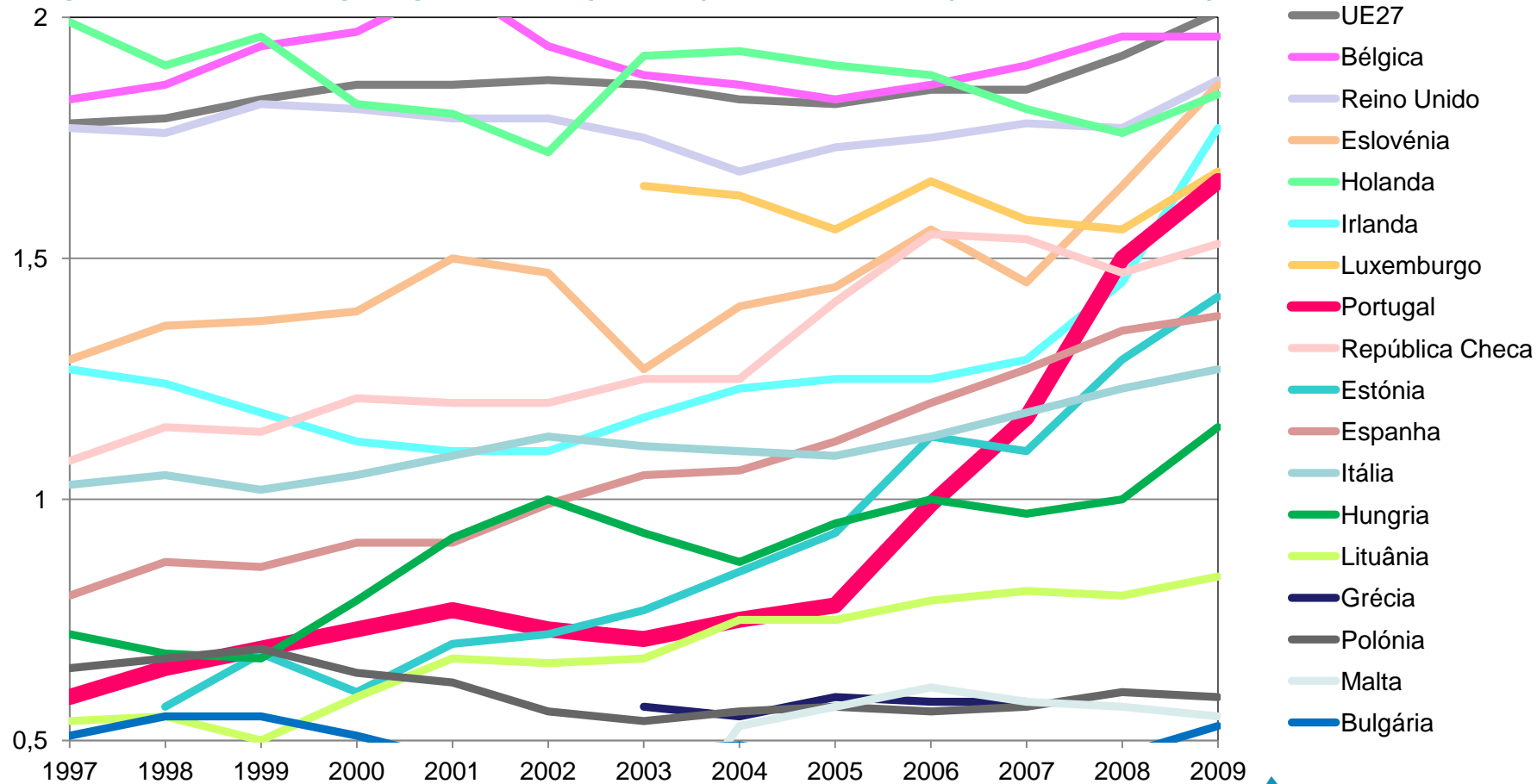## Highest average growth (21%) of UE27 (total=2,5%) in 2005-2009
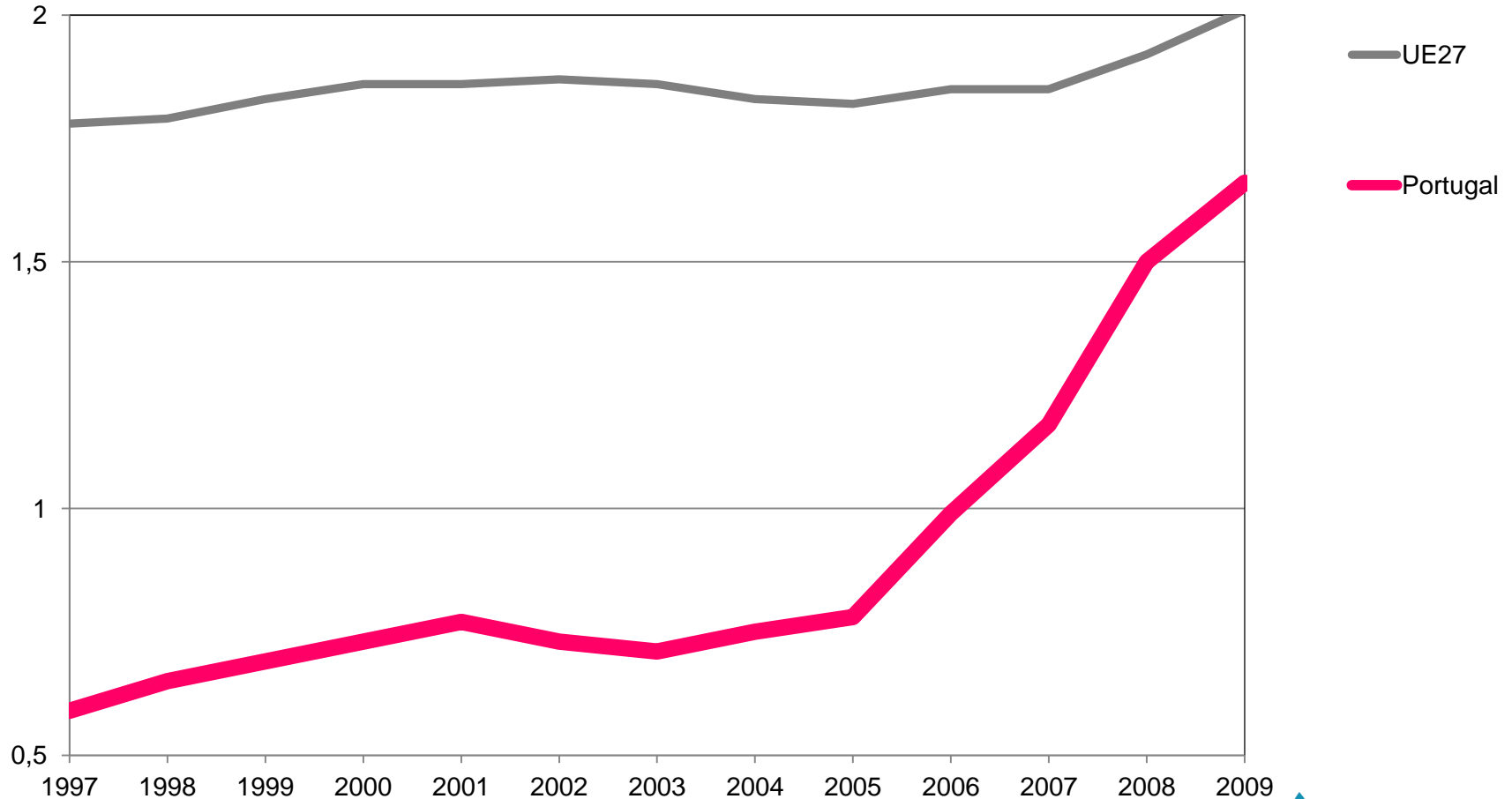

UE27

Portugal

Source: EUROSTAT

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Evolution of R&D Intensity, in Portugal
Highest average growth (21%) of UE27 (total=2,5%) in 2005-2009

Legend:
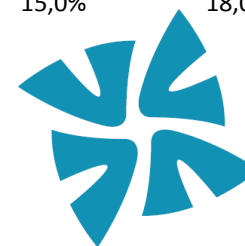- UE27
- Bélgica
- Reino Unido
- Eslovénia
- Holanda
- Irlanda
- Luxemburgo
- Portugal
- República Checa
- Estónia
- Espanha
- Itália
- Hungria
- Lituânia
- Grécia
- Polónia
- Malta
- Bulgária

Source: EUROSTAT

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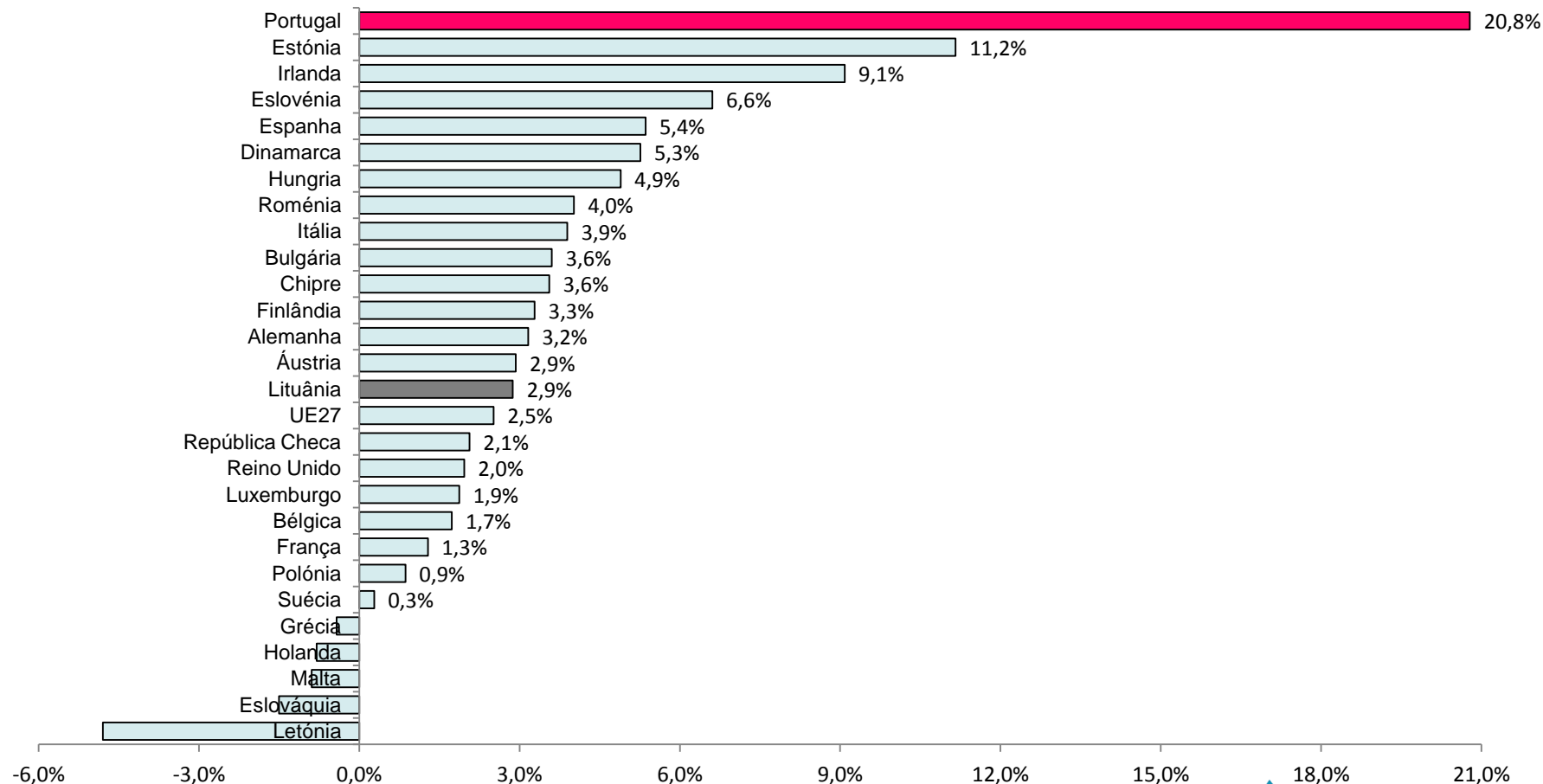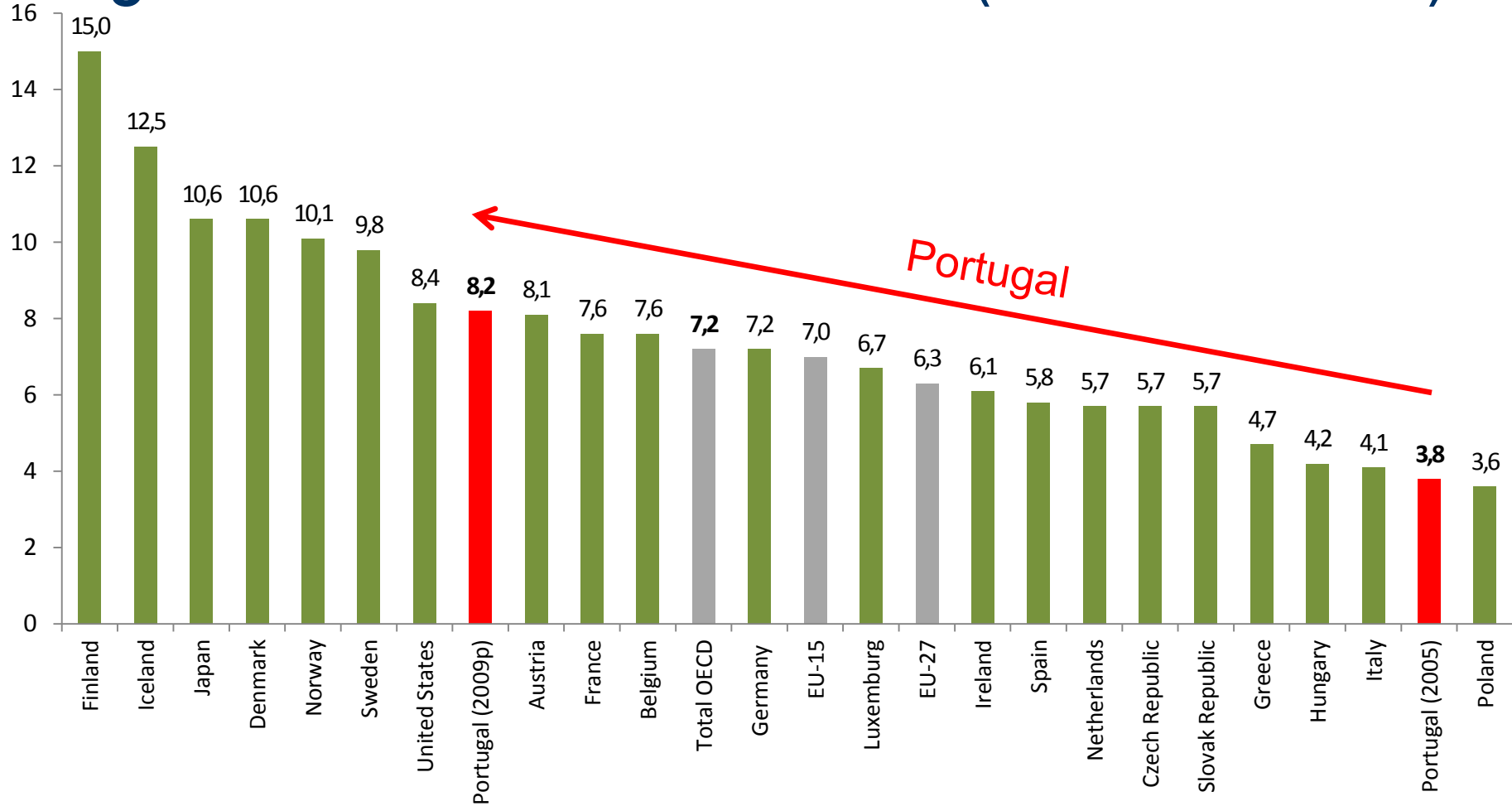

Source: EUROSTAT

High Growth in Researchers (‰ labor force)

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

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

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

➔ **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.
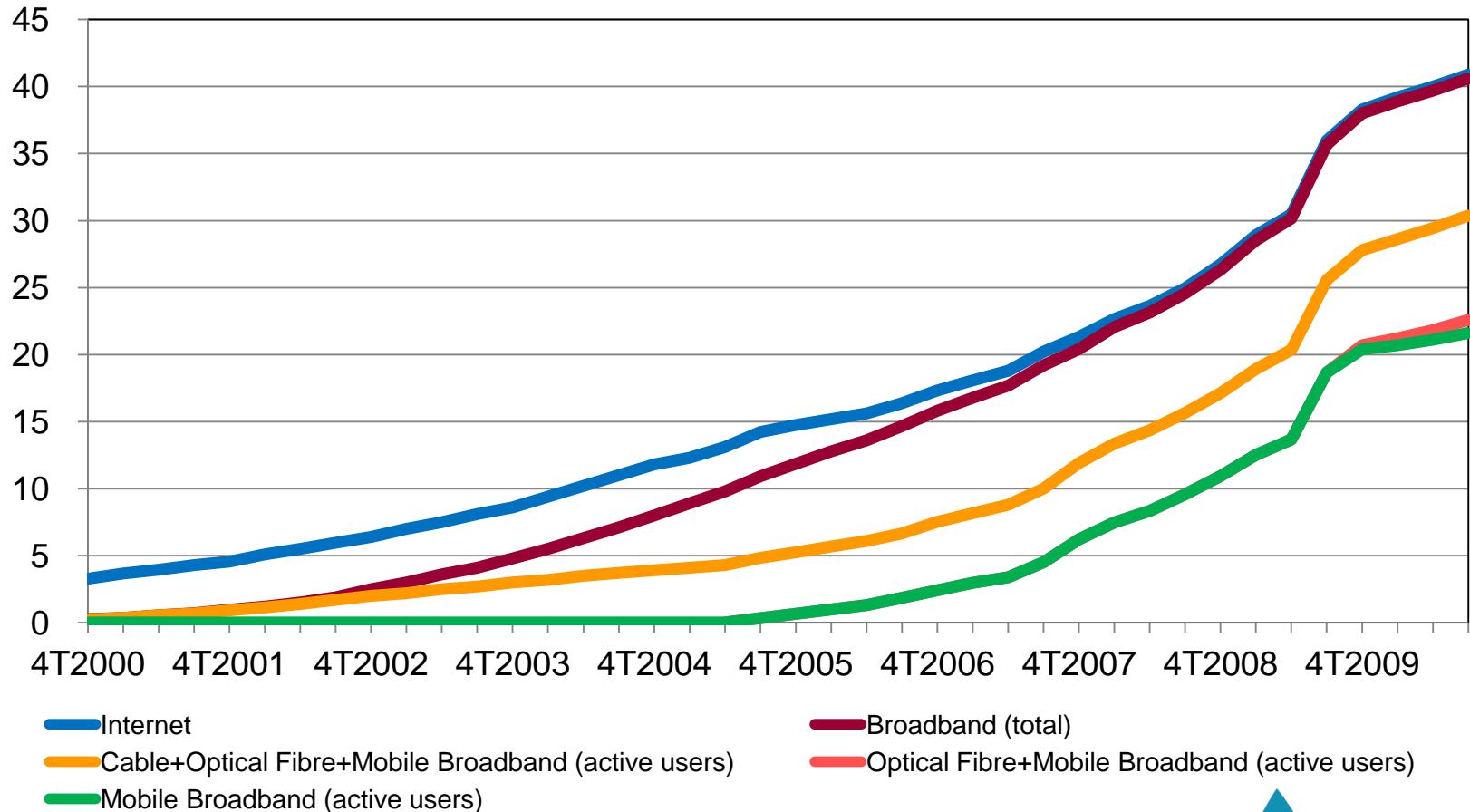
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High Increase of Broadband Access
Mobile and High Speed Fixed Access

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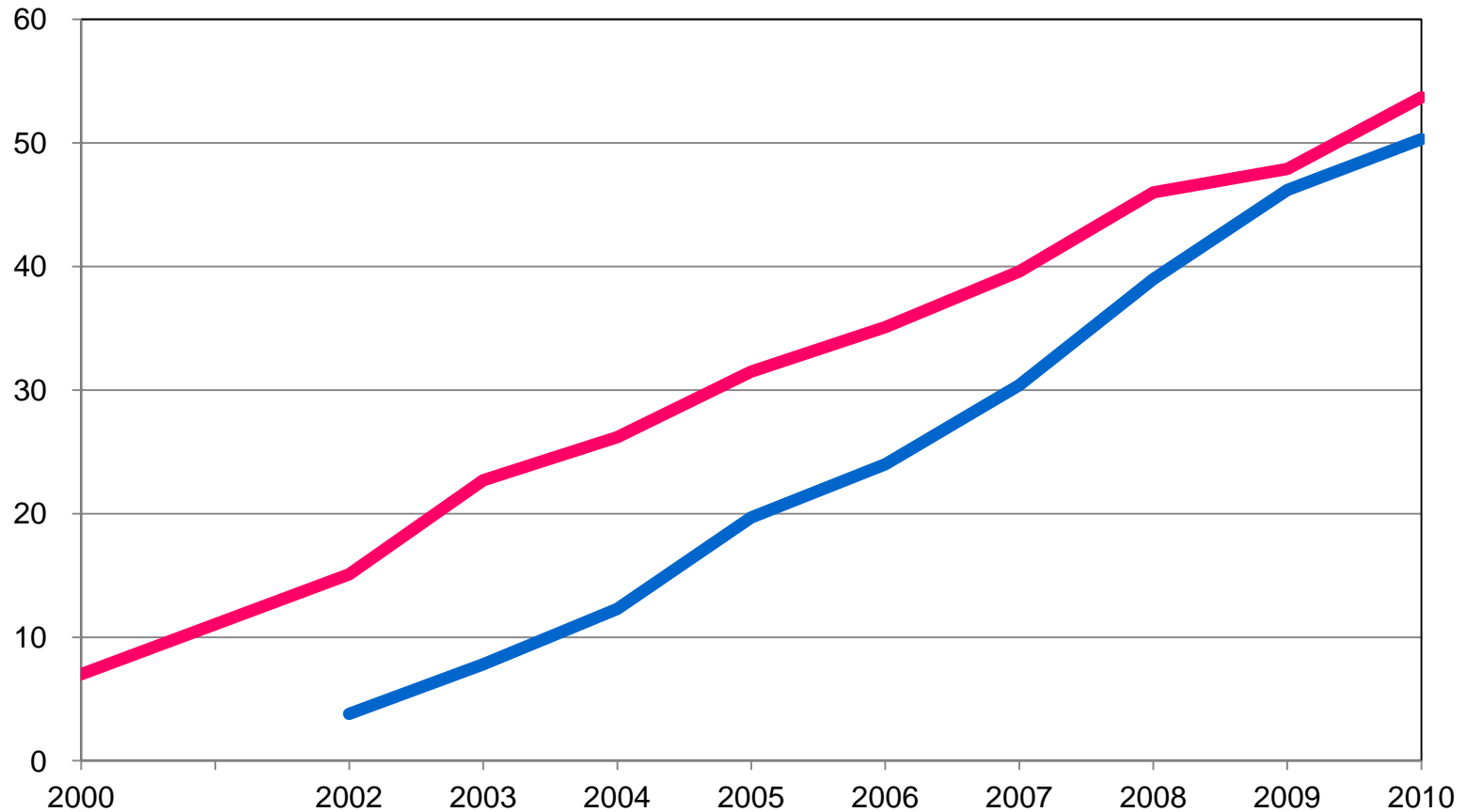

Source: ANACOM

Broadband Penetration in Households (%, 1Q)

Source: EUROSTAT

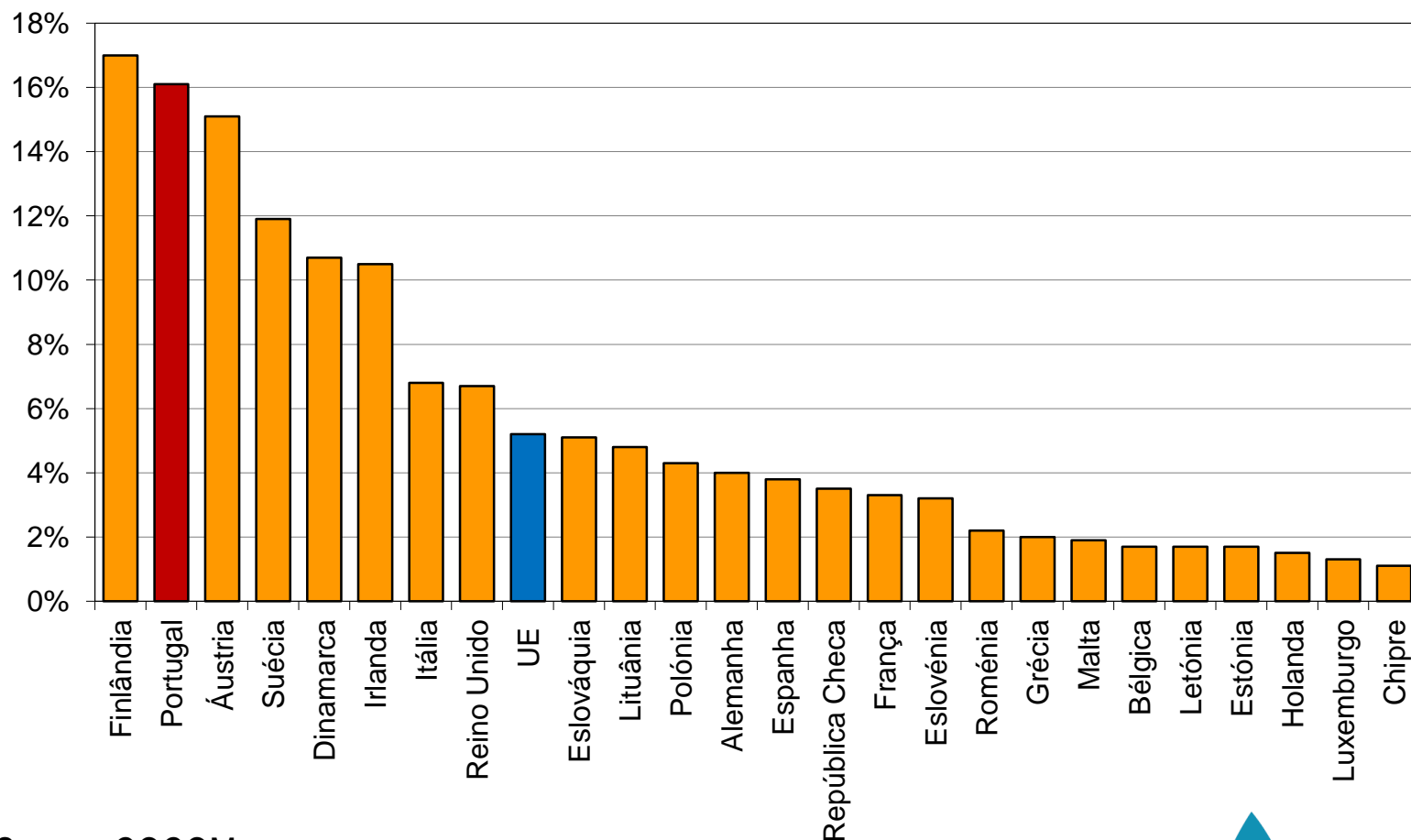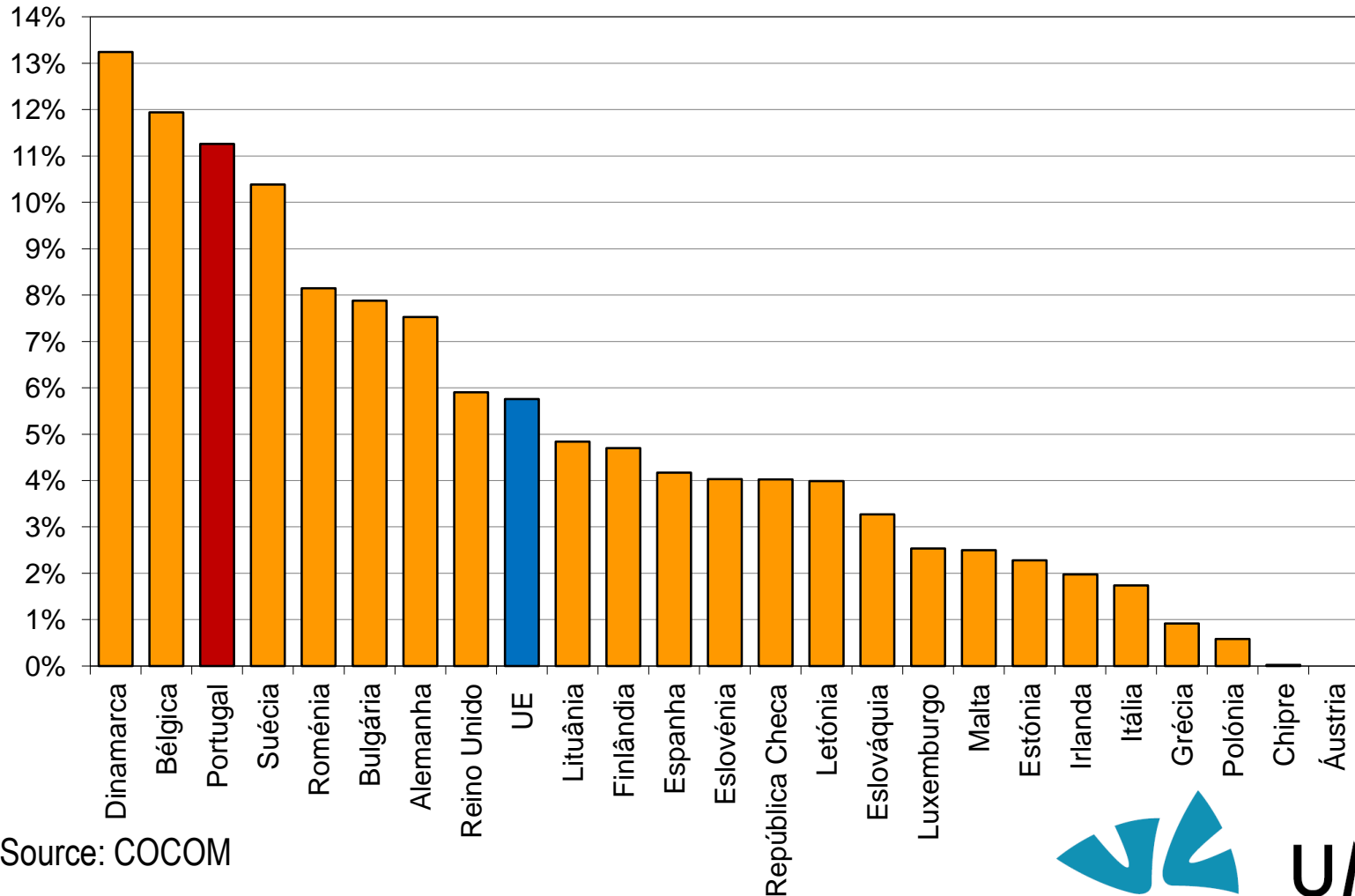Internet   Broadband

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High Speed Fixed Broadband Penetration
≥ 10 Mbp/s 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 (≈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, 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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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
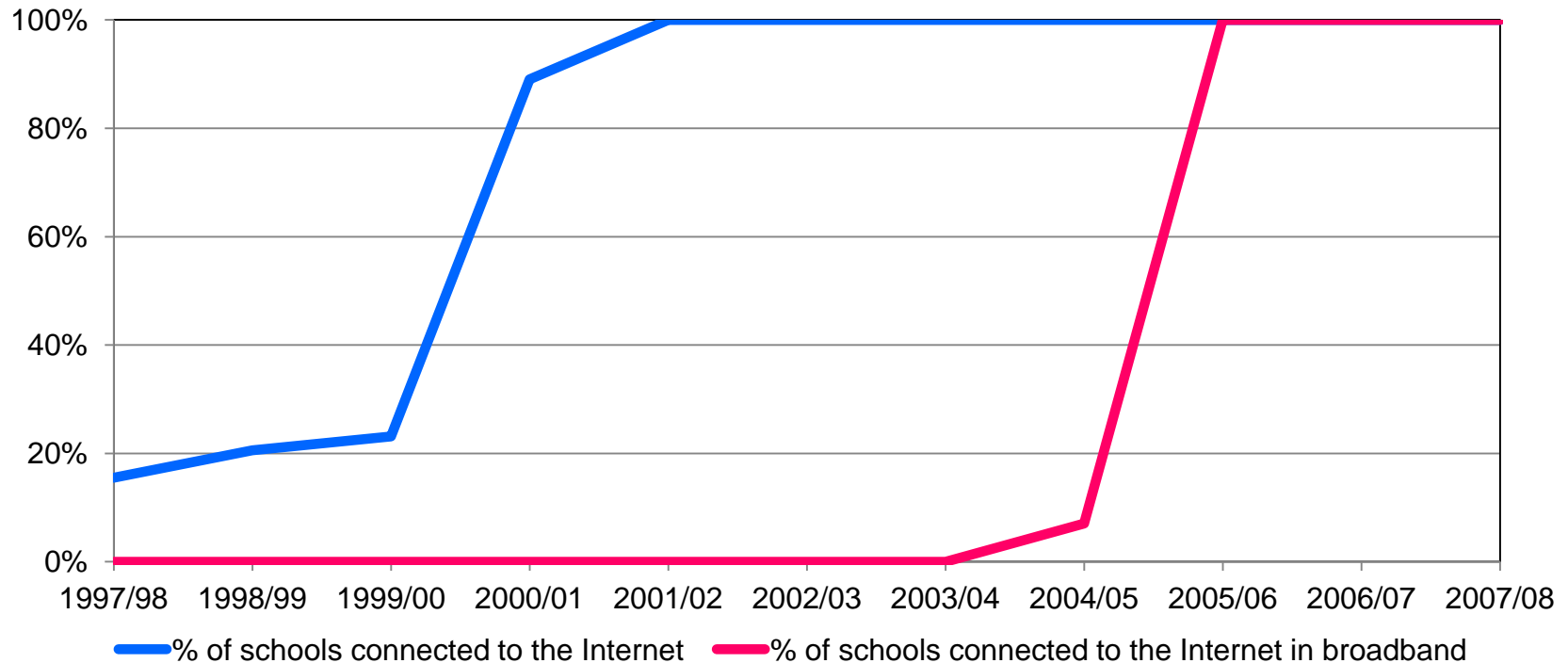
➔ Promote internationalization

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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)

— % of schools connected to the Internet — % of schools connected to the Internet in broadband

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)

No. of students per computer with internet connection   No. of students per computer
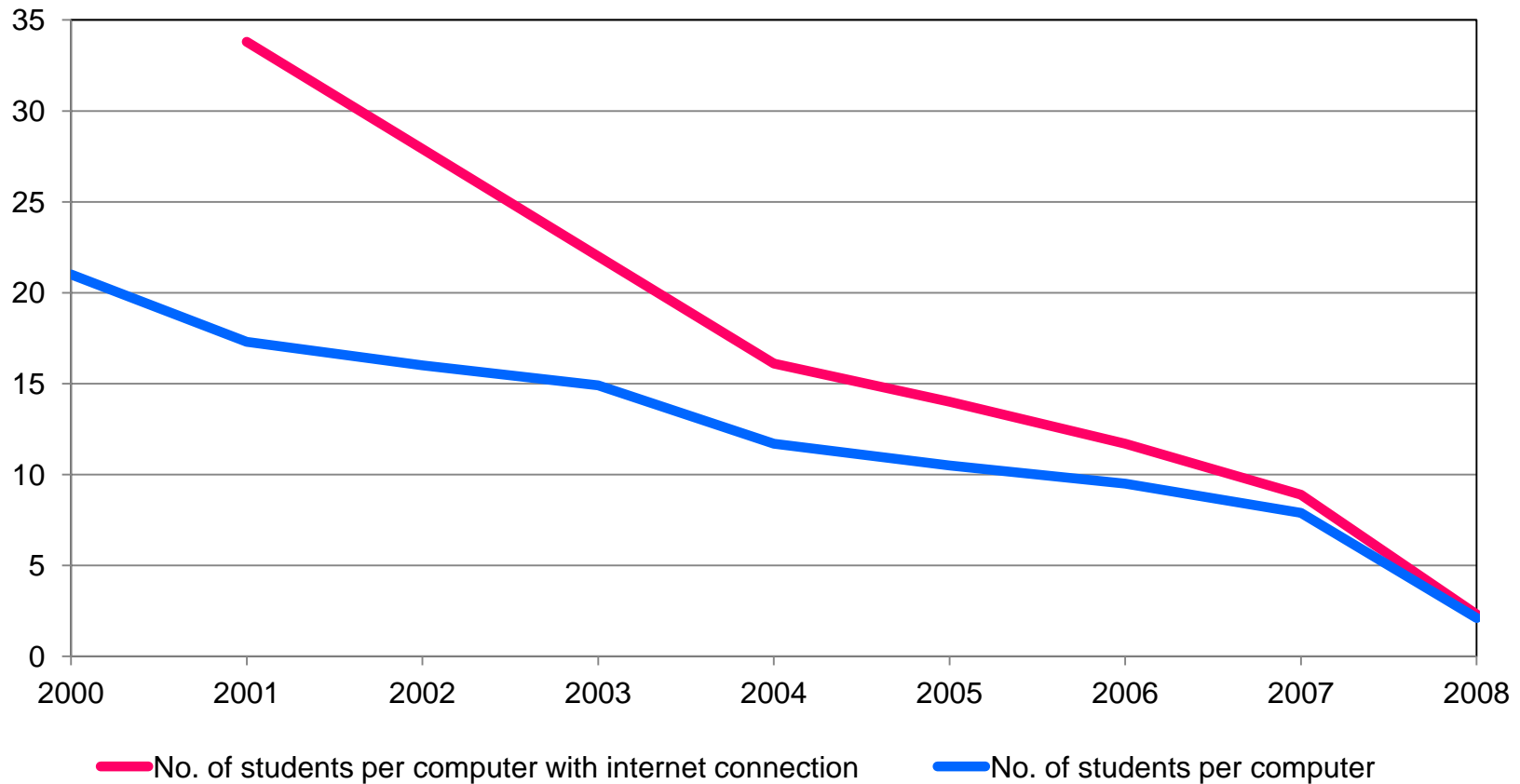
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Education Technological Plan

➔ 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/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

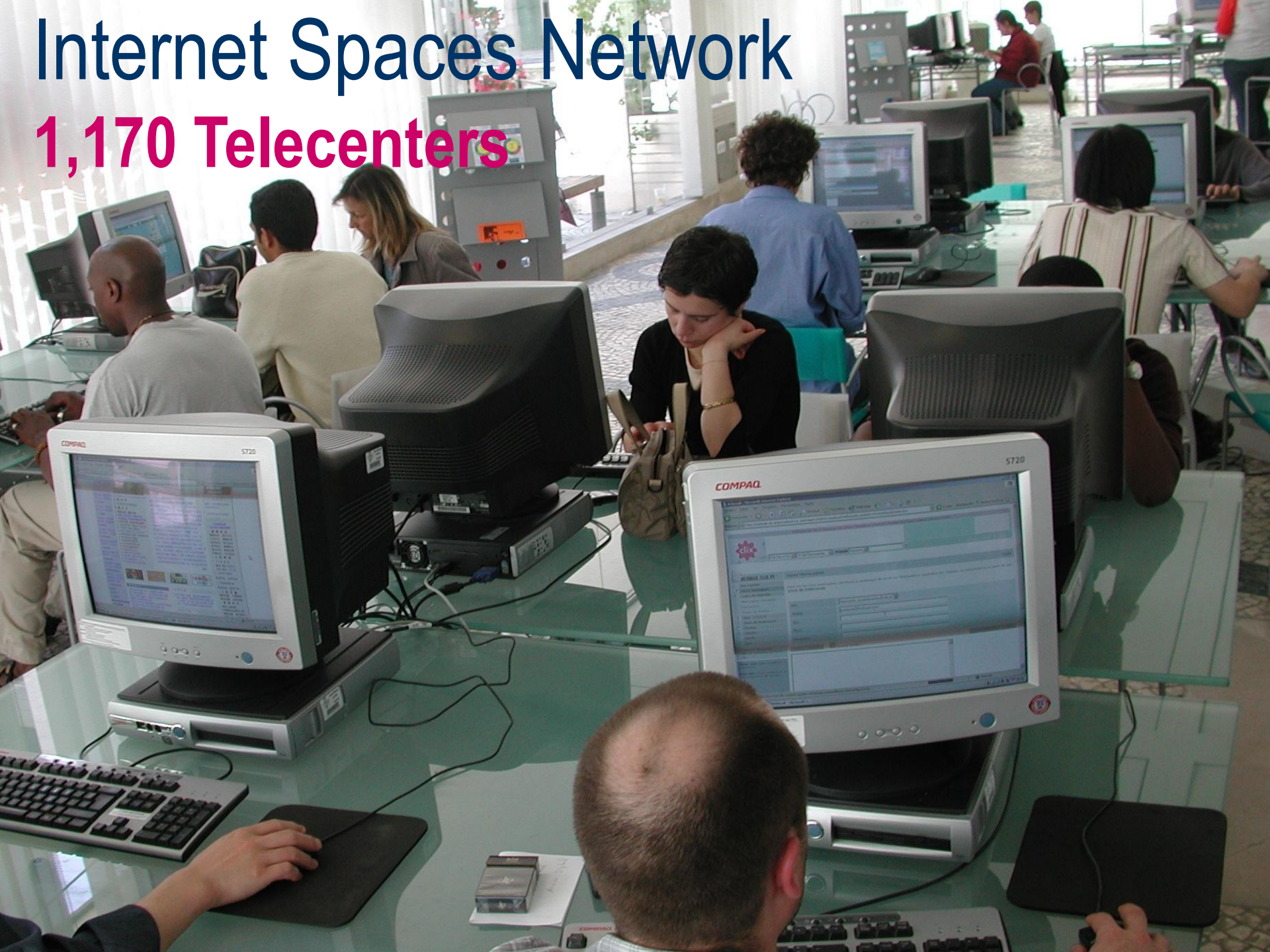➔ ICT Internships: in industry for technology track students

➔ . . .

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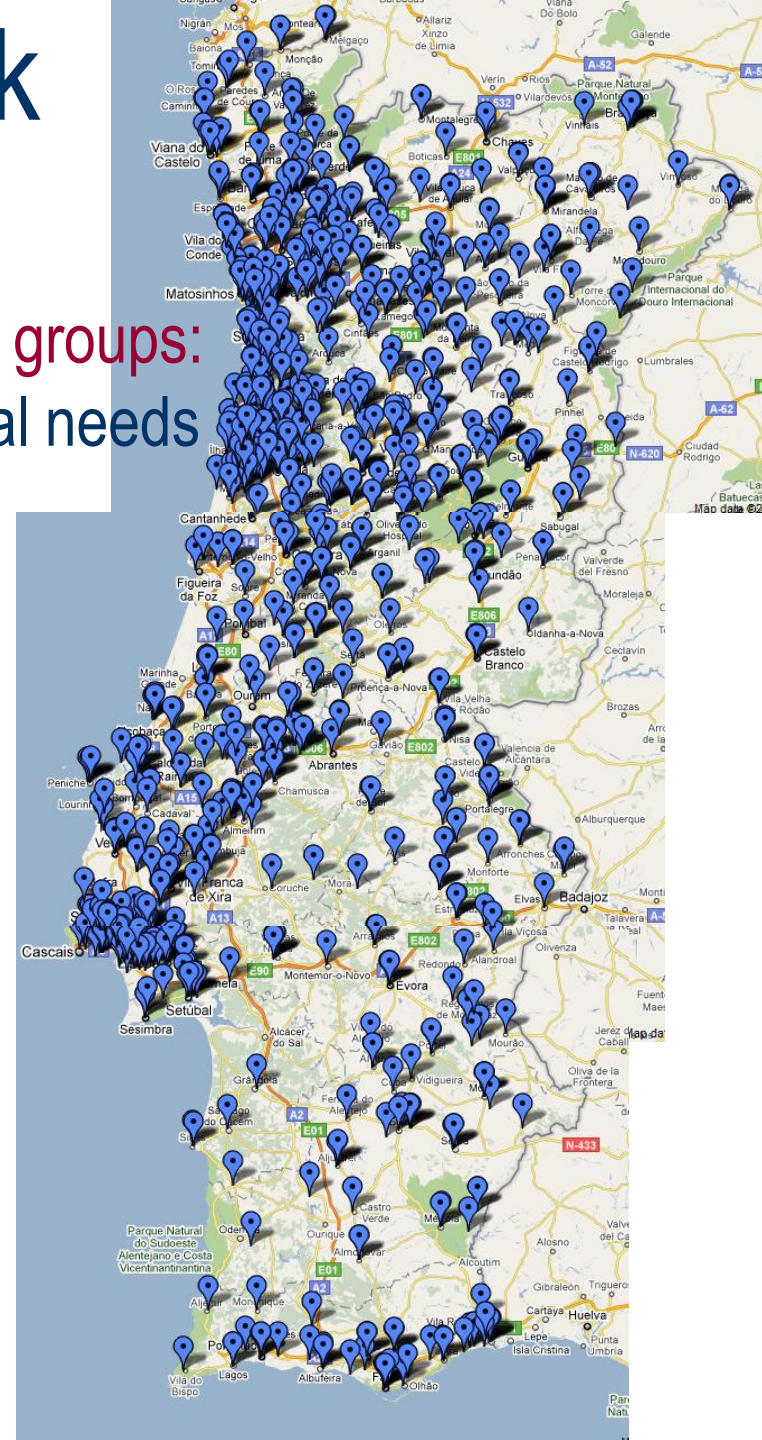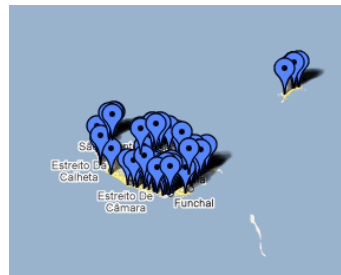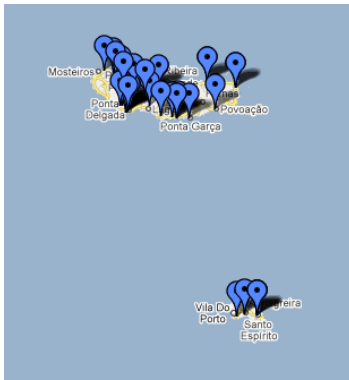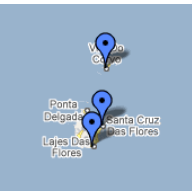Knowledge Society Agency

Internet Spaces Network
1,170 Telecenters
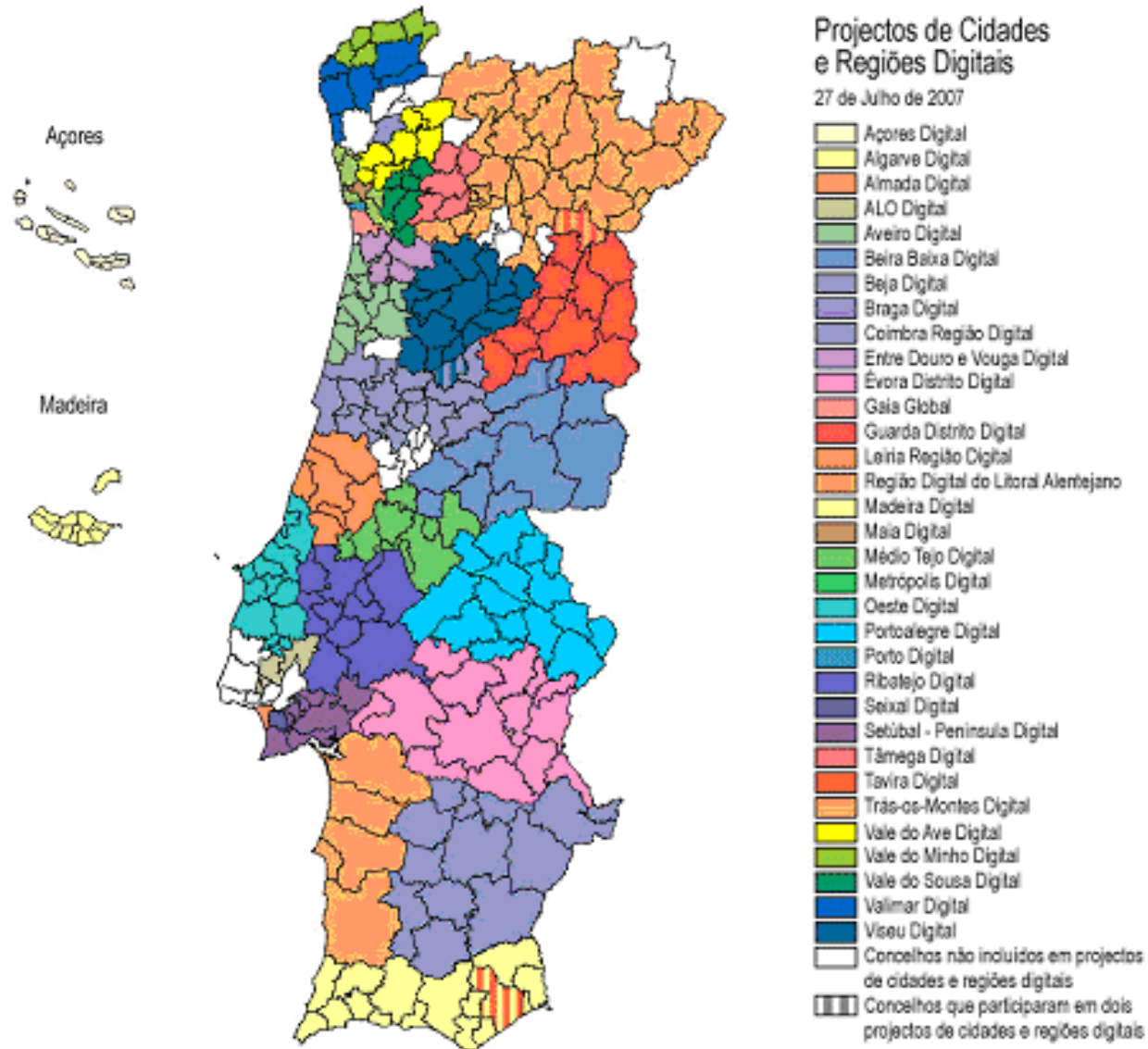
Internet Spaces Network
1,170 Telecenters

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
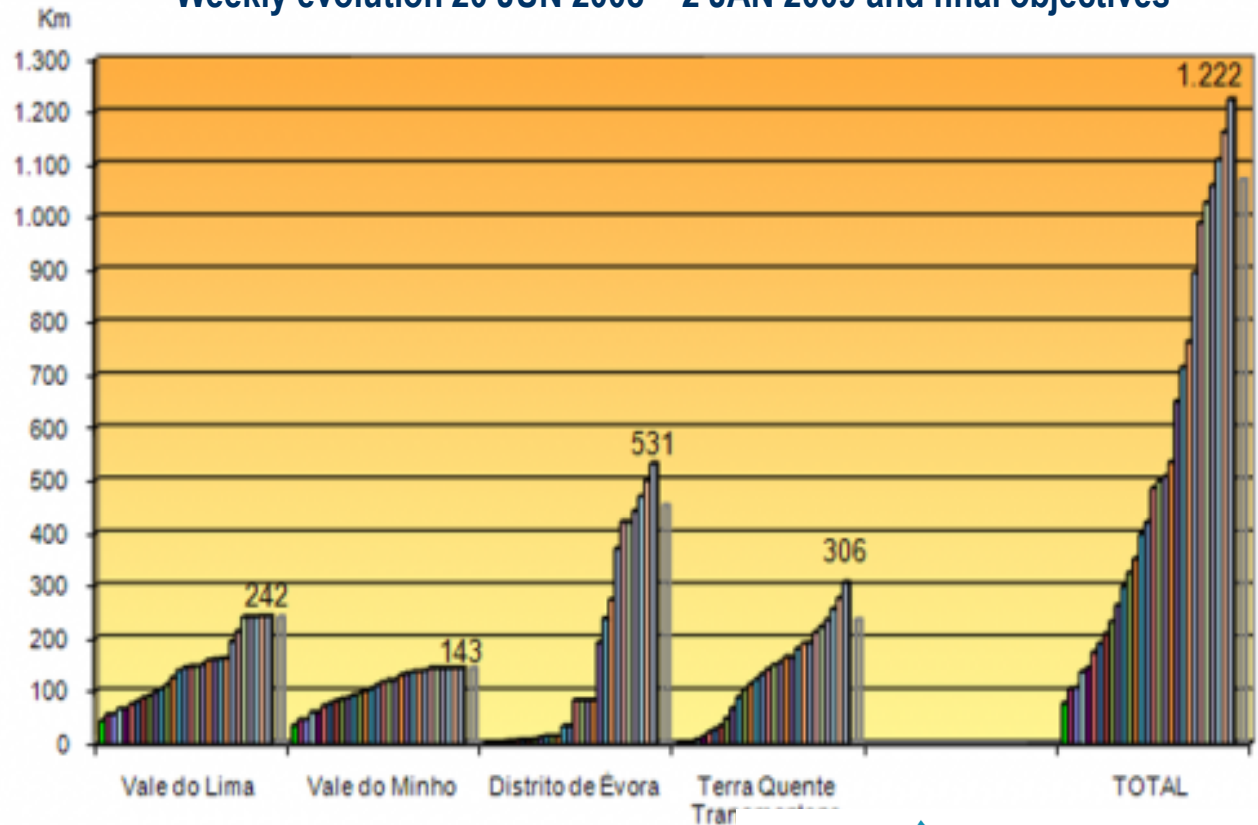
33 Digital Cities and Regions, 1999-2009

Projectos de Cidades
e Regiões Digitais

27 de Julho de 2007

- Açores Digital
- Algarve Digital
- Almada Digital
- ALO Digital
- Aveiro Digital
- Beira Baixa Digital
- Beja Digital
- Braga Digital
- Coimbra Região Digital
- Entre Douro e Vouga Digital
- Évora Distrito Digital
- Gaia Global
- Guarda Distrito Digital
- Leiria Região Digital
- Região Digital do Litoral Alentejano
- Madeira Digital
- Maia Digital
- Médio Tejo Digital
- Metrópolis Digital
- Oeste Digital
- Portoalegre Digital
- Porto Digital
- Ribatejo Digital
- Seixal Digital
- Setúbal - Península Digital
- Tâmega Digital
- Tavira Digital
- Trás-os-Montes Digital
- Vale do Ave Digital
- Vale do Minho Digital
- Vale do Sousa Digital
- Valimar Digital
- Viseu Digital
- Concelhos não incluídos em projectos de cidades e regiões digitais
- Concelhos que participaram em dois projectos de cidades e regiões digitais

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4 Next Generation Community Networks, 2008

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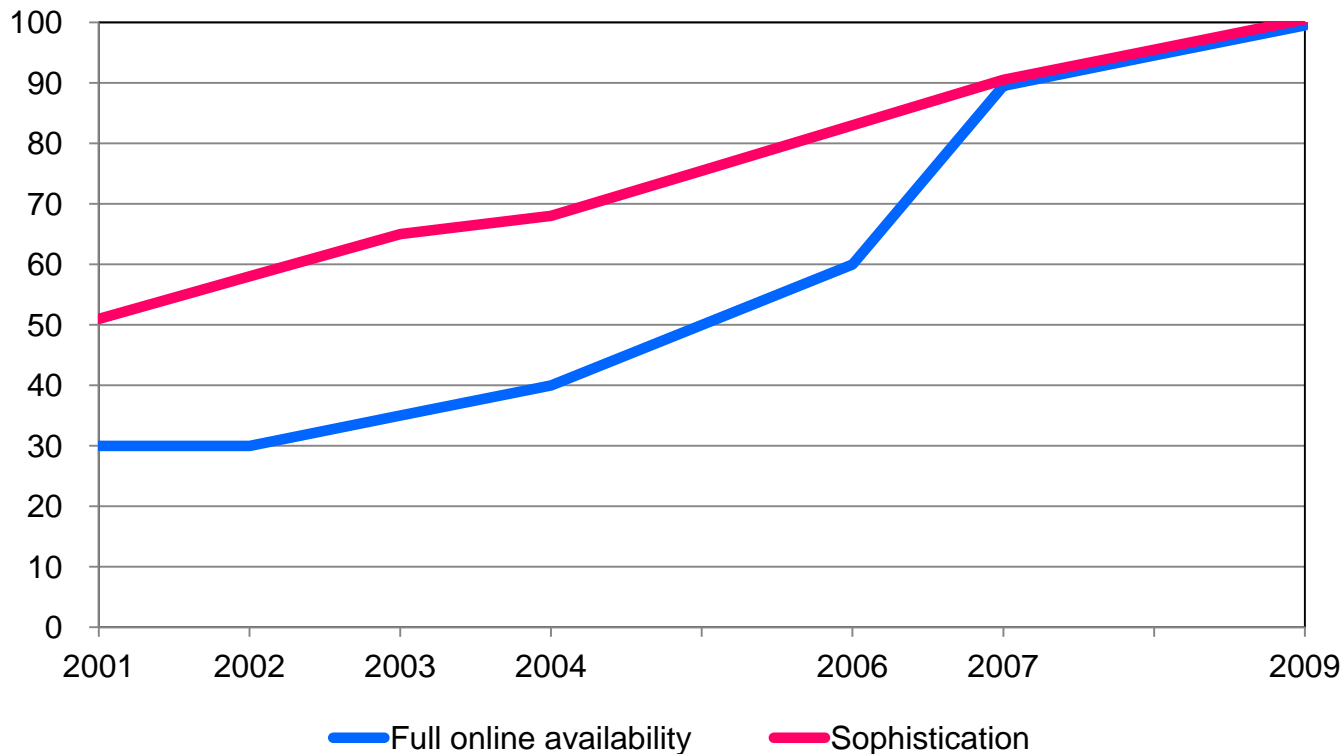**Weekly evolution 20 JUN 2008 – 2 JAN 2009 and final objectives**

Km

1.300
1.200 — 1.222
1.100
1.000
900
800
700
600
531
500
400
306
300 — 242
200 — 143
100
0

Vale do Lima — Vale do Minho — Distrito de Évora — Terra Quente Transmontana — TOTAL

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eGovernment

Basic Public Services Online in Portugal
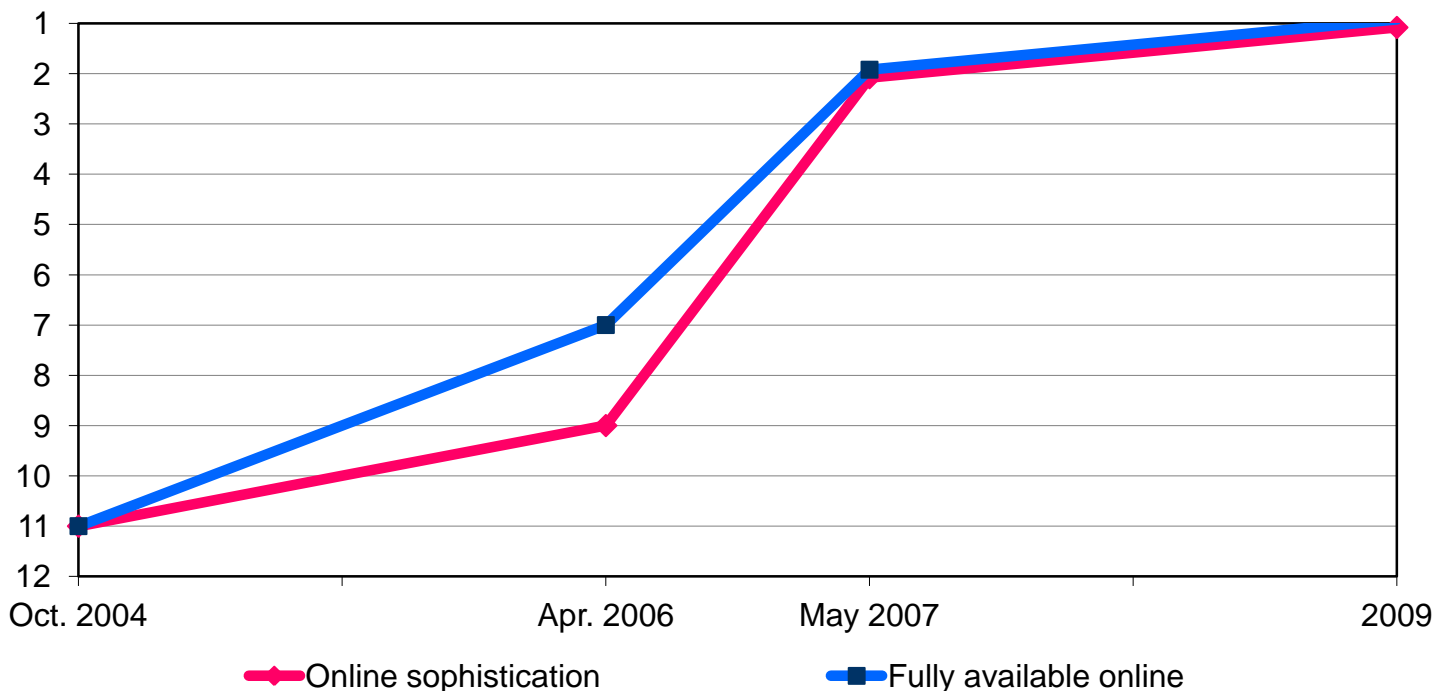## Complete availability and sophistication, 2001-2009

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

Basic Public Services Online in Portugal

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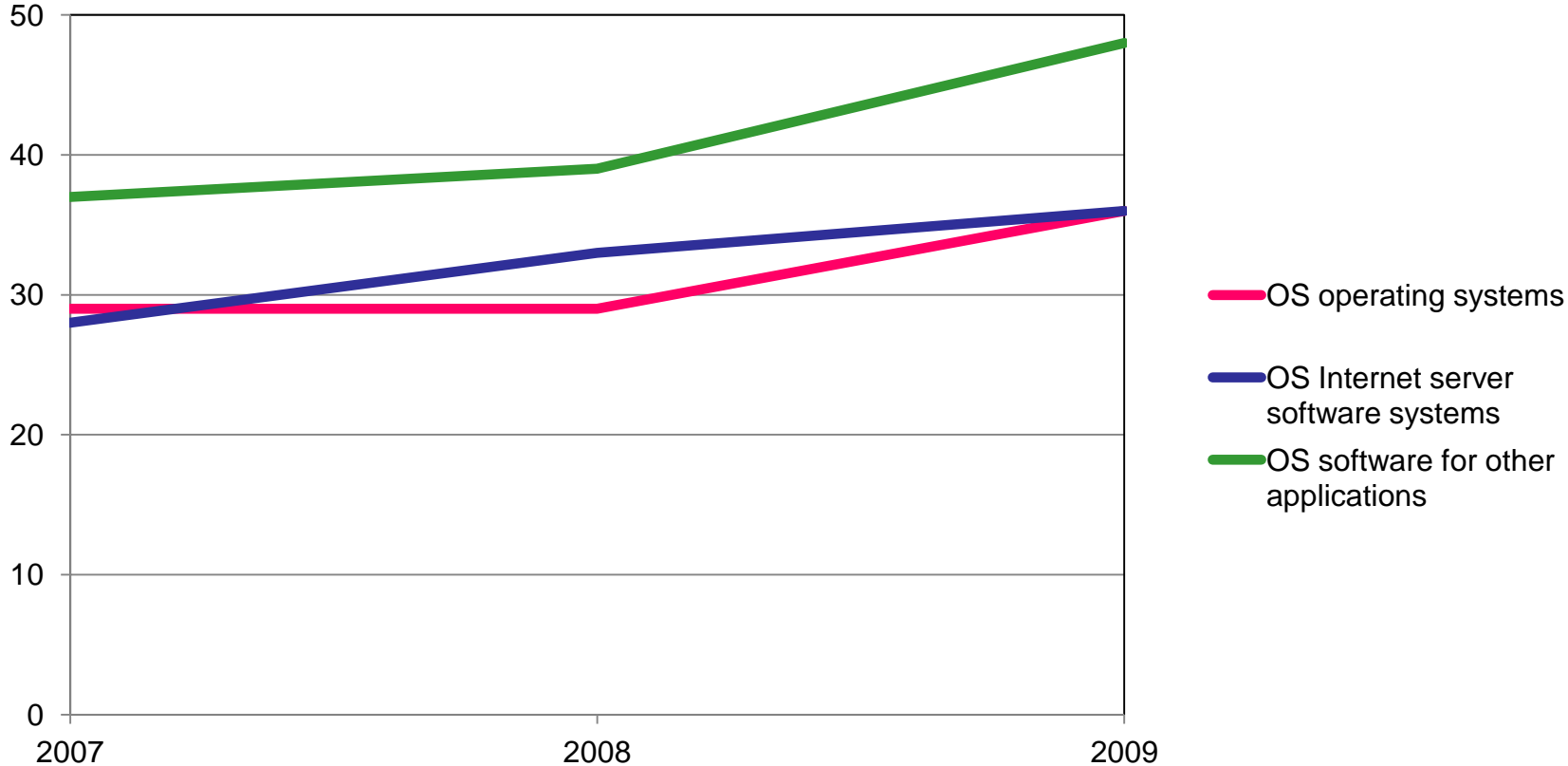

Source: Capgemini reports prepared for DGINFSO of European Commission

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Open Source Use in Central Government Organizations (%)

Legend:
- OS operating systems
- OS Internet server software systems
- OS software for other applications

Source: UMIC

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