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# **The Transition to Digital Cities/Communities: The Role of BroadBand**

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# The Structure of the presentation

- The new emerging context.
- The issue at stake: Re-invent the “demos”.
- The building blocks of a digital local authority organization.
- The key role of NGA networks.
- KEDKE’s (Central Union of Greek Local Authorities) digital strategy.
- Alternative strategies for deploying Broadband in Greece.
- Some general considerations on the wisdom of promoting big infrastructural projects during a crisis period.

# The new emerging context

- The “death of the distance” and the emergence of a new environment characterized by interdependence and information overflow.
- The increasing demand of the citizens for greater transparency, better services and more reliable and timely information.
- “Think globally, act locally”.

# Increasing Mobility: A new social trend and a challenge for European regions and cities

- The emergence of a society which facilitates mobility and autonomy in terms of space and time. “You can do many things from any place at any time”.
- Digital city, digital community: The local response to a global trend.
  - Create a local environment with advanced broadband infrastructure and services.
  - Create a “micro-climate” which encourages the production and diffusion of innovations.
  - Create the demand for useful applications.
  - Attract creative people and innovative activities.

# The local authorities as a driving force to the digital city

- Redefine the mission.
- Re-engineer the operations.
- Re-design and re-package the services offered to the citizens and the local organizations.
- Re-establish participation.
- Re-invent the “demos”.

# The issue at stake: Re-inventing Greek local authorities through the efficient and effective use of ICTs

## **But remember:**

- Technology is the means not the end.
- The way ICTs are used matters very much.
- Information Society in local government is about the local society and its needs.
- It is not about boxes and programming techniques implanted in Local Authorities Organizations.
- It is not even the sum of a number of important ICT projects. It is above all about human networks which use the technology effectively to improve the way they work and live.
- The user matters very much and should be involved in every stage of the implementation process.

# The objectives

- Improve operational excellence.
- Improve relationship management.
- Improve the quality and quantity of services provided to the citizens, the local public and social organizations and the local business.
- Improve citizens participation and structure public consultation schemes.

# “Conventional” local authority

- Emphasis on conventional civil engineering infrastructure projects.
- Basic Services provided in a very conventional way.
- Limited Use of ICTs for organizing and monitoring the Municipality operations and the implementation of projects.
- Limited evidence-based policy shaping and policy-making.



# Digital local authority/ city

- Advanced digital network infrastructure (NGA networks).
- FTTH.
- On-line e-services.
- Continuous monitoring of the implementation of projects and initiatives undertaken by the Municipality.
- Improved quality and increased productivity of the Municipality operations through the effective and efficient use of ICTs.
- Design of innovative and creative initiatives and projects.
- E- Citizens participation schemes and electronically supported public consultation procedures.
- Evidence-based policy-shaping and policy-making.
- Improved City promotion.

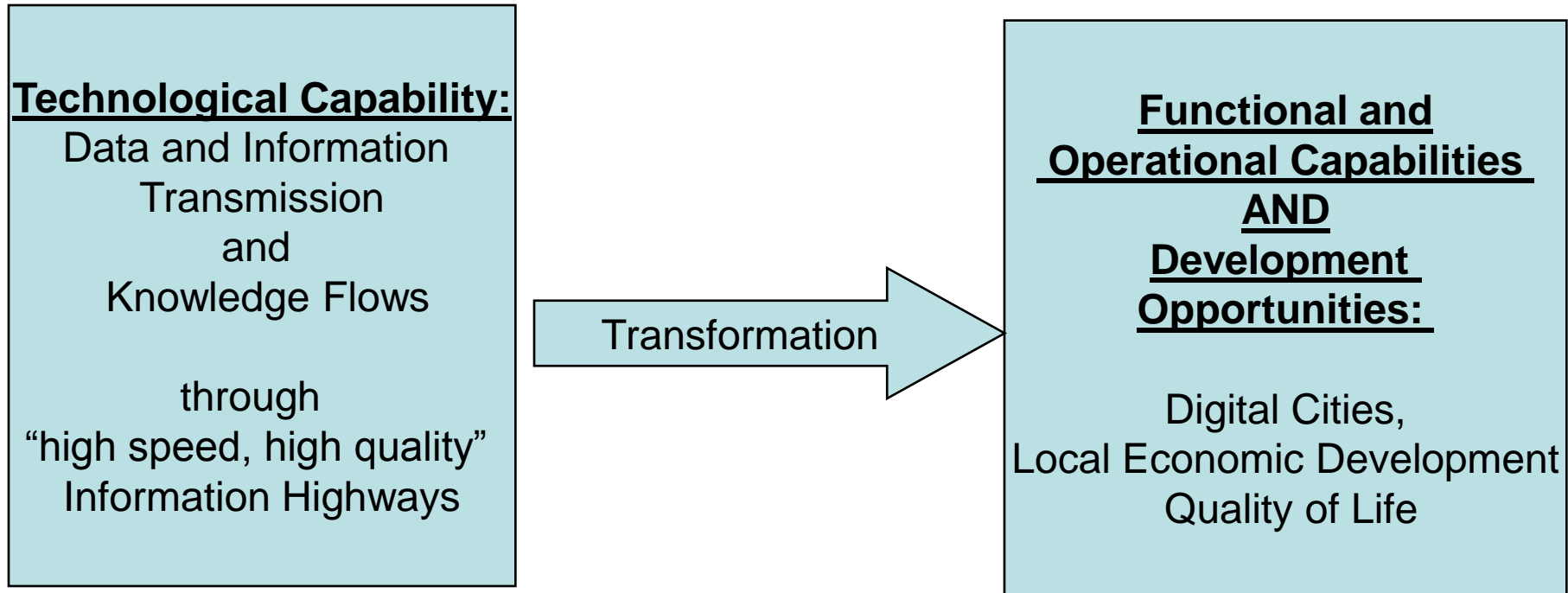
# “Digital” City

- **Five areas of intervention through the use of ICTs**
  1. **Internal Operation:** Cost Savings, Enhancement of Knowledge Diffusion, Communication with other Authorities, Evidence-based Decision-Shaping and Decision-Making etc.
  2. **External Services:** Improvement of Services to the Citizens, Local Businesses and other Entities. Services Provision through multiple channels (Internet, Telephone, Mobile, Interactive TV, printed)
  3. **Citizens Empowerment:** Information, Transparency, Participation, Human Networks
  4. **Local Economic Development:** Attracting people, activities and visitors.
  5. **Networking and Internationalization:** Enhancement of Contacts and Co-operations with external Entities. Building and maintaining Learning networks.

# Transition from “Conventional” to “Digital” City

- Basic Components of a Digital local authority/ City:
  - Next Generation Access (Broadband) Networks.
  - Open and Interoperable Systems for the provision of e-services.
  - ICT Capacity building and Developing Dynamic Capabilities at the Individual and organizational level.

# 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 private sector (agriculture, tourism, services, industrial and commercial businesses)
  - the promotion of a city-region
  - the management of the other Infrastructures (Energy, Water, Traffic, Buildings)

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.

# **The Strategy of the Central Union of Municipalities (KEDKE) for the transition to “Digital” Local Authorities/ Cities**

**Three pillars: e-services, NGA (BB) Networks, HR Management.**

**1. The provision of on-line e-services offered through multiple channels (Internet, Fixed Telephony, Mobile, Interactive TV, printed..) to the Citizens, the local Businesses and the local public organizations.**

The two organizing principles for the creation and provision of e-services is:

- 1. Develop once, apply many.**
- 2. Produce data and content in a digital form.**

**2. Develop Open and Accessible BroadBand Infrastructure (The Central Union’s umbrella initiative and the bottom-up regional initiatives).**

# Strategy of the Central Union of Municipalities (KEDKE) for the transition to “Digital” Cities (...continue..)

## 3. ICT and HR Management

- **ICT Training in various forms at all levels (the elected political personnel, the employees, the citizens)**
- Developing dynamic capabilities and building Capacities for the design, implementation and management of ICT projects and ventures.
- Building and maintaining **thematic “learning networks”** for knowledge sharing and knowledge transfer, for the codification of tacit knowledge and practical experience related to the design and implementation of ICT projects and ICT new ventures and initiatives.
- Encourage co-operation with regional Universities and other Research Institutes and local firms.



# 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. Two 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 Central Union of Local Authorities decentralised Initiative.

# 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 (1<sup>st</sup> 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

# Plan of Ministry of Transport and Communication

- Criticism:

- “Digital Divide” - Other 1,7 millions Households ? / Other MAN Networks (of 75)? / Which areas of the cities will be covered ? (only the central areas of the cities?)
- Backbone Networks ?

# 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 or and active 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 sufficient broadband infrastructure where the Private Sector has no interest (e.g. outside the densely populated areas, Rural Areas)

- Demand

- Aggregation of Demand (Ensuring the demand from Public Authorities)
- Stimulation of Demand (promotion of BroadBand Services, 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 Administration).
  
- **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

- **4 - 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 (1<sup>st</sup> layer) or Wholesale Provider (1<sup>st</sup> and 2<sup>nd</sup> layer)– “**Open Access**” Network
- **Mobilizing citizens based on the community spirit.**



# Criteria of Schemes Formation

- **Geographical Cohesion**
  - Effective Management and Coordination, Scale Economies
- **Sufficient number of current and potential Users** (number > ?)
- **Balance btw. Attractive** (Low cost and/or High Demand) and **Non-Attractive** (High cost and/or Low Demand) **areas**
- **Current Cooperations**
- **???**

# The formation of three Regional Ventures

- **Central Greece: “Digital Cities of Central 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: “IkarosNET”**  
Hrackleio, Chania, Rethymno, Ag.Nikolaos, Siteia, Ierapetra  
**MAN (Crete): 247000**  
Ag.Nikolaos , Bathy (Samos) ,Ermoupoli , Hrackleio ,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 for Broadband Networks in SouthWestern Greece”**  
Includes all the cities that develop MAN Infrastructure in the Regions of Western Greece,  
Peloponnisos, Ionion Islands and Hpeiros except for the County of Ioannina  
**MAN:730000 population**  
**Total Population of the Counties:1875000**

# Project Funding

- Business Plan and Proposal Configuration by every Venture.
- Joint Initiative and a Common Business Plan for the 4-6 zones by KEDKE.

Project Financing: the key issue for the implementation and the viability of the project.

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

# 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?



# 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

# 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.

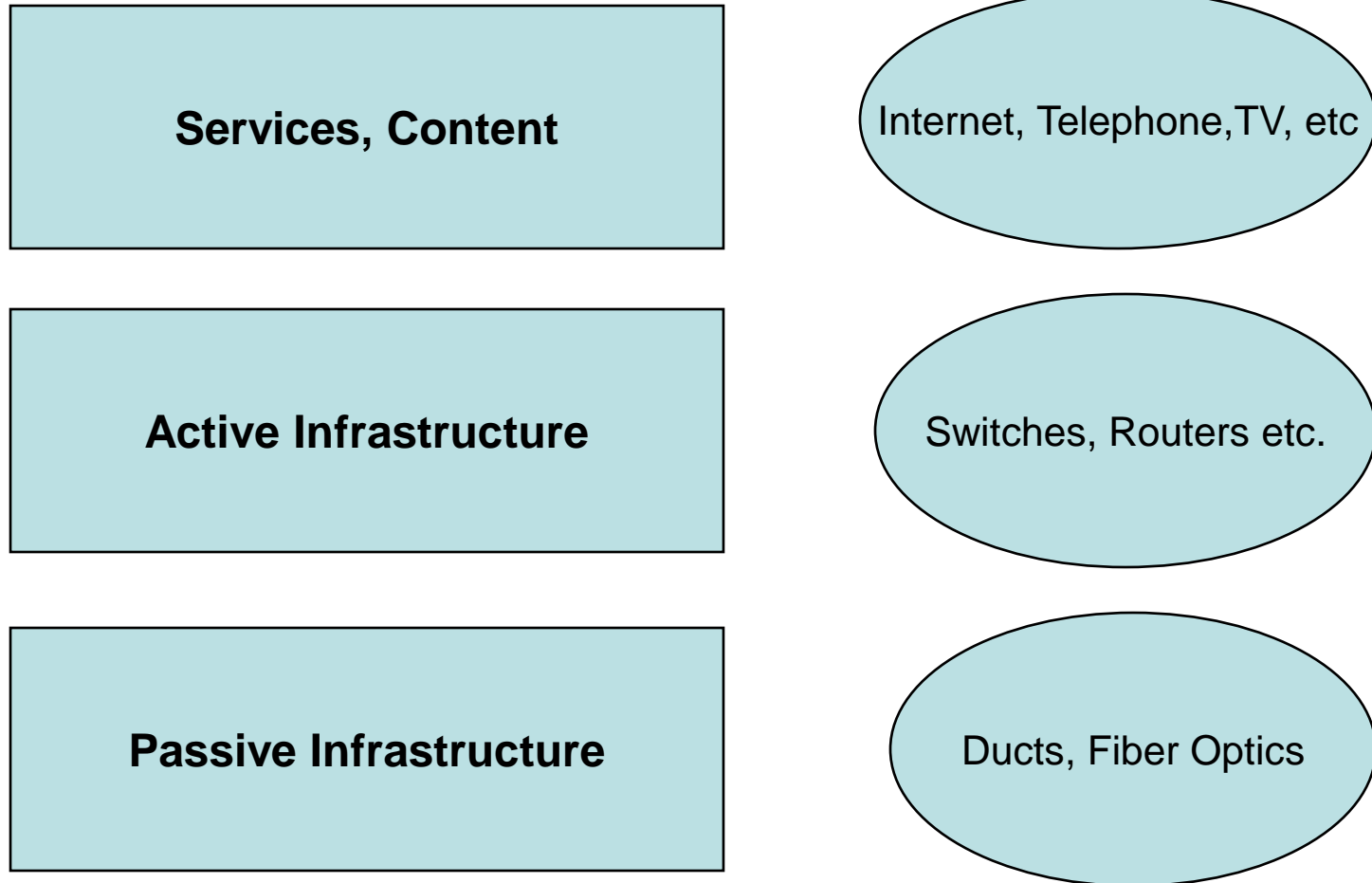
# EU Policy: Broadband strategy as part of the Recovery Plan

1. On 26 November 2008, the Commission adopted a **European Economic Recovery Plan** (the "Recovery Plan"<sup>2</sup>) 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..)

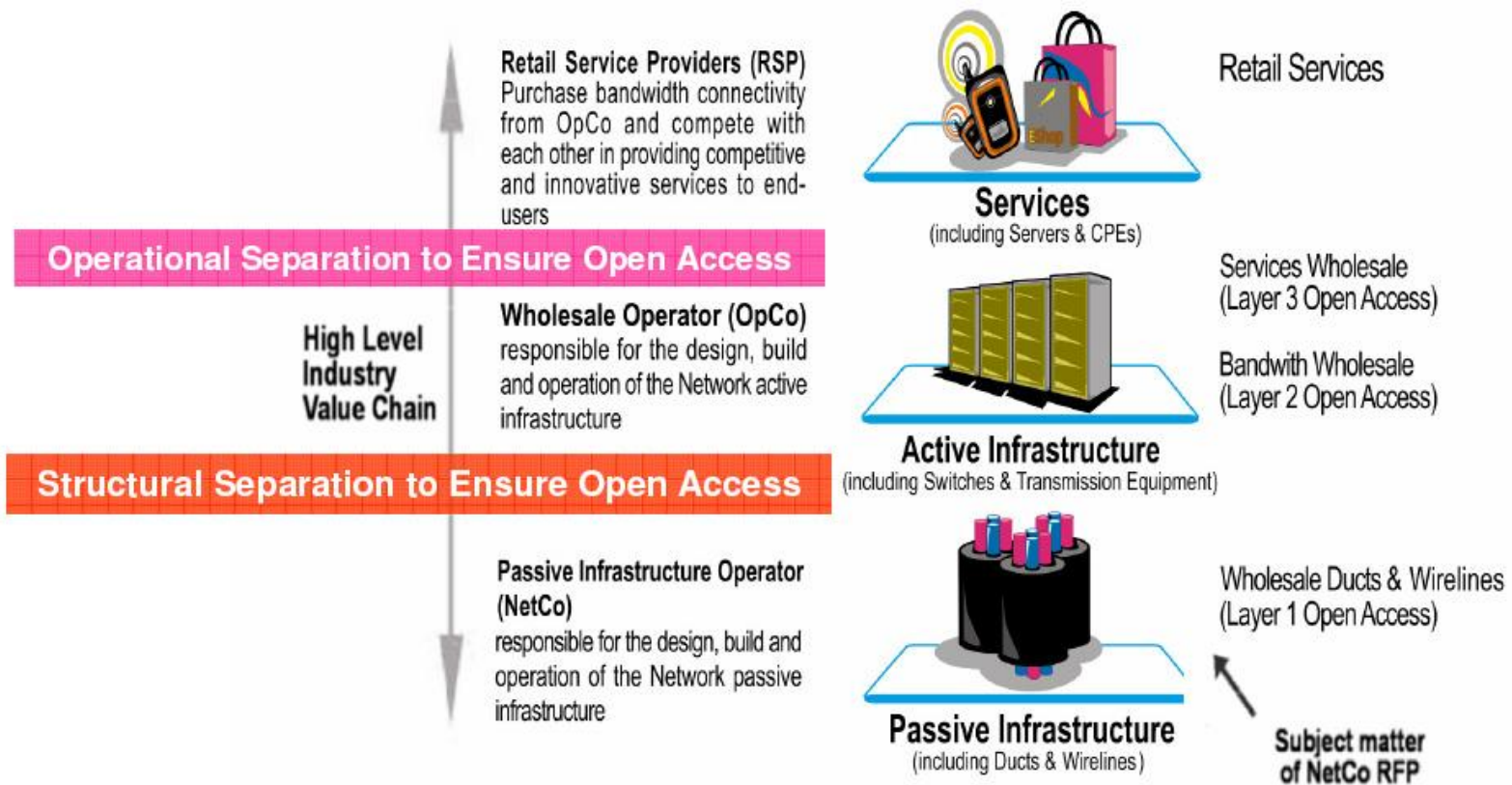
- (3) As part of the above-mentioned Recovery Plan and with an aim to achieve 100% high speed internet coverage for all citizens by 2010, the Commission decided to earmark € 1 billion to help rural areas get online, create new jobs and help business grow further.
- (4) **In addition a number of Member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

# Levels of a Business Model



# Levels of a Business Model

## Next Gen NBN Industry Structure



# 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), Netherlands, Slovenia
  - 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

# PPPs and e-gouvernement 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.

# Type of interventions

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