Information and Knowledge Society Policies in Portugal

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Luis Magalhães

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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 coordination and transversal projects (Citizen's Portal, Enterprise Portal, Citizen Card, Interoperability Platform) transferred to the recently created AMA – Agency for Public Services Modernization, in 1st May 2007

Incubated the National eProcurement Program transferred to ANCP – National Agency of Public Procurement in 9th May 2007

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Sharing Resources in Networks

➔ WWW: Sharing distributed information capacity

➔ GRID Computing: Sharing distributed computational capacity

➔ P2P: Sharing resources in networks
between any of its nodes   *web 2.0*

➔ Web of devices and sensors *(Web of Things)*
Sharing ubiquitous communicating
devices and sensors   *web 3.0*

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Basic Principles for Sharing Resources in Networks

➔ Interoperability

➔ Independence of technology platforms

➔ Ubiquity

➔ Security: confidentiality, integrity, access control, no repudiation

➔ Management of services over broad band

Deliver Value to Final Users

➔ Understand rigorously preferences and needs of final users (citizens, enterprises, ...)

➔ Segment in groups and prepare facilitated access pathways to their preferences and interests

➔ Work with local organizations to reach the people (municipalities, NGOs of solidarity and support to development, schools, polytechnics, universities, ...)

➔ Organize free access public Internet Spaces with specialized personnel as an instrumental network for effective inclusion (more than 1.080)

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Provide Multichannel Attendance and Facilitation

➔ Internet

➔ Mobile Phone

➔ Voice and Image

➔ ATM network

➔ Person-to-Person

➔ Network of physical Citizen' Shops

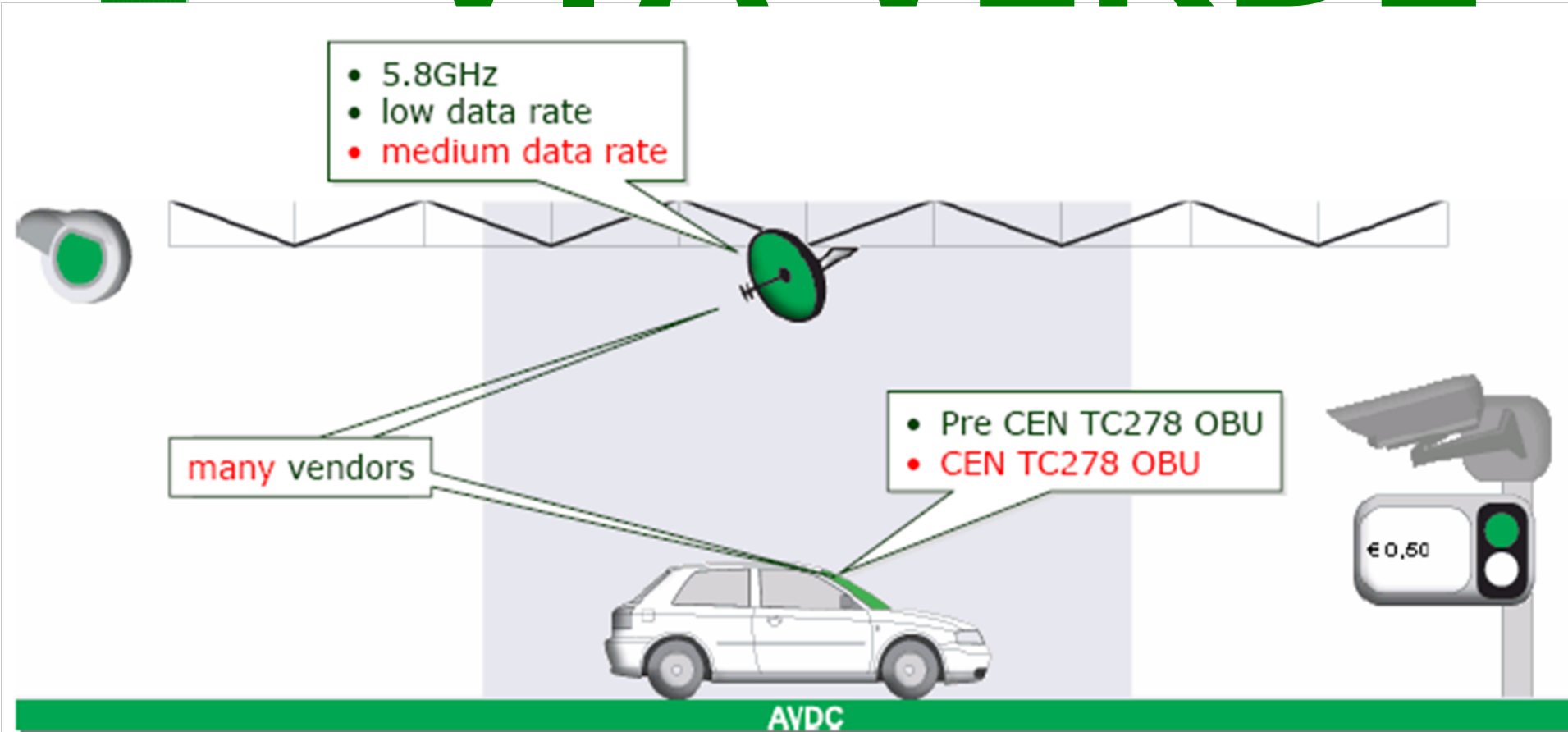➔ Measure citizen satisfaction and improve services accordingly

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Enhance Mass Applications Use Even Through Classic Channels

➔ Advanced Electronic Car Recognition
in highway tolls, parking lots, gas stations, …

➔ Electronic services and commerce through ATMs

➔ Expand network of physical Citizen' Shops in the main towns they became the public services counters preferred by citizens

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Mass Applications Example:
Advanced License Plate Recognition

VIA VERDE

- 5.8GHz
- low data rate
- medium data rate

many vendors

- Pre CEN TC278 OBU
- CEN TC278 OBU

€ 0,50

AVDC

Car Parking

39·48·MC

39·48·MC

39·48·MC

Leader in Europe

Per thousand inhabitants

190 75 17

Customers (millions)

0.2 0.4 0.5 0.7 0.9 1.0 1.2 1.4 1.6 1.7 1.9

1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
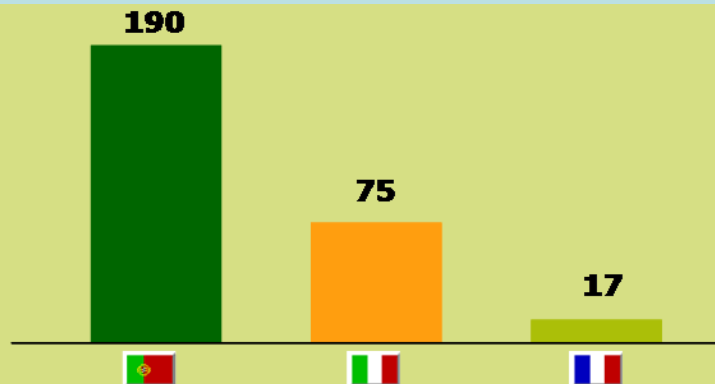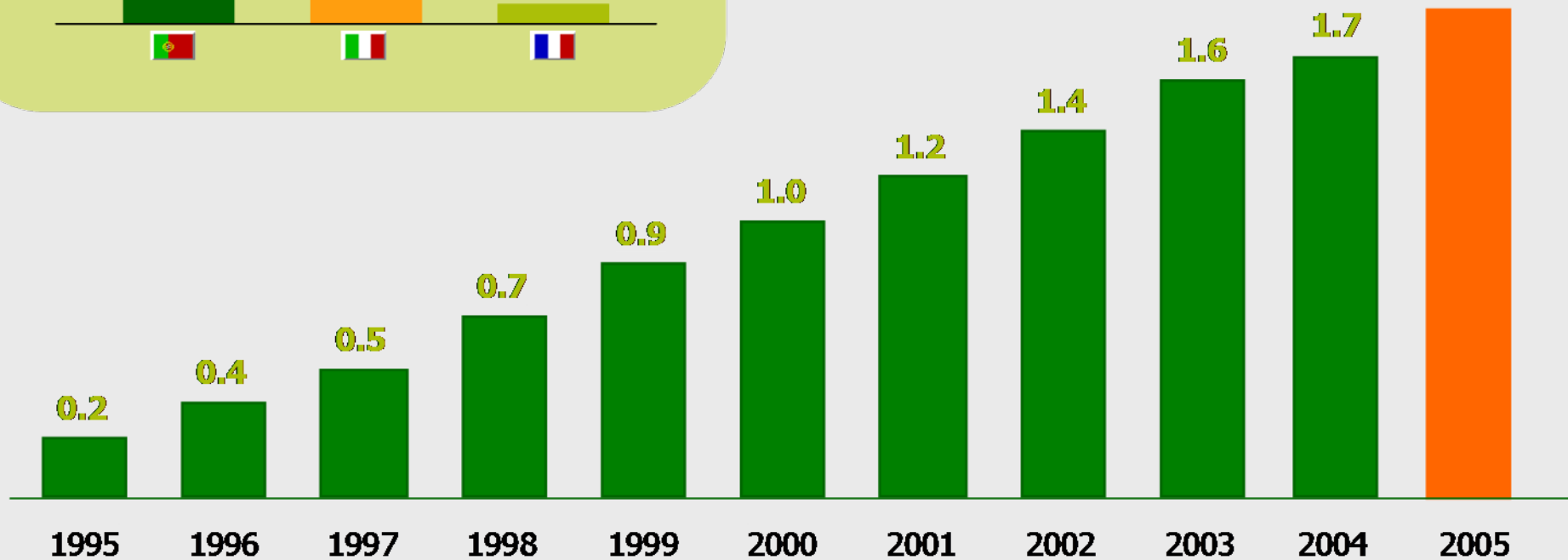
Mass Applications Example: Services Through ATMs Pervasive Unified Network in Portugal

Millions of operations

MBNet (e-commerce)

Direct Debits

ATM Audio Interface

Telemultibanco (GSM bank services)

ATM Advertising

Via Verde (non-stop tool payment)

POS Network

Bill Payment Services

ATM network

	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Number of cards (thousands)	551	939	1.644	3.184	4.798.	6.265	8.132	10.824	13.250	14.687
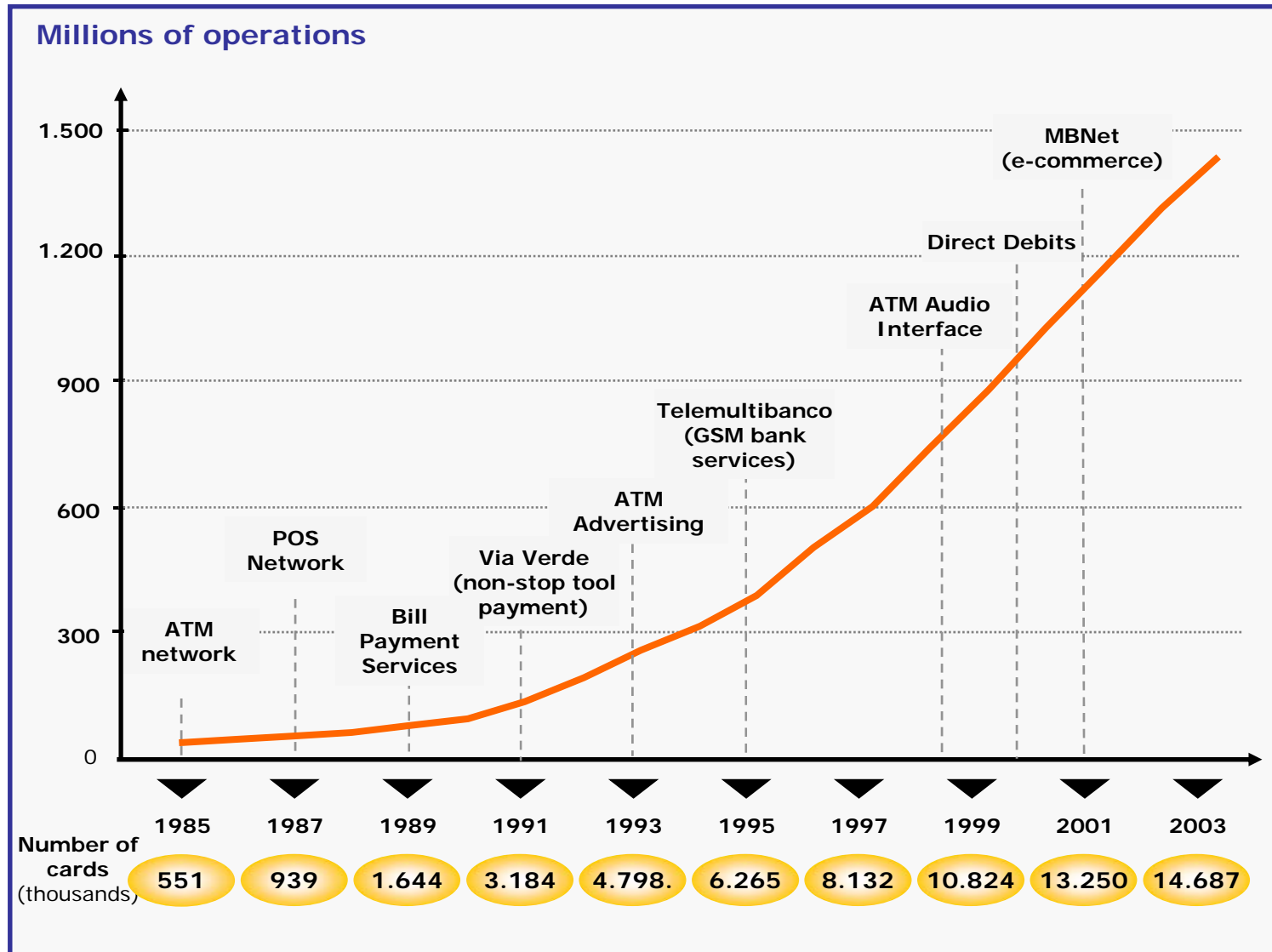
Source: SIBS.

ATM Services Portfolio: 60+ services

➔ Usual bank services (same system for all banks)

➔ eCommerce (bill payments – e.g., water, gas, electricity, telecommunications, GSM top-up, transport services – Via Card, train tickets, tickets for performances, telecom services – internet subscriptions, Totobola/Totoloto/Lottery)

➔ Service enrollment/subscription (Via Verde, MBNet – chargeable limited amount credit card used for 30% of payments through the Internet, TeleMultibanco – m-banking and m-commerce)

➔ eGovernment (payment of taxes, social security contributions, judicial costs, consulting voter registration lists, …)

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Focus In ICT Use by The People Now

Beware of the temptation of looking for fully comprehensive technological solutions from the supply side

Building a perfect comprehensive supply system with today technology and standards will delay benefits to people and the adoption of unexpected breakthroughs

and will lock systems to present technology making it difficult to reap the benefits of the ubiquitous connected world that is coming

Digital Inclusion in Portugal on One Slide
% of Internet users
by educational attainment, 2006 (1st quarter)

➔ 5th (80%) in EU25 within people with secondary education

EU25 average = 61%

(just after Netherlands, Sweden, Denmark, Luxembourg)

➔ 8th (87%) in EU25 within people with higher education (just after the above and Finland, United Kingdom, Slovenia)

digital divide

UE25 average = 84%

➔ 22th (19%) in EU25 within people with 9th grade or lower education (only better than Italy, Cyprus, Greece)

UE25 average = 32%

From 65 to 75 years old:　　2%　(2 million people)
From 25 to 54 years old:　15%　(3 million people)
From 16 to 24 years old:　59%　(1 million people)
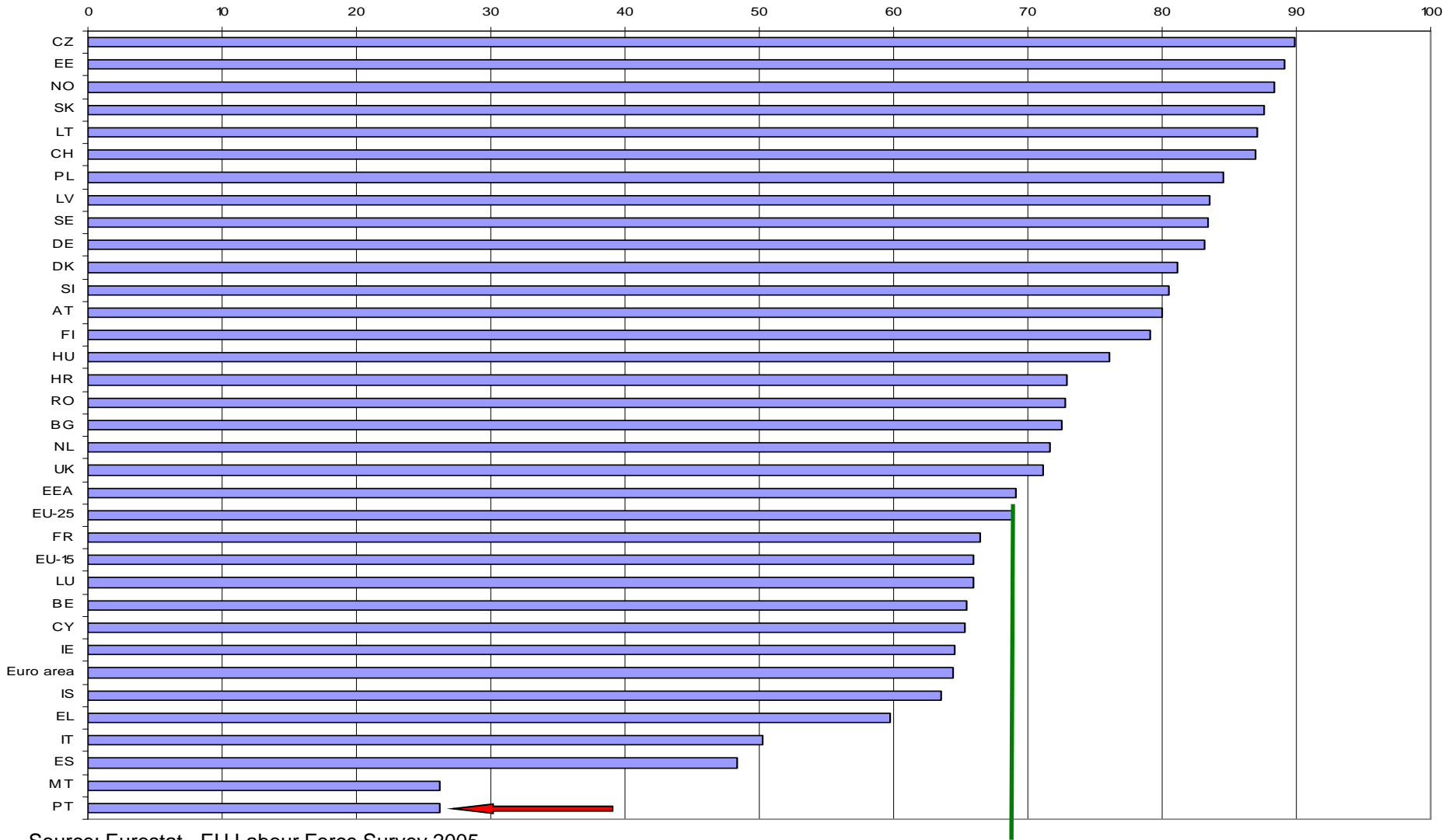
Source: EUROSTAT

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Very Different Situation Than Other EEuropean Countries

25 to 64 years old population with at least secondary education (%), 2005

Source: Eurostat - EU Labour Force Survey 2005
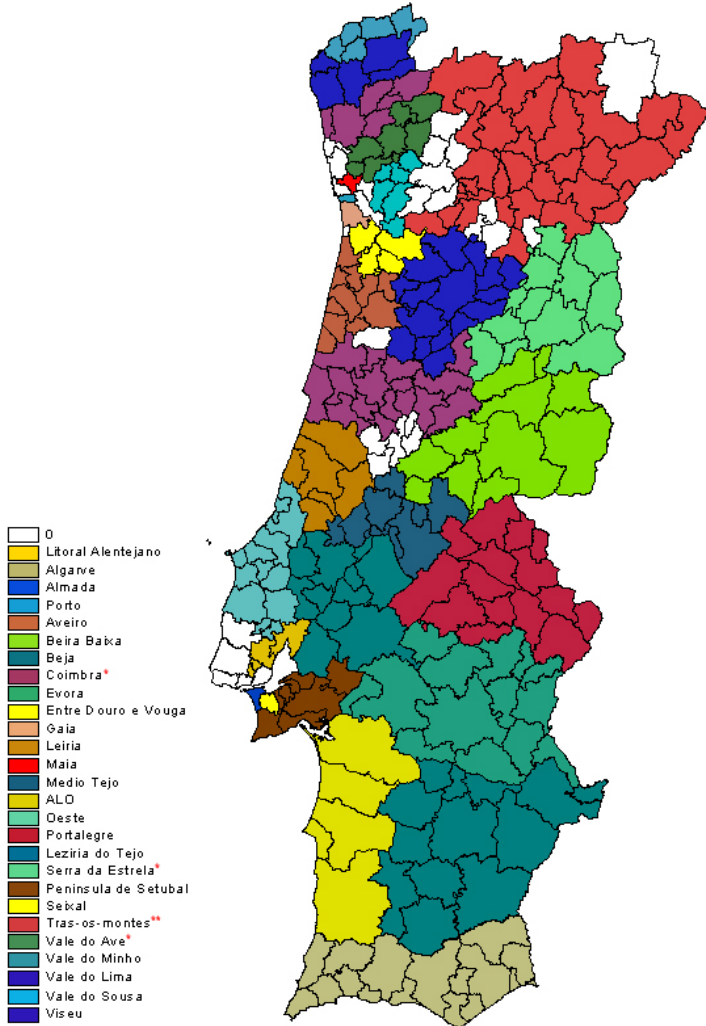
More Than 1.080 Free Public Internet Spaces

Digital Cities and Regions Projects

30 Digital Cities and Regions projects, including 284 of the 308 municipalities, an area of 95% of the country with 82% of the population, and an investment > 200 M€

Agent of economic and social development and of fight against regional unbalances

Instrument of mobilization of local actors, against the attractive forces to centers developing when new powerful communication technologies spread without a corresponding local development

Map legend:
- 0
- Litoral Alentejano
- Algarve
- Almada
- Porto
- Aveiro
- Beira Baixa
- Beja
- Coimbra*
- Evora
- Entre Douro e Vouga
- Gaia
- Leiria
- Maia
- Medio Tejo
- ALO
- Oeste
- Portalegre
- Leziria do Tejo
- Serra da Estrela*
- Peninsula de Setubal
- Seixal
- Tras-os-montes**
- Vale do Ave*
- Vale do Minho
- Vale do Lima
- Vale do Sousa
- Viseu

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Public Broadband Networks in Digital Cities and Regions and Community Networks

➔ Several of the 30 Digital Cities and Regions installed broadband municipal networks for public administration, hospitals, schools, solidarity institutions, etc. (fiber and WiMax) and services

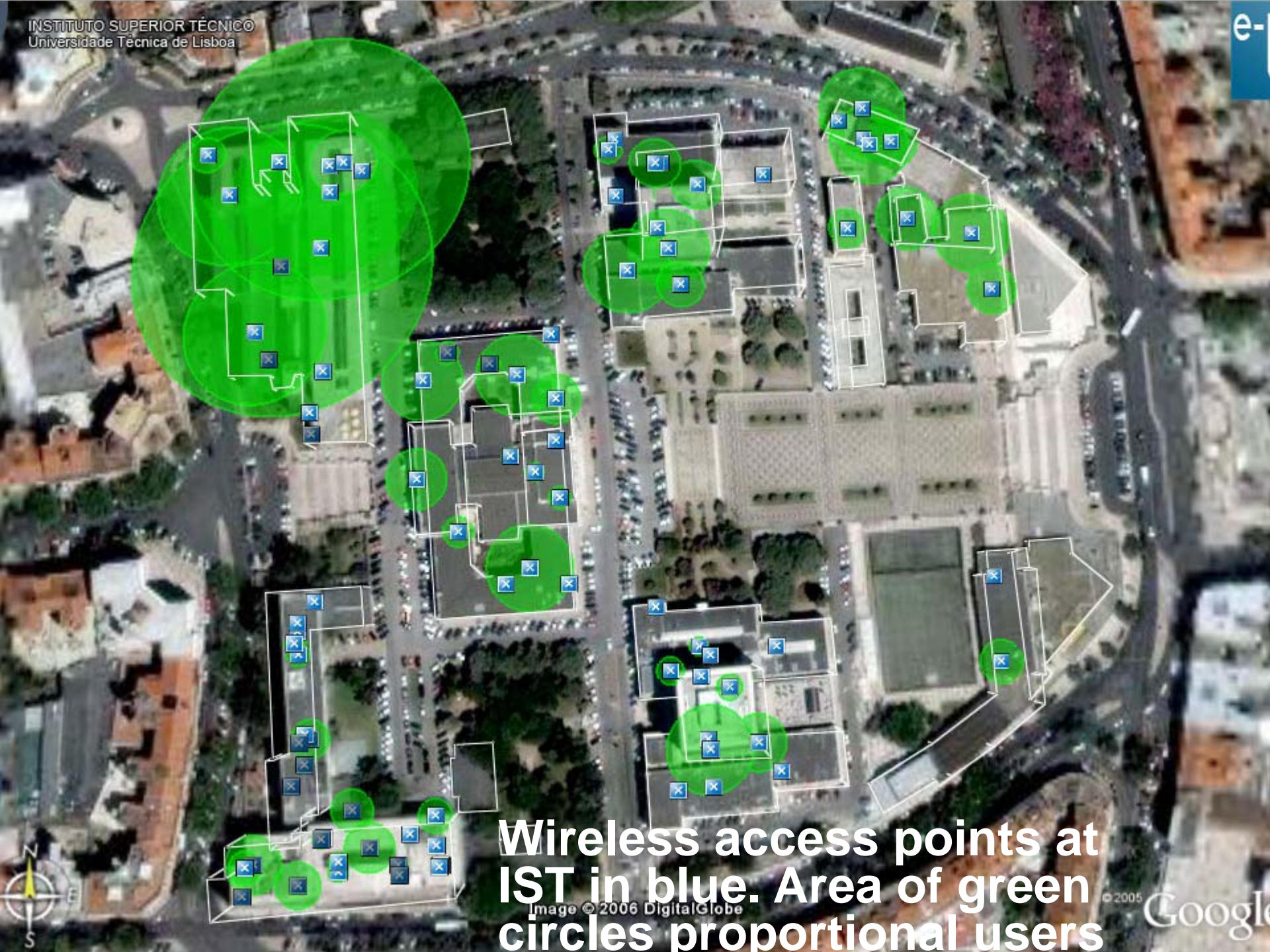➔ 4 Community Networks projects being developed in connectivity deprived areas

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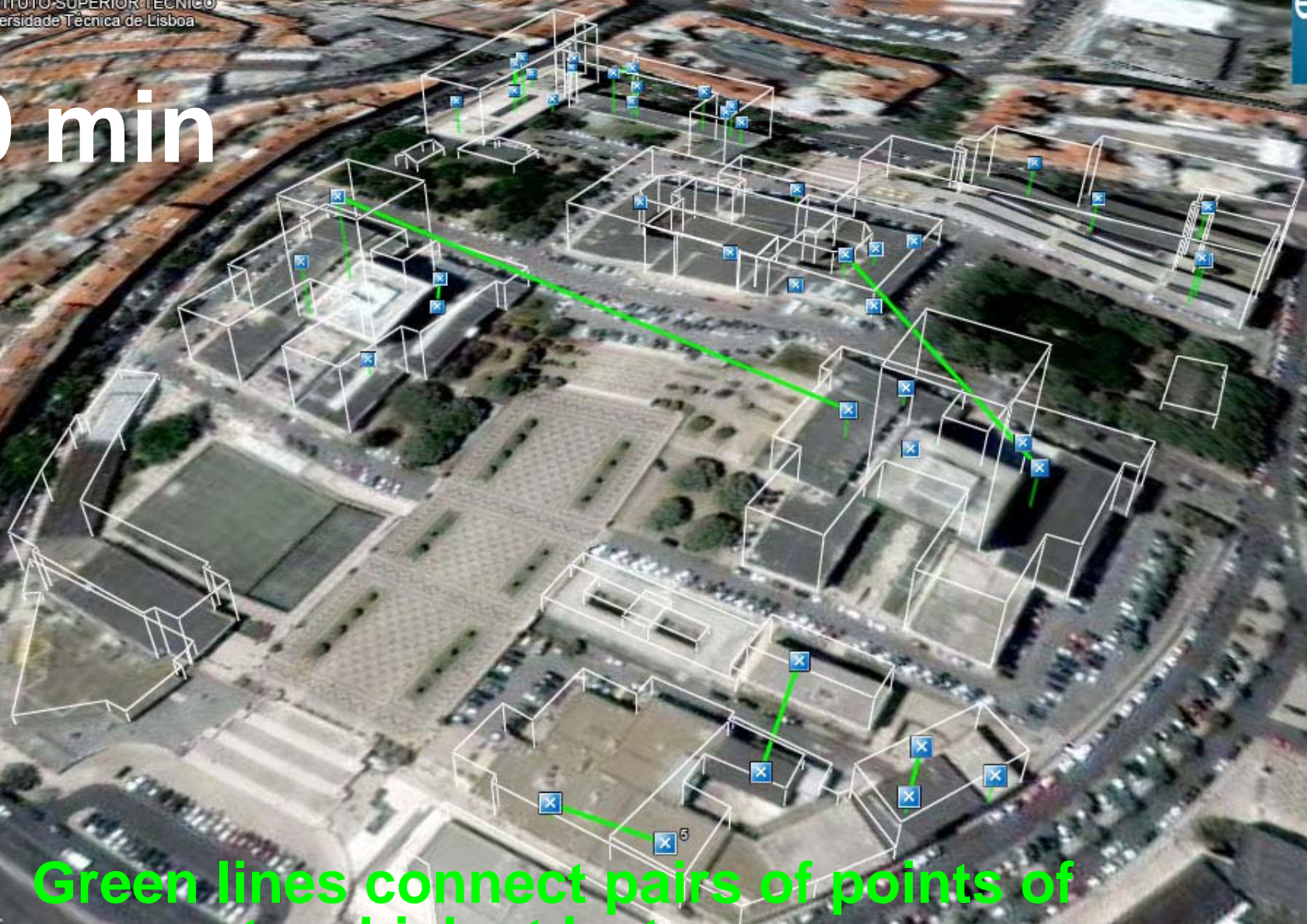
100% Broadband in All Public Schools

Fully Integrated Wireless Higher Education Virtual Campus

Wireless access points at IST in blue. Area of green circles proportional users

10 min

Green lines connect pairs of points of access to which at leat one user was connected within the indicated time span

1 day
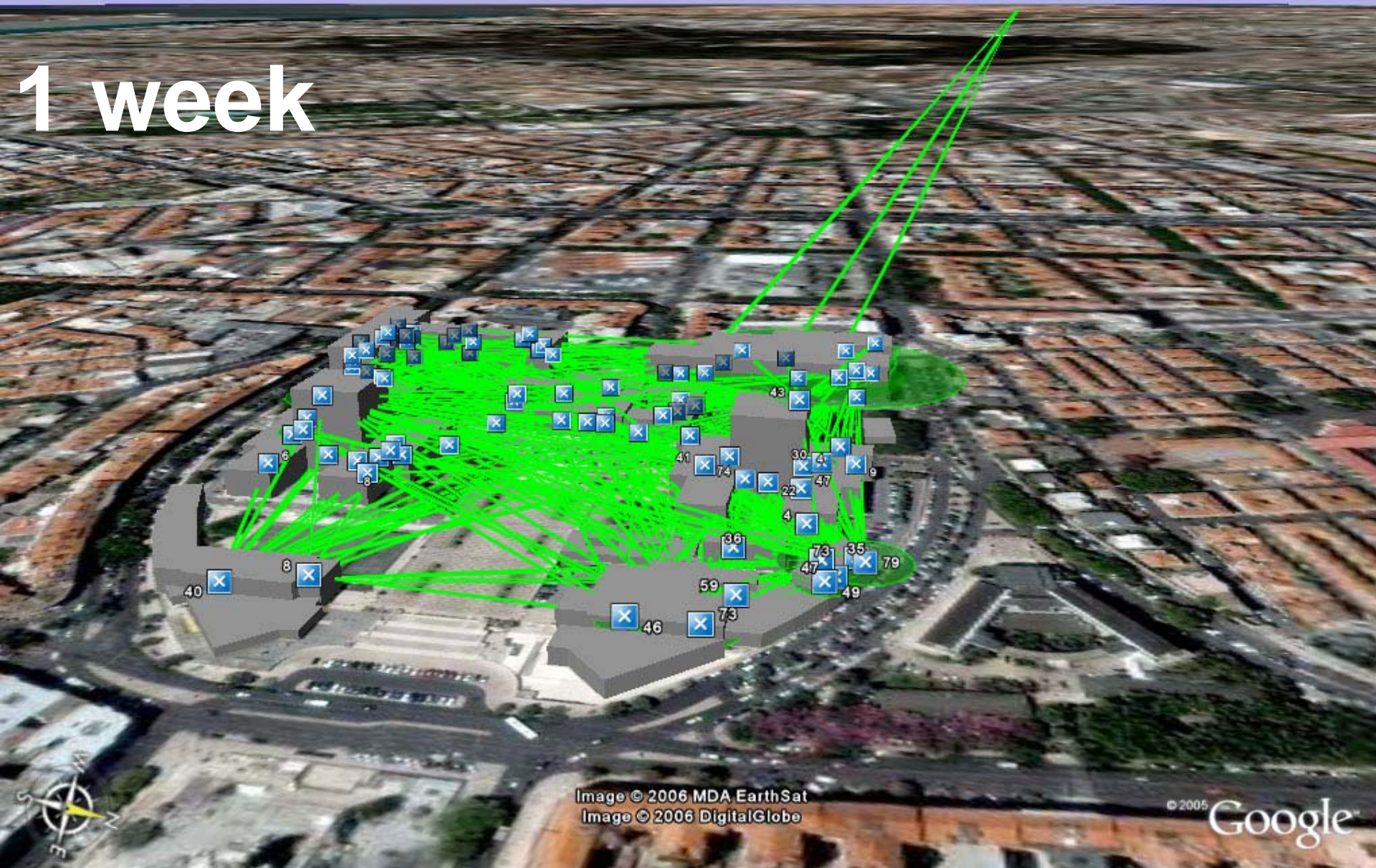
Praise by Industry Leaders

"e-U has been one of the most innovative initiatives, on a worldwide level, that has been driven by a government to promote the use of technology into academia"

Christian Morales, Vice President Intel

"This is a very innovative project that acts as a seed to develop new competences in several society areas, from the younger to the older, and with impact in the short and long term"

Steve Ballmer, CEO Microsoft

"Cisco considers Portugal's e-U initiative a landmark international reference. (…) The successful roll-out of e-U, over a short timeframe, across such a large number of universities is very impressive, as is the project's scale relative to the size of Portugal"

Robert Lloyd, President EMEA Operations, Cisco Systems

Nationally Subscribed Knowledge Library Online

INICIATIVA NACIONAL GRID

INGRID, launched 29th April 2006

➔ **Infrastructures** (as joint national infrastructures)

➔ **Connectivity** (between GRID nodes and with international infrastructures)

➔ **R&D Projects**

➔ **Demonstration and application projects** (meteorology, oceanography, geophysics, seismology, high energy physics, etc., with strong international connections, involving National Laboratories)

➔ **Training** (PhD and PostDoc grants, in Portugal and abroad. Engineering internships in top international institutions. Support higher education GRID Computing programs)

➔ **International evaluation** (International Scientific and Technical Committee)

➔ **Observation, monitoring and information dissemination** (observation and monitoring by UMIC. Site www.gridcomputing.pt. Annual conferences, national and international)

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National Research and Education Network (RCTS)

Portugal-Spain Dark Fiber Ring
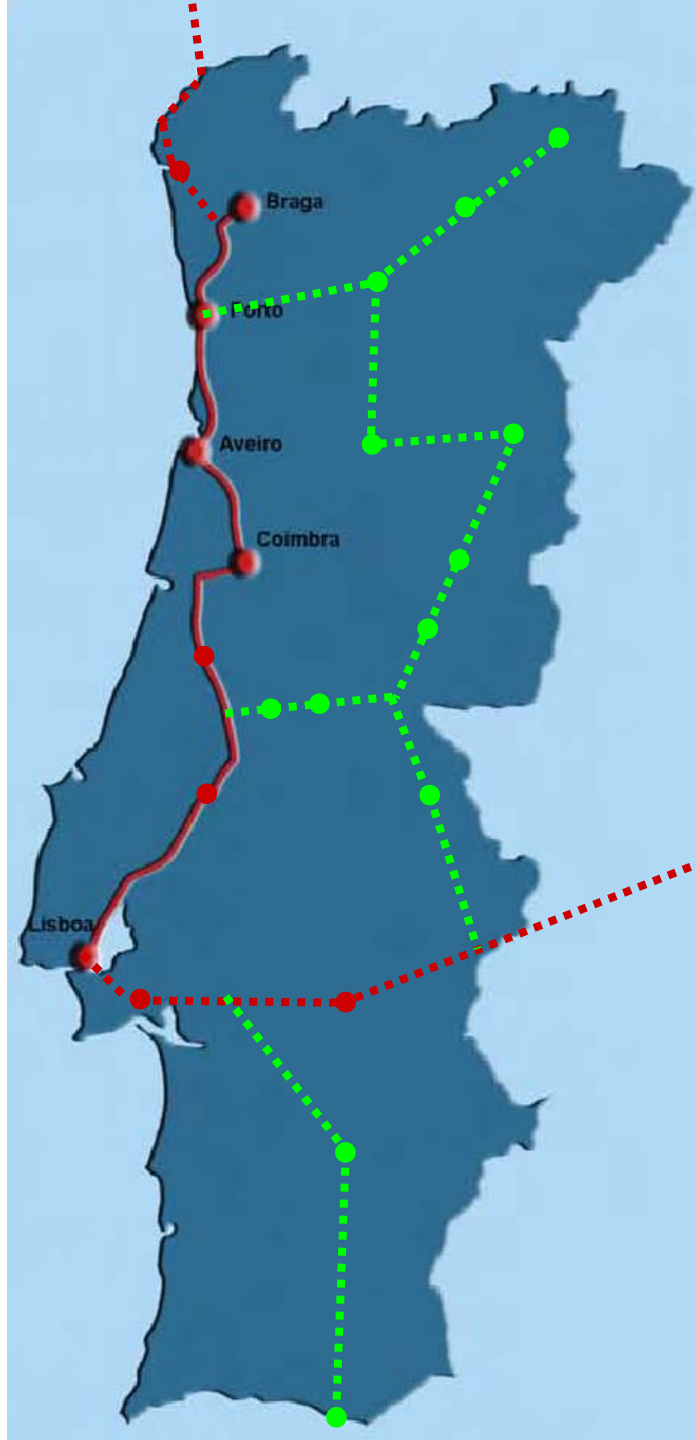
Portugal-Spain Summit, Nov 2005

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National Research and Education Network (RCTS)

Portugal-Spain Dark Fiber Ring

Portugal-Spain Summit, Nov 2005

Extension of Fiber Network
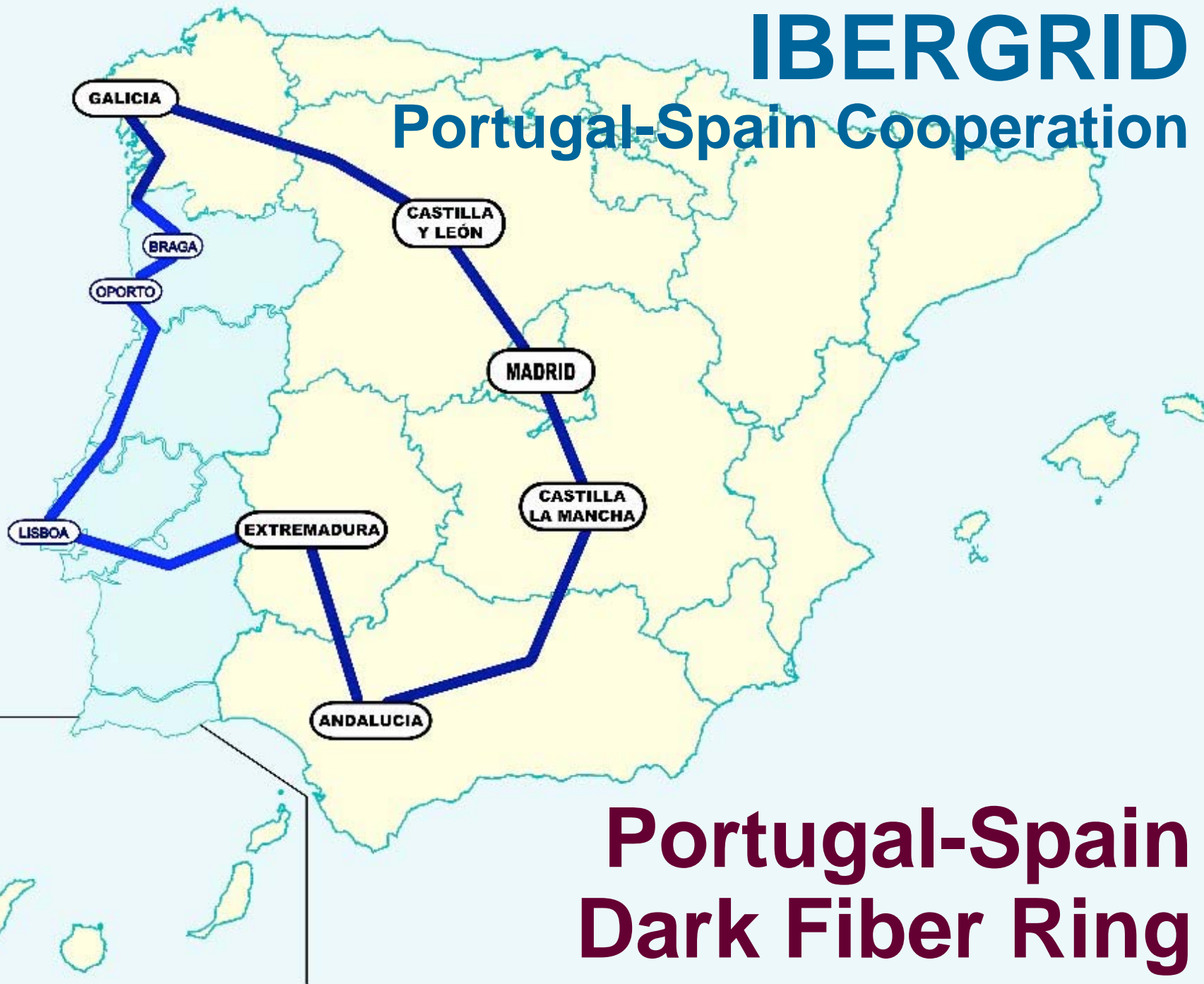
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IBERGRID
Portugal-Spain Cooperation

GALICIA

BRAGA

OPORTO

CASTILLA Y LEÓN

MADRID

LISBOA

EXTREMADURA

CASTILLA LA MANCHA

ANDALUCIA

Portugal-Spain
Dark Fiber Ring

Look at Globalisation as an Opportunity

➔ Developing Internationalized Knowledgeable, Creative and Skilled Workforce for Knowledge-Based Industry

➔ Building Ambitious International Knowledge Networks

➔ Inducing the Creation of New Knowledge-Based SMEs of Global Reach

➔ Enabling Networks of Competence to Reach Global Markets

➔ Attracting Foreign High Tech Industry and R&D Investment

➔ Adopting Globally Competitive Tax Deductions for Industrial R&D

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Partnerships for the Future
Building Ambitious International Knowledge Networks

➜ Assure world class excellence in partnership with leading international institutions

➜ Enhance knowledge networks with a global reach and involving research, industry and university

➜ Train researchers and contribute to the development of a skilled workforce for technology based industry

➜ Create clash of cultures in knowledge creation environments to stimulate creativity and entrepreneurship by shaking up the *status quo*

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Partnerships for the Future
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Previous example:

IBERGRID Portugal – Spain cooperation (beginning Oct/Nov 2006)

- Joint Grid Computing infrastructure,

- Joint access to resources and coordination of activities both in Grid Computing and Supercomputing,

- Information exchange,

- Mobility of Portuguese and Spanish researchers between Iberian centers, Participation of researchers of both countries in training programs (including for PhD students),

- Joint R&D projects, strategic alliance in the EU framework and regarding Latin America, Mediterranean area, Africa

Partnerships for the Future
Building Ambitious International Knowledge Networks

Further examples:

MIT – Portugal Programme (11 Oct 2006)

Engineering Design and Advanced Manufacturing, Energy Systems, Transportation Systems, Bioengineering Systems.

Also with *Sloan School of Management:* International MBA and *Lisbon-Sloan Seminar Series in Management Science.*

Involves 6 universities, 6 Associate Labs, 1 National Lab, VW-Autoeuropa, EADS-CASA and 10 Portuguese companies mostly SMEs

CMU – Portugal Programme (27 Oct 2006)

Software Engineering, Information Networking, Information Security, Critical Infrastructures and Risk Assessment, Language Technology, Technical Change and Innovation, Mathematics.

Includes the creation of an international virtual institute: the *Information and Communication Technologies Institute (ICTI)* operating first with two nodes, *ICTI@Portugal* and *ICTI@CMU.*

Involves 11 universities, 4 Associate Labs, Portugal Telecom, Siemens Networks Portugal, Novabase SA and 16 SMEs

Partnerships for the Future
Building Ambitious International Knowledge Networks

Further examples:

UT Austin – Portugal Programme (2 Mar 2007)
Digital Media, Advanced Computing, Mathematics.
Includes the creation of an international virtual institute: the *International Collaboratory for Emerging Technologies (CoLab)* operating first with two nodes, *CoLab @Portugal* and *CLab @UTAustin*.
Involves 15 universities, 3 Associate Labs, 4 Science and Technology Parks, 9 SMEs.

Harvard – Portugal Programme (16 Apr 2007)
Biomedicine and Health Care Content. Signed MoU for assessment phase with Harvard Medical School. Will involve Universities, Associate Labs, large and SMEs.

Fraunhofer – Portugal Programme (18 Apr 2007)
ICT, Biotechnology, Nanotechnology, Advanced Manufacturing Engineering, Logistics.
Signed MoU for assessment phase with *Fraunhofer Gesellshaft*.
One objective is the creation in Portugal of the 1st Fraunhofer Institute outside Germany (on *Technology, Applications and Services for Ambient Assisted Living)*.
Will involve Universities, Associate Labs, large and SMEs.

Partnerships for the Future
Building Ambitious International Knowledge Networks

Further example:

International Iberian Nanotechnology Laboratory (19 Nov 2005)
Nanomedicine (drug delivery, nanotechnology for diagnostics), Environmental Applications, Food Quality Applications, Electronic Devices. 200 researchers. International research organization under UN umbrella whose joint creation was decided by Spain and Portugal governments at the Spain-Portugal Summit of 2005. Convention signed in Summit 2006 (25 Nov 2006).

"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*
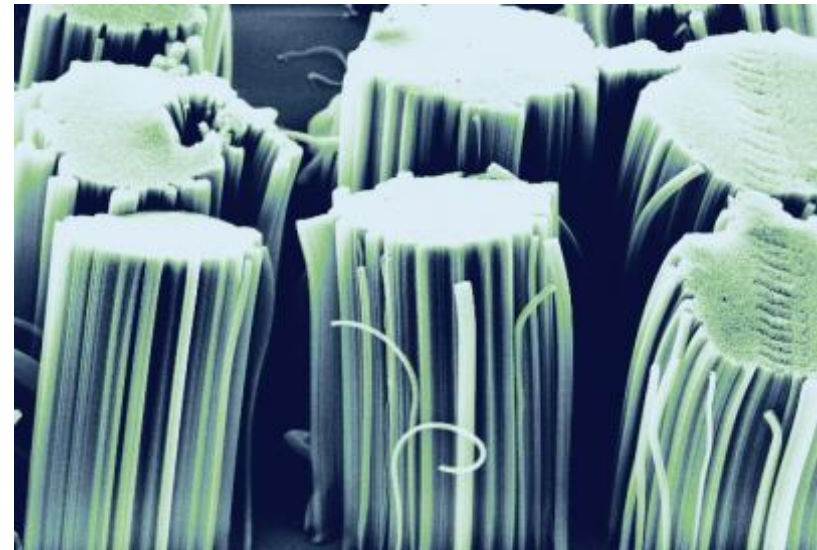

Figure: Carbon nanotubes

For the Future: Wide Use Applications

➜ Enhancing human-computer interaction by speech and image

➜ Exploring highly interactive technologies

➜ Providing innovative health care enhanced by ICT

➜ Managing/mitigating public risks

➜ Expanding large scale simulations of complex systems

➜ Data mining large data repositories

➜ Exploring the future ubiquity of communicating devices, sensors and distributed computing for Ambient Intelligence

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5 General Practical Rules

for Success in the
Information and Knowledge Society

➔ Develop human capital

➔ Foster partnerships and knowledge networks

➔ Aim at outcomes and measure them

➔ Leave room for bottom up creativity

➔ Promote internationalization

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