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Implementation Schemes (including Public Private partnerships) for the Development of Innovative Broadband Projects: The role of Local Authorities

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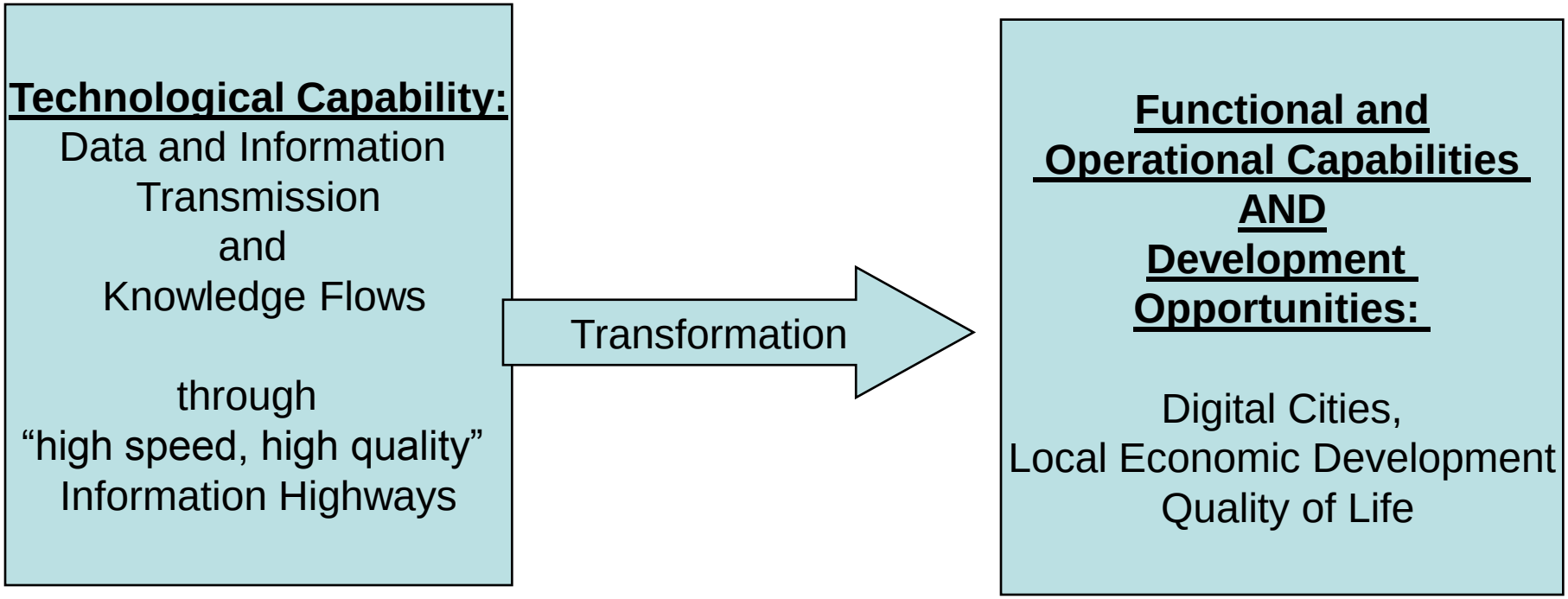
BroadBand Networks



Benefits of BroadBand Networks and Services

- Access to BroadBand Networks and the development of BroadBand Services can contribute to:
  - the quality of the Education System (e-education),
  - the provision of Health Services (e-health),
  - the provision of government services and the improvement of the operations of Public Administration (e-local government),
  - Citizens' participation (e-participation),
  - the productivity and the opportunities of local businesses
  - the promotion of a city-region.

  and generally they can foster **economic development** and improve the **quality of life** in a city-region.

BroadBand Services: an instrument for citizens' empowerment, a means of expanding the development capabilities of the local society

- Broadband at the epicenter of the Local Authorities Agenda
- Broadband Access is:
  - a necessary working environment for the municipalities.
  - An essential network infrastructure for a modern city.
  - A useful instrument for the citizens' daily activity.
  - An effective means for the design and implementation of a local development strategy.

Recession: The day after

- Is recession really the time to take major decisions for the implementation of large scale projects (such as BroadBand Networks) ?
- Go beyond the short term response and the necessary tidying up.
- Go for a Long term strategy, starting from today.
  - “Think of economic crisis as a disrupter to the status quo”.
  - Change is coming, so we must lay the foundations for the future.
  - Focus on the fundamental transformations that are already taking place.
  - Invest in human resources and technology going for productivity improvements.

Facing the Recession: The BroadBand deployment as part of a stimulus package

- Fiscal Stimulus

  Short-term Benefits:

  ➢Stimulation of Demand

- **Investment** in modern **Infrastructure, Technology, Education**

  Long-term Benefits:

  ➢Productivity Improvement

Obama policy

- Developing broadband networks and services (Next Generation Networks) as part of a stimulus and development package for:
  - economic growth,
  - job creation, and
  - education and health modernization

  in the USA.

EU Policy

1. Broadband connectivity is a key component for the development, adoption and use of information and communication technologies (ICT) in the economy and in society.
2. Broadband is of strategic importance because of its ability to accelerate the contribution of these technologies to growth and innovation in all sectors of the economy and to social and regional cohesion.
3. The Commission actively supports the widespread availability of broadband services for all the European citizens as laid down in the Lisbon strategy and subsequent Communications.

EU Policy: Broadband strategy as part of the Recovery Plan

1. On 26 November 2008, the Commission adopted a **European Economic Recovery Plan** (the "Recovery Plan"2) as a means to drive Europe's recovery from the financial and economic crisis. The **broadband strategy** is an important part of the Recovery Plan.
2. In particular, the aim of the latter is to boost EU investment in defined strategic sectors, such as broadband, that can help support the economy in the short run and over the longer term create **essential infrastructures** for sustainable economic growth.

EU Policy: Broadband strategy as part of the Recovery Plan (..continue..)

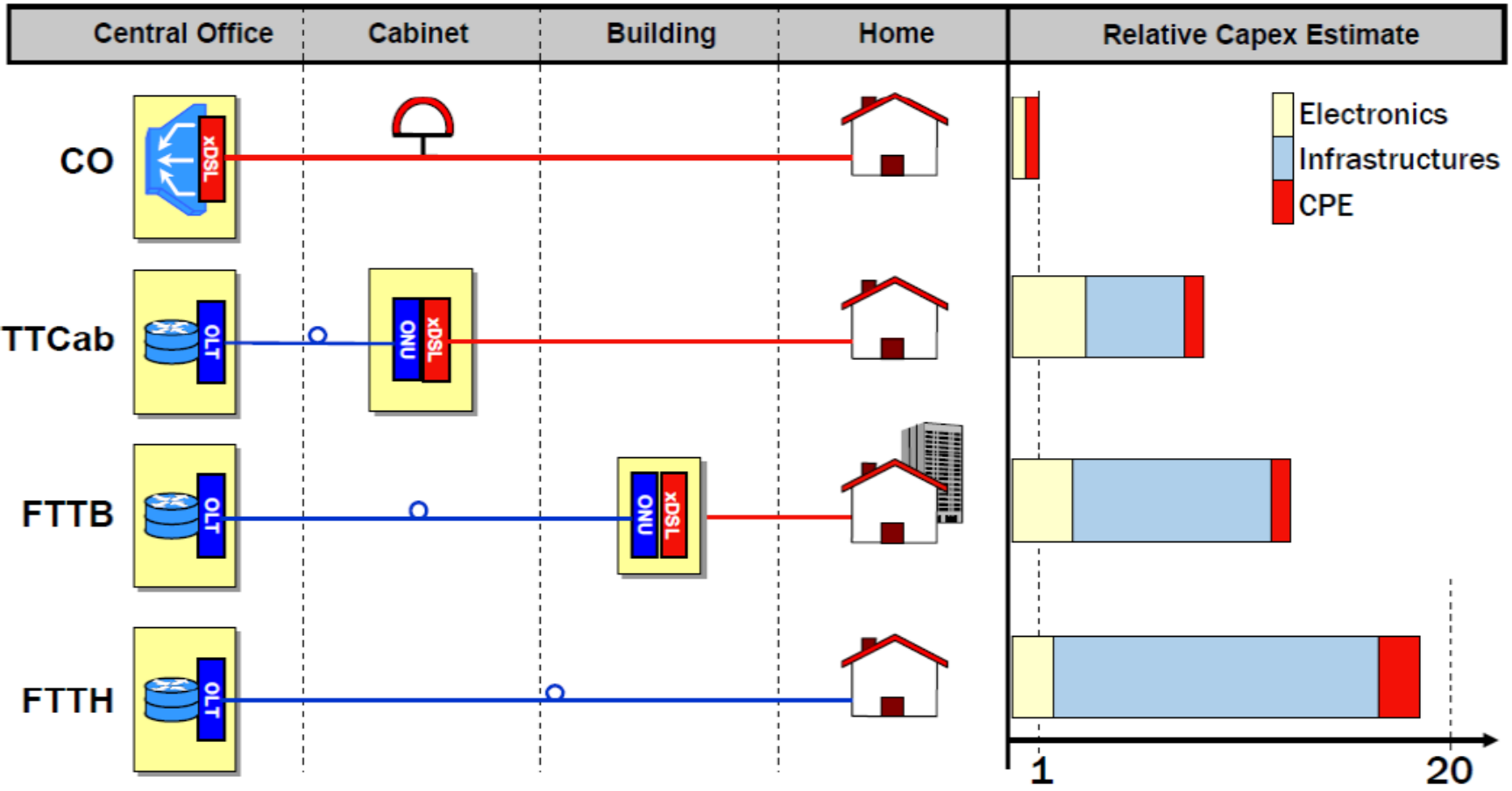
(3) As part of the above-mentioned Recovery Plan and with an aim to achieve 100% high speed internet coverage for all citizens by 2010, the Commission decided to earmark € 1 billion to help rural areas get online, create new jobs and help business grow further.

(4) **In addition a number** of **Member States** have already announced **plans** to support investment not only in high-speed broadband infrastructure for rural and underserved areas, but also to accelerate the deployment of very high or super fast, next generation access networks ("NGA") in large areas of their territories, including urban areas or areas already served by basic broadband infrastructures.

Next Generation Access (NGA) networks across the globe

- "Throughout the world **many investment projects** are planned (launched, some times already completed) that in one way or another **change** the existing copper-based physical infrastructure in the local loop by deploying fibre ("deep fibre") and thus bringing **more bandwidth to end users in the business and the residential market**" (WIK, 2008).
- Fibre deployment ventures are usually **geographically focused** (first and foremost in **densely** populated areas).
- NGA Deployment requires **significant** investments in any case.
- **The policy question is: Who** is doing **what**, **how** and **why**?

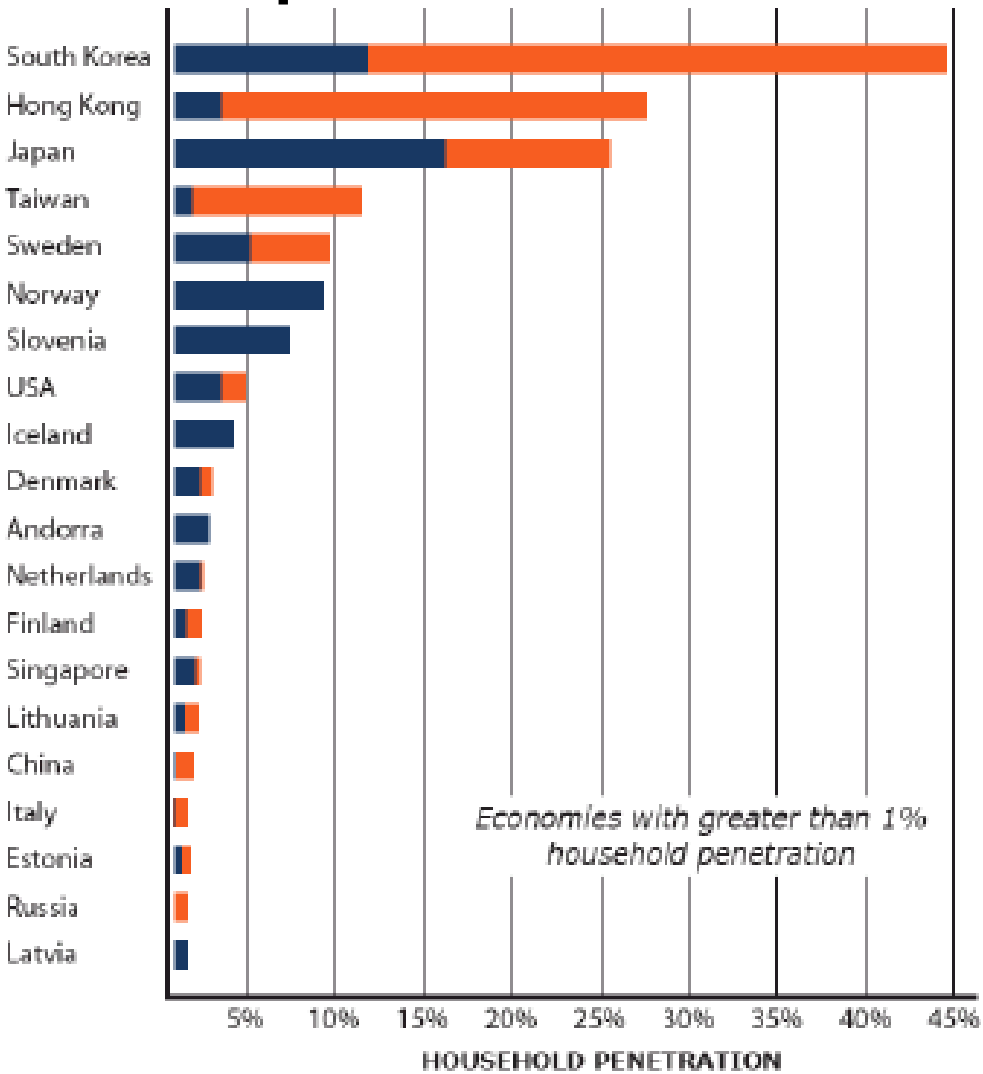
Architectures



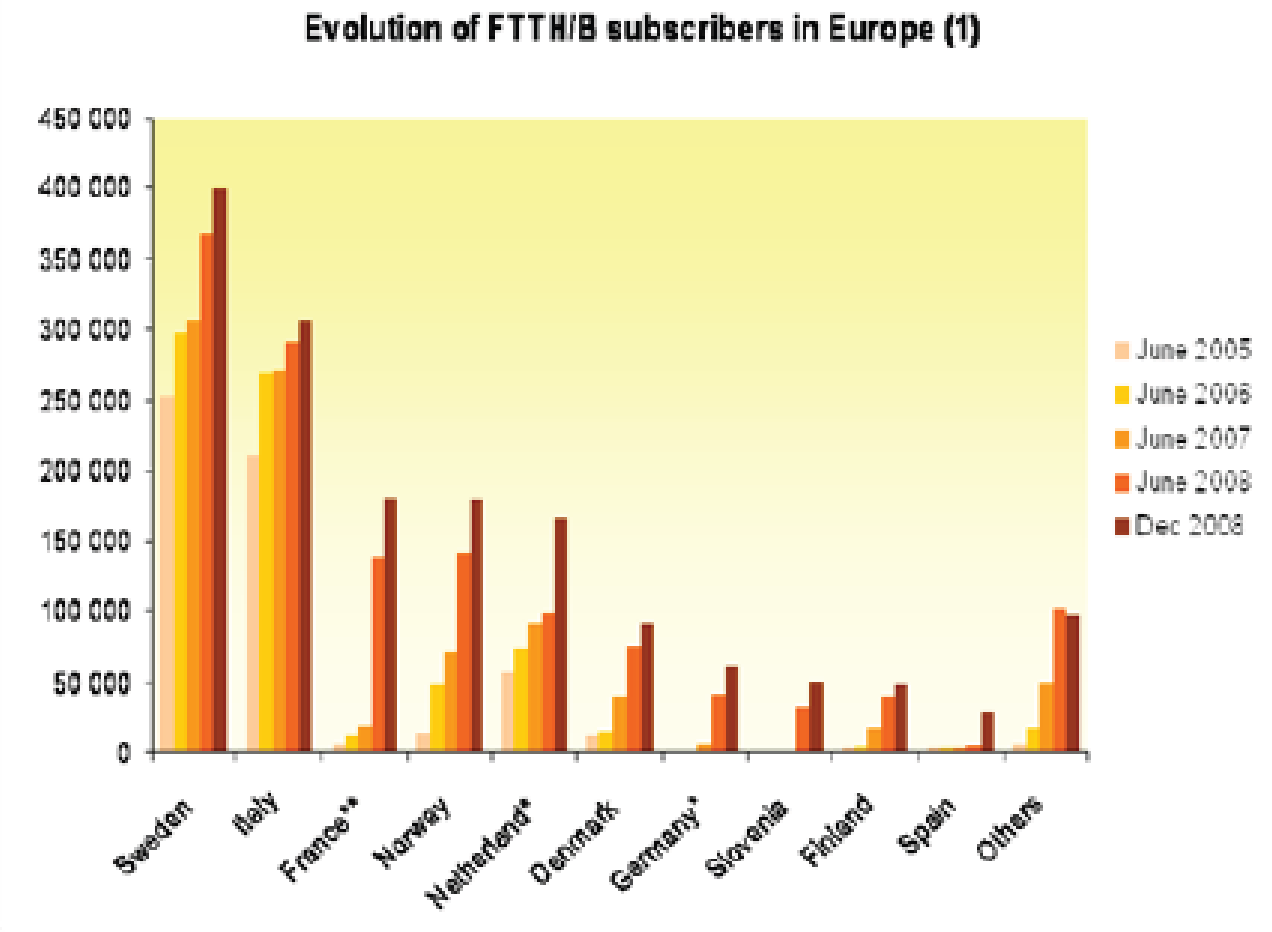
Source: Telecom Italia, 2008

Technology/ Architecture	Average download speed/user (Megabit/sec)	Average upload speed/user (Megabit/sec)
ADSL	24	4
FFTN/C	50	50
FTTH – P2P	100 - 1000	100 - 1000
FTTH – PON	19 - 125	5 - 63
Wireless-WiFi (short distance)	3 - 54	3 - 54
Wireless-WiMax (long distance)	2 - 40	2 - 40

Top Countries in FTTB/H penetration

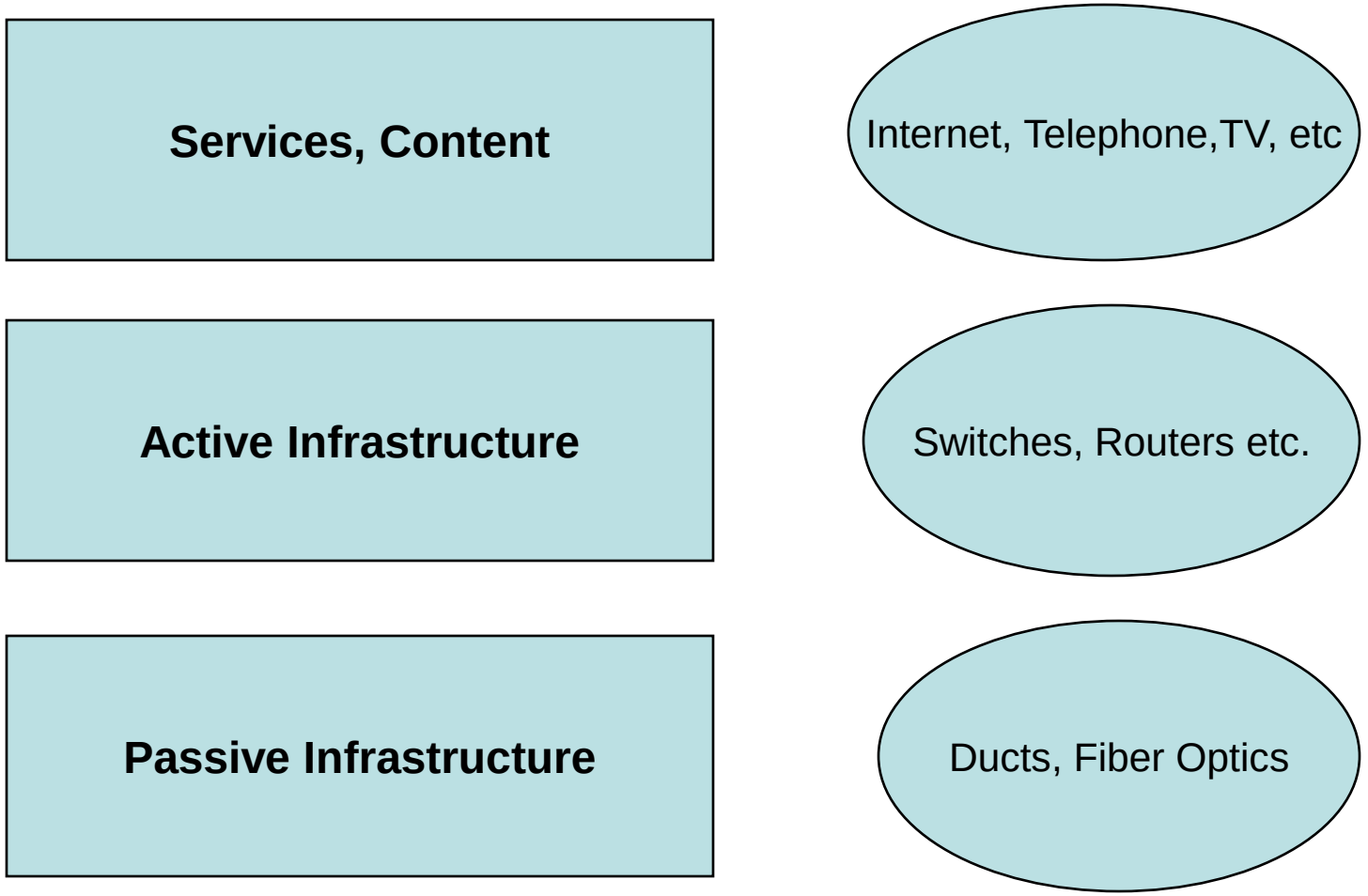


Evolution of FTTB/H subscribers in Europe

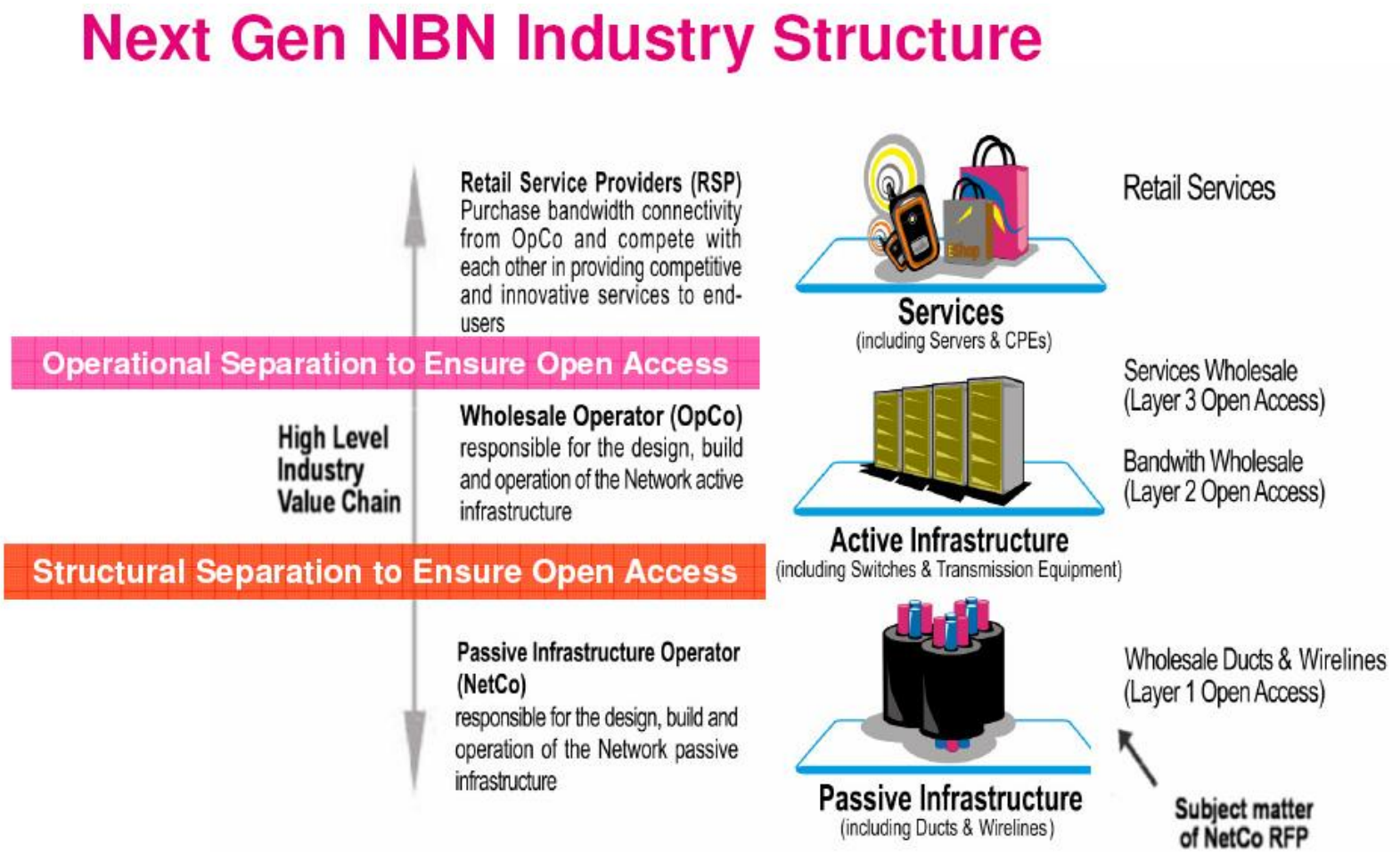


Source: FTTH-Council Europe/IDATE 2008

Levels of a Business Model



Levels of a Business Model



FTTH/B Global Deployment

- **Asia:**
  - **28 millions subscribers**
  - **Japan, South Korea: The Highest Penetration globally (PON architecture)**

- **Europe:**
  - **1,7 millions subscribers**
  - **Direction of E.U. for "Open Access" networks**
  - **Leaders: Scandinavian Countries (Sweden, Norway, Denmark) and Netherlands**
  - **The majority of the projects are driven by Municipalities and Utility Companies (the most of them are "Open Access" Networks)**
  - **Katalunia (LocalRet): Regional Venture – "Open Access"**

- **USA:**
  - **3,9 millions subscribers**
  - **Mainly developed by Regional Bell Operating Companies (RBOC) [AT&T, Verizon]. Besides are developed by Incumbent Local Exchange Carriers (ILEC) and Competitors Local Exchange Carriers (CLEC)**
  - **Policy direction by the US President Obama for "Open Access" networks.**

A variety of players engaged (Hansen, November 2008)

- Japan: Electricity companies and incumbent operators
- Sweden: Government, municipalities, utilities all engaged.
- Norway: Government working on the demand side
- Slovenia: telecom operator respond to new entrant challenges
- Denmark: utilities versus the incumbent operator.
- Australia: The incumbent is excluded

What is a Public Private Partnership?

A Public Private Partnership (PPP) is a form of procurement in which the private sector is invited to participate in the development of public infrastructure and in the delivery and management of public services.

Kinds of PPP

There are many kinds of PPP:

- Leasing contracts
- Concession contracts
- Operation and maintenance contracts
- Management and assistance contracts
- Construction and management contracts

PPPs and e-governement initiatives

Governments around the world have been using Public Private Partnership (PPP) models to finance e-government initiatives, with various degrees of success. PPPs are a form of government procurement involving the use of private sector capital to wholly or partly fund an asset, which is used to deliver government outcomes. The benefit of PPPs is generally that access is gained to private sector design and innovation, project management skills and private sector finance.

Business Models

PPP Model	Initiative	Function of Municipality	Network components and Access			Examples**	Authors
			Physical infrastructure (Dark Fiber)	Network (Backbone & Access)	Access, Services and Content		
Franchise Model	Municipality	Contracts with a private party to build and operate the facility	Operating Company		Multiple service and contents providers	Milan (It), Helmond (NL)	(Lehr et al.,2004)
Cooperative Model	Citizens/ Private Entrepreneurs	Supports the set up of a non-profit organization that negotiates with suppliers different services	Owned by non-profit organization	All levels are managed and owned by non-profit organization		Nuenen (NL)	(ICM, 2004; Lehr et al., 2004)
Social Housing Corporations Model	Social housing Corporations	Provides a nexus for the aggregation of demand of different social housing corporations	Owned by municipality or housing organization	Operating Company	Multiple service and contents providers	Rotterdam (NL)	(ICM, 2004)
Coordination Model	Municipality	Provides a nexus for the aggregation of demand of households, private companies and semi-public parties like hospitals	Municipality aggregated passive infrastructure	Operating Company	Multiple service and contents providers	CityNet Amsterdam (NL), Terrecablate (It)	(ICM, 2004; Lehr et al., 2004)

Table 1: Different Models for Public Private Partnerships

Type of interventions

- Mainly supply side interventions driven by central and local government initiatives.
- Norway promotes broadband from the demand side.

Network Infrastructure in Greece: 1. **The state of network development**

- Network of Universities and Research Institutions (1 up to 10 Gbps, 70 institutions): The real BB network.
  - This network serves as an upstream provider for the Greek School Network which interconnects about 15000 schools and administrative offices).
- National Network of Public Administration "SYZEYXIS"
- Conversion of ISDN connections into DSL
- Incumbent's Network
- Competitors' Networks
- Metropolitan Area Networks (MANs)
  - **in 75 Municipalities except for Athens and Thessaloniki**
  - **5000 spots of Public interest**

2. Proposals for FTTH development

- The Ministry of Communication FTTH deployment plan [(3 PPPs) in Athens, in Thessaloniki and in the other 54 largest cities of Greece]
- The bottom up approach of the Local Authorities decentralised Initiative

The policy questions

- Nationwide FTTH?
- Is there a need for an open access public backbone network in Greece?

- Who is doing what?
- Supply side interventions
- Demand side interventions
- Top- down vs. Bottom-up
- What is the optimal policy-mix?

The Plan of the Ministry of Transport and Communication

- FTTH (> 100 Mbps) for 2 Millions Households in Athens, Thessaloniki and in the other 54 largest cities of Greece
- 3 PPPs in 3 zones which are equal in terms of cost deployment and potential demand
- Business Model: Infrastructure Provider (1st layer) – “Open Access” Model
- Budget:

➢ 2,1 Billions Euros

➢ Public Funds: 1/3 of the budget (700 Millions), cover the cost of in-house infrastructure and the public fees

- Roll-out (for Home-passed) in 7 years
- Private exploitation of the Passive Infrastructure for 30 years

The Local Authorities Bottom Up Decentralised Broadband Initiative

- This is part of KEDKE (Central Union of Local Authorities) digital strategy (three pillars: e-services, BB and HR).
  - Building and management of the passive infrastructure of a mass scale FTTH deployment.

Conclusions of KEDKE Broadband Conference (Thessaloniki, 2007)

- Need for **Public Intervention** for the limitation of “Digital Divide”
- Nationwide FTTH
- The **Decentralized Ventures** appear to be more appropriate.

Conclusions of KEDKE Congress (Thessaloniki, 2007)

- Business Models with more advantages:
- **Municipalities** hold the **Passive Infrastructure** ,
- **"Open Access"** to the Active Infrastructure Providers (Wholesale Operators) and to the Retail Service Providers

➢ Enhancement of Competition in Service Provision

- Best Architecture: **Point-to-Point**

➢ **Highest Speed** and **Symmetry** in the transmission of Data

➢ Favors **Competition** between Service Providers

Need for Public Intervention

- Supply
  - Development of high capacity broadband infrastructure (Nationwide FTTB/H) where the Private Sector has no interest (e.g. outside the densely populate areas, Rural Areas)

- Demand
  - Aggregation of Demand (Ensuring the demand from Public Authorities)
  - Stimulation of Demand (training of human capital in ICTs, enhancement of ICT capabilities of SMEs, etc.)
  - Setting up a local effort for the diffusion of BB: a community drive to attract a critical mass

Metropolitan Area Networks

- **75 Municipalities** except for Athens and Thessaloniki
- ➢ Capital cities and other major cities of the Counties
- ➢ 4000 – 5000 spots of public interest
- ➢ Population Coverage: 2.3-2.4 Millions

Metropolitan Area Networks
The steps forward

- **Immediate Steps**

➢ Complete the building and undertake the maintenance of the networks.

➢ Utilization of the networks by the connected Authorities (Linking them with the available public networks i.e. The Education and Research Networks, the Network of the Public Admninistration).

- **Next Steps**

1. Expansion of these networks inside the cities (i.e. more public buildings)
2. Interconnection of the networks → Development of a backbone infrastructure
3. FTTB/H and/or Wi-Max in every household and company of the country

Operational and Organizational Initiatives

- **5 or 6 Regional** Flexible viable Schemes (Municipalities' Partnerships)
  - Sufficient **Demand**: Critical Mass of Users
  - Broad Coverage of **local needs**
  - Sufficient **Human Resources** (e.g. cooperation with Universities and Research Institutions
  - Sufficient Size for **negotiations** with **Suppliers** and **Service Providers**
  - Small Flexible Schemes for the deployment and the management of the passive infrastructure
- Business Models: Infrastructure Provider (1st layer) or Wholesale Provider (1st and 2nd layer)– **"Open Access"** Network
- **Mobilizing citizens based on the community spirit.**


THRAKI
MACEDONIA
Thessaloniki
EPIRUS
THESSALIA
SPORADES
ISLANDS
NE AEGEAN
ISLANDS
Corfu
Skiathos
Alonissos
Skopelos
Mytilini
CENTRAL
GREECE
Kefalonia
Athens
Patra
IONIAN
ISLANDS
PELOPONNESE
Aegina
Samos
Zakynthos
Tinos
Poros
Mykonos
Hydra
Syros
Patmos
Spetses
Paros
Naxos
DODECANESE
ISLANDS
SARONIC
ISLANDS
Sifnos
Amorgos
Kos
Milos
Ios
CYCLADES
ISLANDS
Rhodes
Santorini
Chania
Rethymnon
Heraklion
CRETE
Lassithi

The formation of three Regional Ventures

- **Central Greece: "First Digital Community in Greece"**
  Trikala, Larisa, Volos, Nea Ionia, Karditsa,
  Katerini, Lamia, Grevena, Ioannina, Kozani, Veroia
  MAN: 530000 population
  Total Population of the Counties:1572000

- **Crete and Aegean Sea: "CretaNET"**
  Hrakleio, Chania, Rethymno, Ag.Nikolaos, Siteia, Ierapetra
  MAN (Crete): 247000
  Ag.Nikolaos , Bathy (Samos) ,Ermoupoli , Hrakleio ,Ierapetra , Mytilini , Naxos N.Alikarnassos , Paros ,Rethymno ,Rodos ,Siteia , Chania, Xios
  MAN (total): 393000 population
  Total Population of the Counties:1064000

- **SouthWestern Greece: InterMunicipal Corporation of Broadband Networks in SouthWestern Greece**
  Includes all the cities that develop MAN and Wireless Infrastructure in the Regions of Western Greece, Peloponnisos, Ionion Islands and Hpeiros except for the County of Ioannina
  MAN:730000 population
  Wireless:420000 population
  Total Population of the Counties:1875000

Project Funding

- Common Proposal for the 5-6 zones by KEDKE:
- Preparation of a business plan ensuring the viability of the Venture.

➢ Project Financing

  ➢ European or joint European- national (National Plan for Regional Development co-funded by EC and national funds, European Investment Bank) and Public Funds.

Total Budget: Very Rough Estimates

- Cost per Households: 300 Euros (in high-density areas) to 5000-10000 Euros (in low-density areas)

- Two scenarios:

➢ Broadband coverage (75 big cities excluding Athens and Thessaloniki with Metropolitan Area Networks):
  ➢ 2000 Euro/household x 800000 households (=2.370.000/3) = **1,58 Billion Euros**

➢ Broadband coverage (total population except for Athens and Thessaloniki):
  ➢ 3000 Euro/household x 2,2 households= **6,6 Billion Euros**