



# Broadband Infrastructure in Southwest Greece and Local Government: Initiatives and Perspectives

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**Municipality of Patras**



# Municipalities and Broadband

- Promoting economic development
- Increase in revenue of the municipality
- Service of remote areas
- Supply of e-Government services
- Public security
- Applications that make effective the usual services provided by municipalities
- Promoting municipality projects

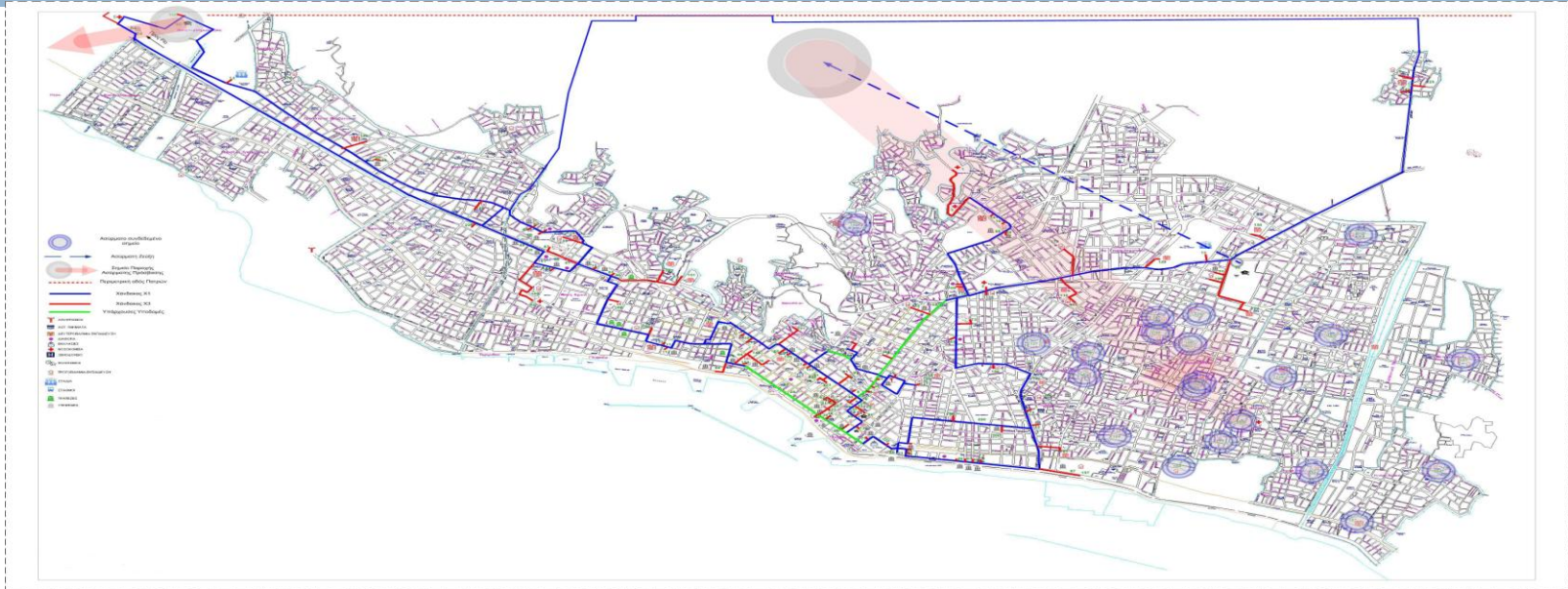


# Broadband MAN

- 75 Greek cities through the Calls 93, 145 and 195 of the Operational Program "Information Society" , have realized metropolitan broadband fiber optic networks (MAN) with the basic objective of linking the buildings of public interest (~ **5.500**).
- The immediate objective of this effort is to gradually provide broadband access to all public agencies for the e-Government establishment and the efficient provision of interactive services to citizens.



# MAN of Patras



- The largest MAN in Greece (Total Length: ~ **88 km**) under Calls 93 and 195 (extension)
- Project Budget: ~ 4.2 million euro
- The network consists of 4 main nodes, 7 distribution nodes and 21 access nodes
- 189 public interest points are interconnected
- 9 points have wireless connection to the MAN



# Construction Phase





# Broadband Infrastructure in Greece

## □ Public Sector

- Greek Research & Technology Network (GRNET) ([www.grnet.gr](http://www.grnet.gr))
- National Network of Public Administration (SYZEFXIS) ([www.syzefxis.gov.gr](http://www.syzefxis.gov.gr))
- Greek School Network ([www.sch.gr](http://www.sch.gr))
- Internal networks of Universities and Technological Institutes
- Wireless Broadband Networks (Call 105, Wi-Fi hotspots)

## □ Private Sector

- Networks of commercial providers (Call 157)
- Hellenic Organization of Telecommunications (OTE), Hellas On Line, CYTA, Forthnet-Nova, Tellas-Wind, Vodafone, On Telecoms, Teledome, Vivodi.



# The necessity of utilization

- The need to establish and operate a new regional scheme for the proper operation and further development of metropolitan networks in Greek regions main stems from the fact that the developed broadband infrastructure in these areas are diffused, not yet sufficiently exploited and have no interconnection.
- The establishment of a such managing body has to face the broadband as an “public infrastructure”, which means that it should be offered as a public good, without any exclusion. A key to the success of this strategy is the local authority.



# Local Authorities Initiatives

- Four (4) regional schemes have been created by Greek municipalities trying to promote the utilization of their optical infrastructure:
  - CitiesNet (Digital Cities of Central Greece S.A.): **11 MAN**
  - Inter-municipal Company of Broadband Network (IBC) of Southwest Greece: **24 MAN**
  - Municipalities Consortium IKAROS NET (Crete, Aegean Islands): **15 MAN**
  - Municipalities Consortium (East Macedonia, Thraki)





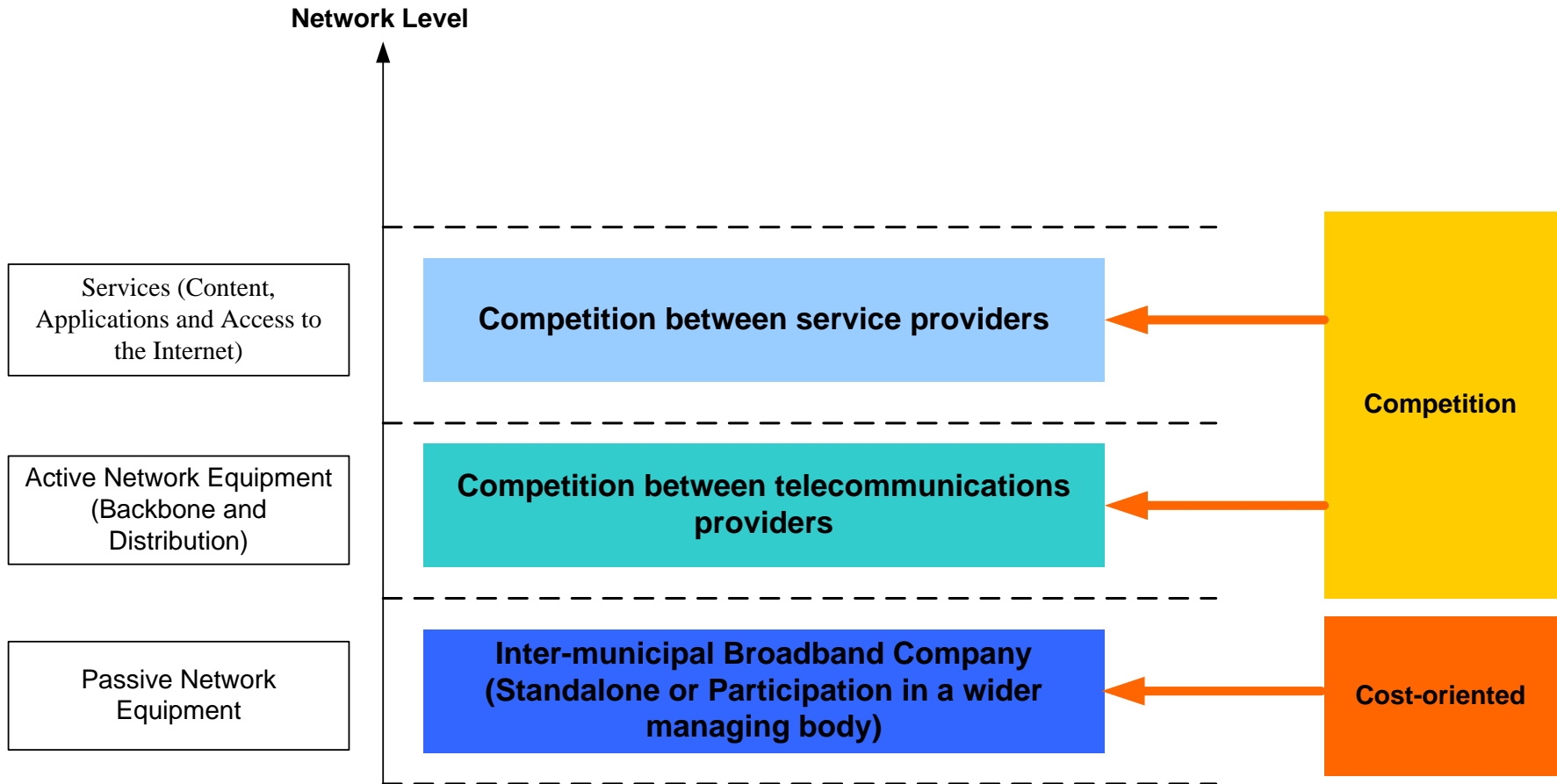
# IBC of Southwest Greece: The vision

- Activation only at the level of passive network equipment.
- The main task is the management, maintenance and expansion of broadband infrastructure of 24 participating MAN.
- In no way the purpose of IBC is to become a telecommunications provider. The ultimate objective is the creation of an open competitive environment in which access and services will be offered by many providers.



# Broadband Business Model

(Techno-economic study prepared by the University of Patras)





# IBC of Southwest Greece: Area Coverage

- Regions:
  - ▣ Western Greece
  - ▣ Ionian Islands
  - ▣ Epirus
  - ▣ Peloponnesus
  
- The 24 participating municipalities form a geographically unified total
  
- Total Population: **729.770**





# Immediate Expansion Prospectives

- Total km: **376,157**
  
- Public Sector points: **629**
- Educational & Research points: **418**
- Total points: **1.047**
  
- Public Sector points “Syzeffxis”: **441** – Prospective of “Syzeffxis” expansion in **188** points (increase 43%) through the utilization of infrastructure of MAN
- Educational points “Greek School Network”: **995** – Prospective of MAN expansion in **577** educational points of GSN
- Educational points of Greek School Network in neighboring districts: **224**
  
- The above data increase with the implementation of the Kallikrates



# Assumptions for financial analysis

- The construction cost of the optical fiber network per kilometer is equal to **50,000 €/km**.
- The maintenance cost of the optical fiber network per kilometer is equal to **2%** of construction cost per kilometer thus equal to **1,000 €/km**.
- The average length of the optical loop (from network distributor to telecommunications centre) is equal to **1.3 km**.
- Assuming that at least two providers will undertake action in the local area and request the use of the network, the estimated average number of optical pairs rented per cable is equal to **1.5**.
- The period of depreciation is equal to **25 years**.
- The fixed charge for the provision of any new connection is equal to **1.500 €**.



# Calculations of financial variables

- ❑ The construction cost of the optical loop (from network distributor to telecommunications centre) is equal to  $50,000 \text{ €} / \text{km} \times 1.3 \text{ km} = \mathbf{65,000 \text{ €}}$ .
- ❑ The annual construction cost of the optical loop is equal to  $65,000 \text{ €} / 25 \text{ years} = \mathbf{2,600 \text{ €}}$ .
- ❑ The total annual cost or equivalently charge (construction and maintenance) of the optical loop is equal to  $(2,600 \text{ €} + 1,000 \text{ €}) / 1.5 = \mathbf{2,400 \text{ €}}$ .
- ❑ The total monthly cost or equivalently charge of the optical loop is equal to  $3,600 \text{ €} / 1.5 / 12 = \mathbf{200 \text{ €}}$ .

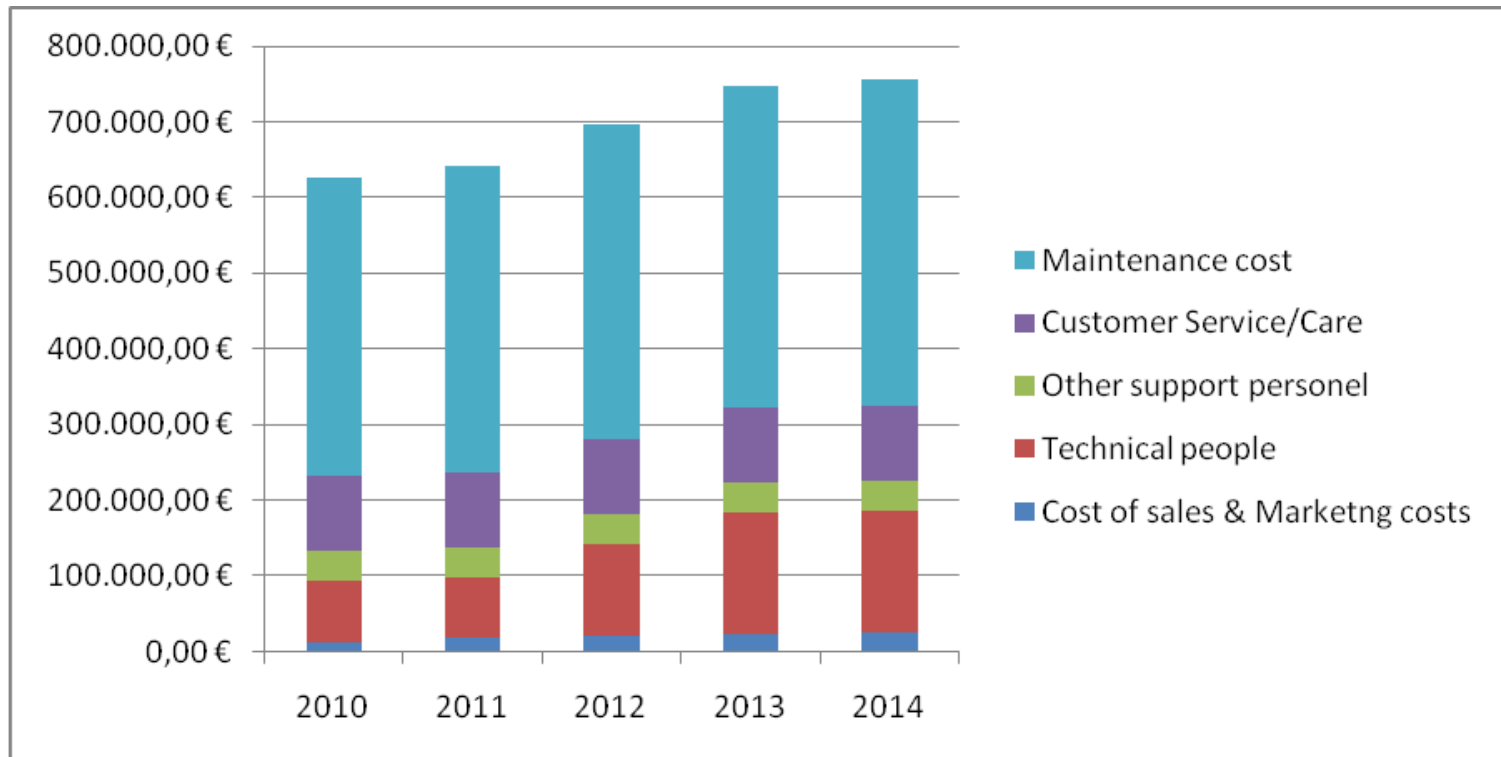


# Revenue Sources

- Rent physical network resources in network providers
- Revenue from a single network connection fee
- Revenue from the use of optical fibers connected to public buildings from providers who have undertaken the implementation of SYZEFXIS links
- Revenue by providing links to schools and education institutions with the National Education Network
- National and / or EU funding



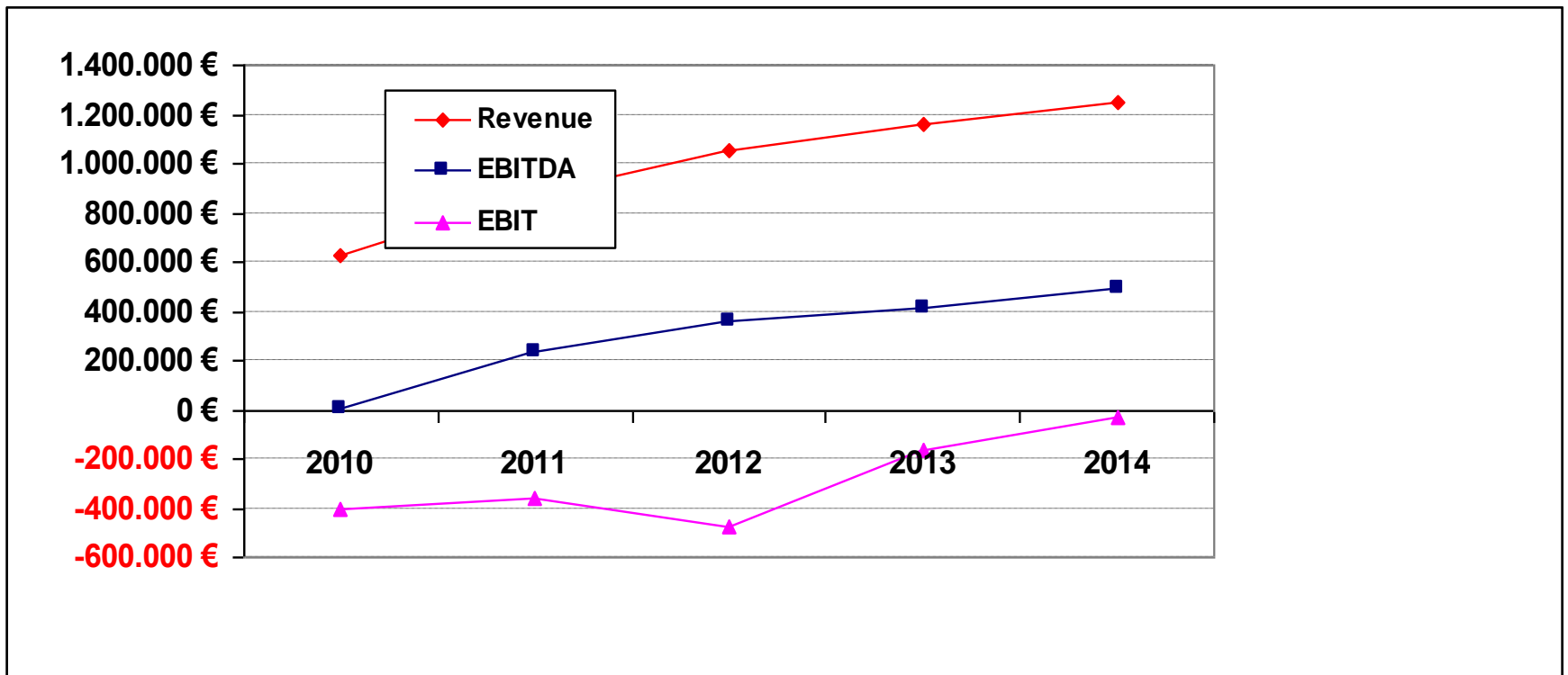
# Operating costs of the company and the network





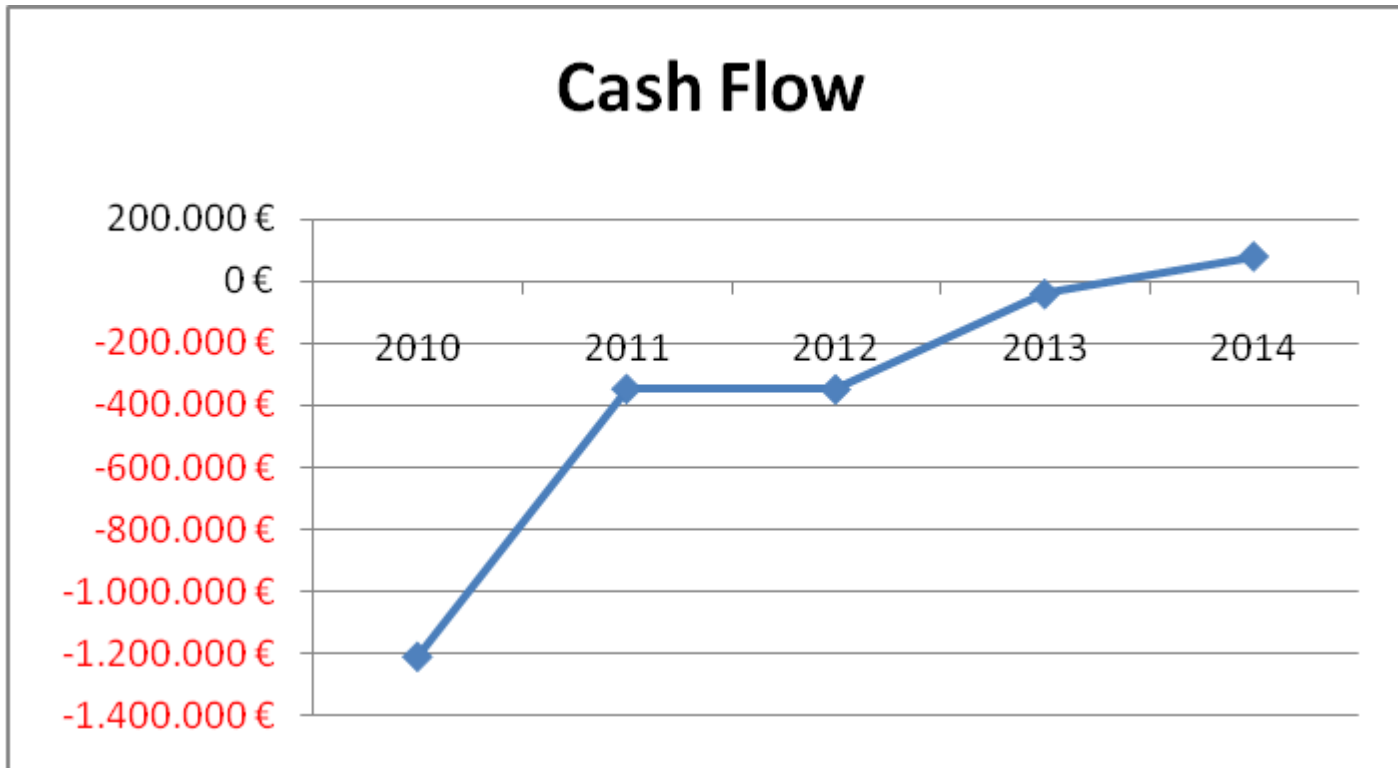


# Progress of revenues and earnings





# Cash Flow





# Assessment of sustainability (1)

- The first general conclusion is that IBC shows the first positive cash flow in 2014.
- This does not mean that the IBC will be profitable by the year 2014 as there are negative financial flows in previous years which have to be covered.
- It means that, IBC with positive financial flows from 2014 onwards, may reach the point where the total (cumulative) income will be equal to the total (cumulative) cost (break-even point).



## Assessment of sustainability (2)

- Having as key objective to reduce the costs of IBC, applying a national business model under the auspices of Central Union of Municipalities and Communities would contribute significantly to sustainability.
- By applying such a model the conditions for reducing the costs to the levels of management, maintenance and expansion of the network are created and significant economies of scale can be achieved.



# Risk Analysis

- Significant investments are required by network providers and service providers.
- In the five years period more than two providers should be active in the area and interested in using optical fiber pairs.
- There's a risk on the revenue expected from government agencies, accounting for 50% of the total revenue of the IBC. If these revenues are accounting and can not be collected or received late, the company's operation is compromised.
- IBC should get experience and capable managers on technology issues and on the promotion of broadband infrastructure.



# Regional Schemes Proposals (Jan 2010)

- Activation of all municipalities for their participation in inter-municipal schemes (existing or new)
- Immediate start of productive operation and utilization of MAN
- Extension of MAN through synergies with other infrastructure
- The use of wireless networks for Internet access and coverage wider geographical areas
- Interconnection of MAN to create a national backbone network
- Participation of the regional schemes in the intervention of the Ministry of Infrastructure, Transport and Networks for the establishment of National Infrastructure of Open Access Fiber Optic Network (FTTx) at the level of management of the passive network infrastructure
- Signing a program contract between the Greek State and inter-municipal initiatives to provide technical assistance to municipalities



# Public consultation for MAN managing body (Regional Schemes Views)

- Institutionalizing the participation of regional schemes to the management, exploitation and development of MAN to create and operate open and equal access networks to telecommunications providers and broadband services providers
- Clarification of the role of local government before the competition
- The role of municipalities is not to provide telecommunications services, but only passive infrastructure management
- Free provision of a sufficient number of optical fibers to municipalities to cover their operational and development needs
- The number of geographical areas for each managing body should consider (a) the development of existing infrastructure (b) the techno-economic sustainability criteria (c) the geographic criteria for integrated geographic areas



# The next day

- The Operational Programs “Digital Convergence” and “Administrative Reform” and the Program “Kallikratis” are a reality.
- **Why not utilize optical MAN as access infrastructure to existing networks and new initiatives?**
- There are: National Network of Public Administration (SYZEFXIS), Greek Research & Technology Network (GRNET), Greek School Network, ...
- **The substantial participation of Municipalities (Local Government) in the management of the broadband infrastructure has to be considered as a “success factor” for the new digital era.**





# Instead epilogue

**Reformation of a subsidized project  
to a viable network of services of  
public interest**

*Thank you*