



**“Business Modeling for Metropolitan Area Networks in
Greece: Proposed Models & Financial Analysis
Impact of Telecom Operators strategies to Municipal MANs”**

Dr. Dimitris Katsianis

Theodoros Rokkas, Vagia Kyriakidou, Aris Chipouras,
Dimitris Varoutas and Thomas Sphicopoulos

Department of Informatics and Telecommunications,
University of Athens, Greece

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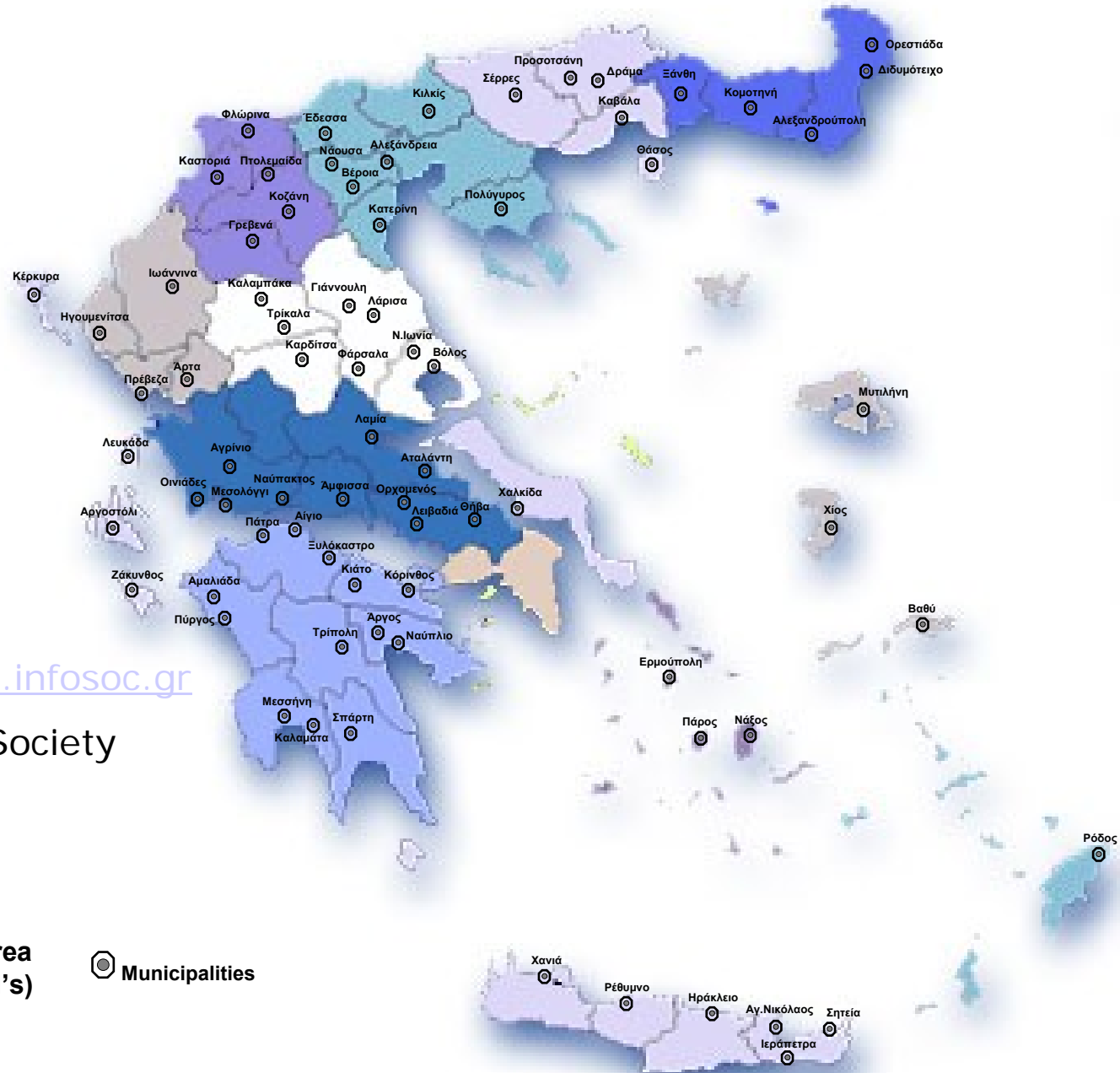
Abstract

The business and economic aspects of the case Greece will be presented concerning the development of the municipal networks in order to arise some issues about the FTTH future development in emerging markets. In addition the impact of Telecom Operators strategies to Municipal MANs will be quantified



Municipalities Networks

In Greece



Source: www.infosoc.gr
Information Society

Metropolitan Area
Networks (MAN's)

⊙ Municipalities

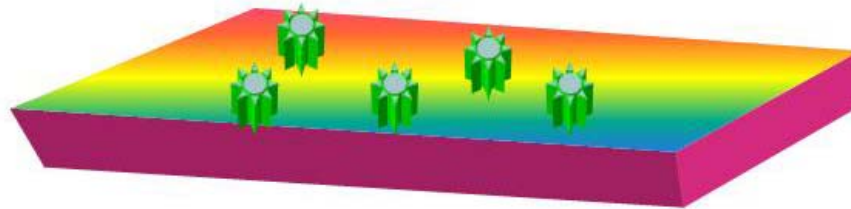


MAN's Details

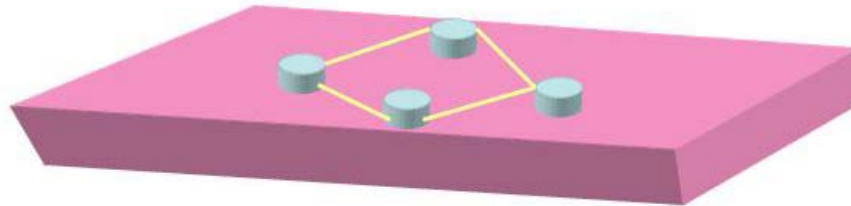
- Constriction of MANs in 75 Cities (12 main regions)
- Total Budget > €62 M
- 750 Km
- 2800 points of Public Interest



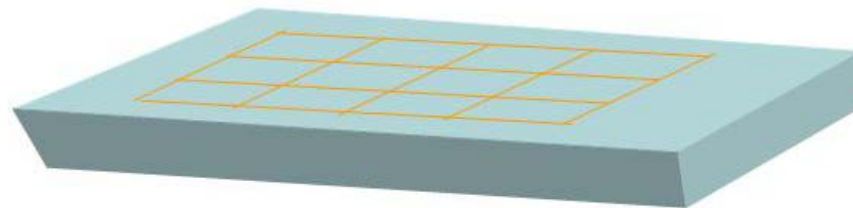
Layers in an Optical Network



Services and Content Providers



Operation Active Infrastructure



Owner -Passive (Dark Fiber)

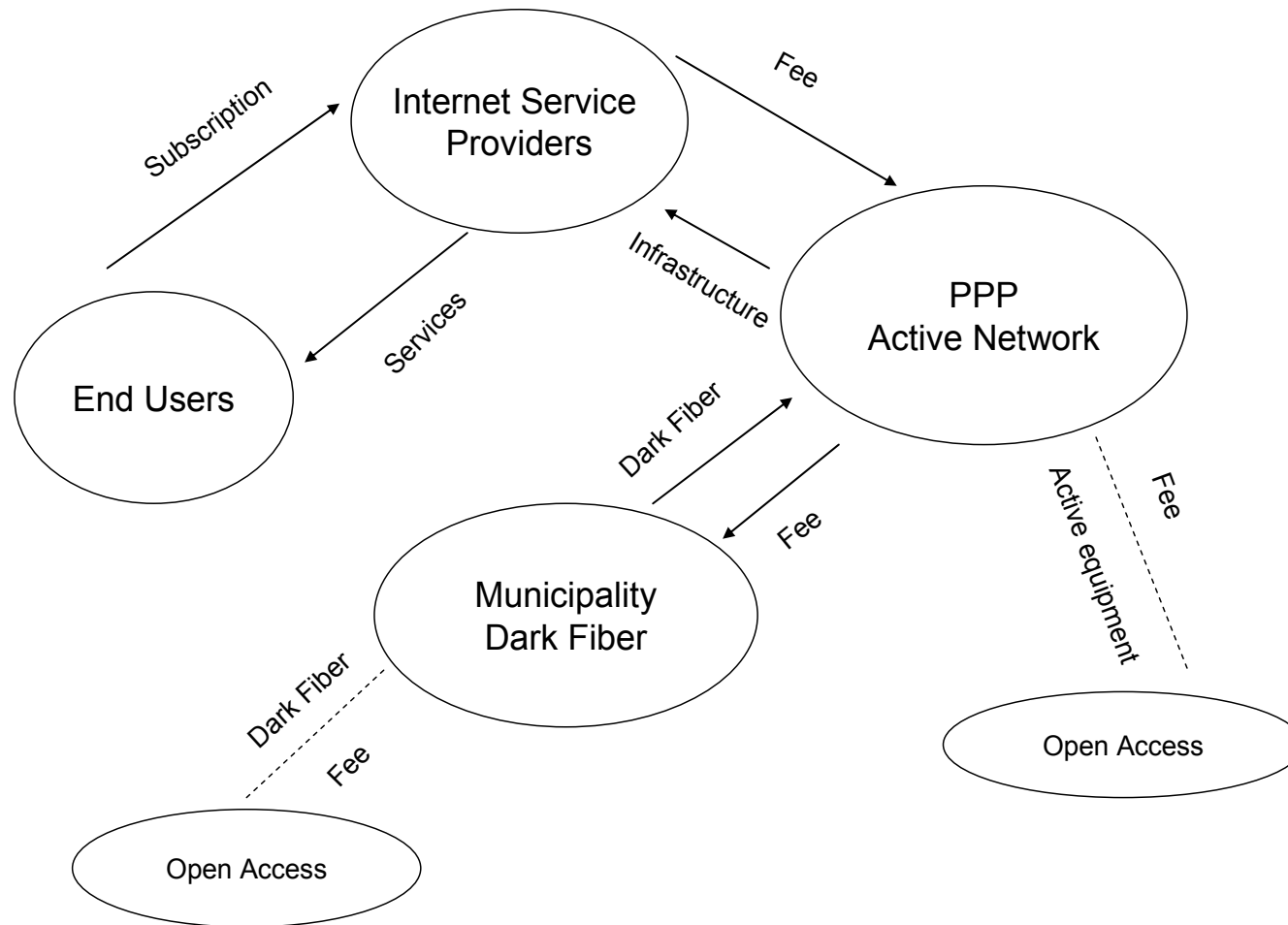


Key Points for Operations

- Concrete Business Plan for all players involved Alternatives
- Economically viable case for the Operators involved

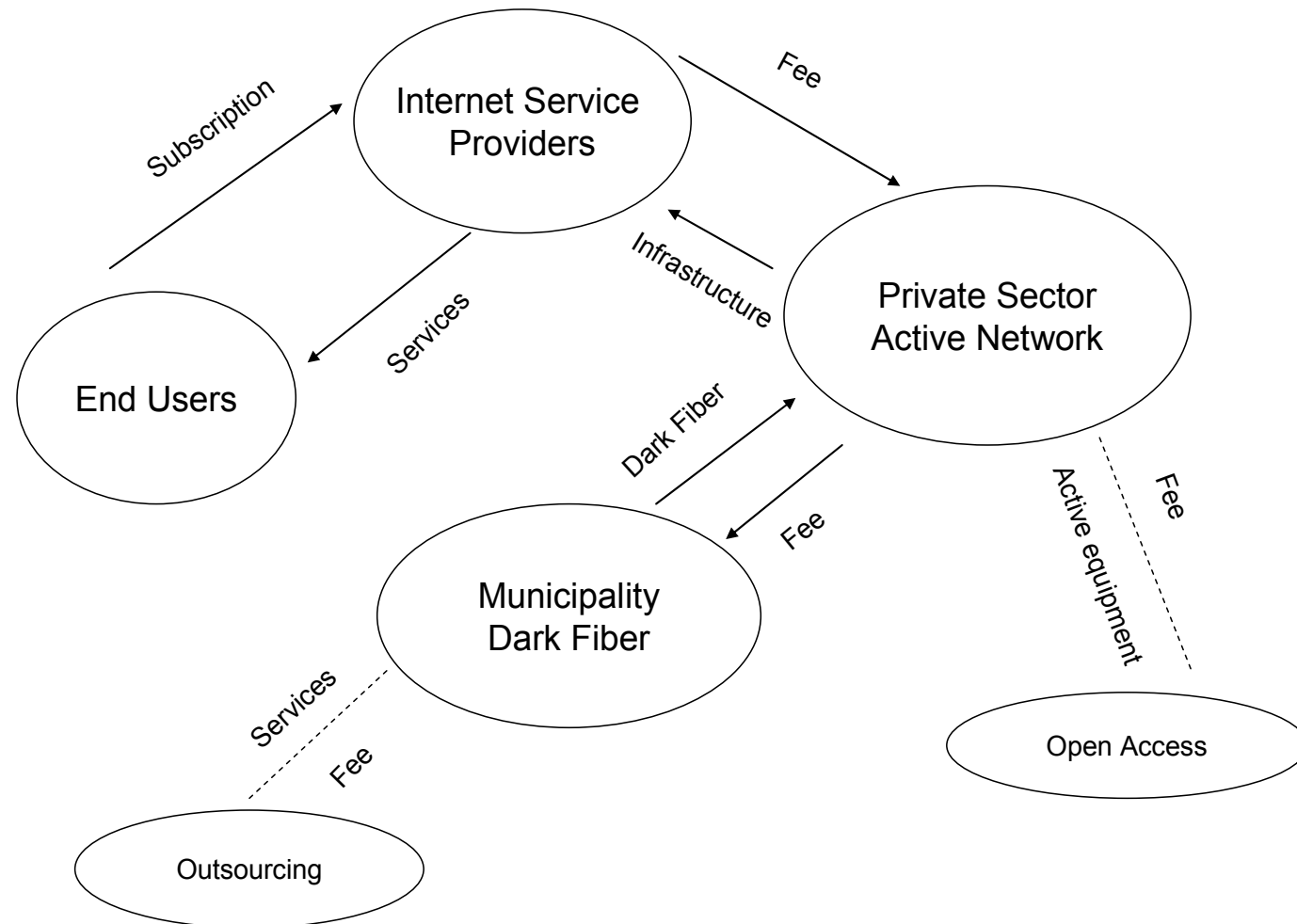


Business model “PPP in Active Layer”



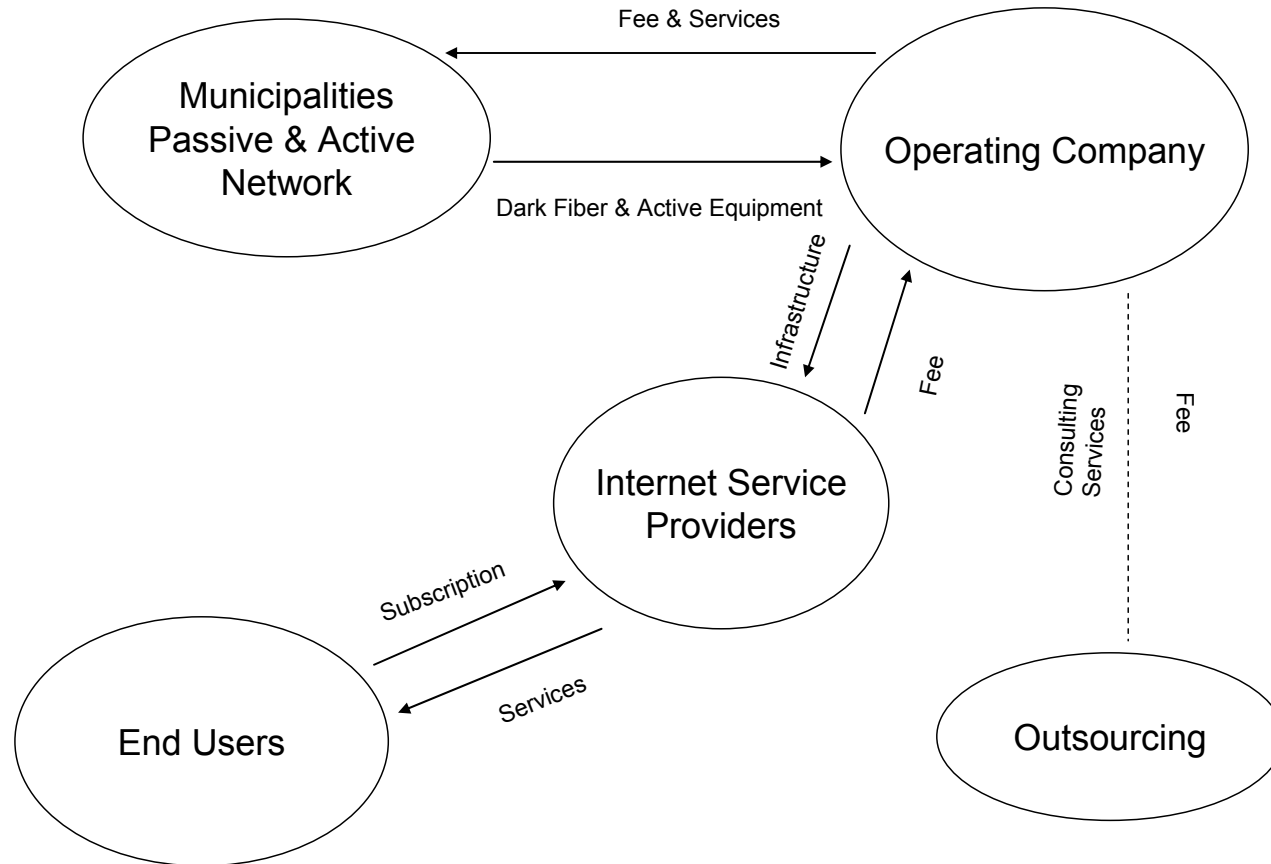


Business model “Private initiative in Active Layer”



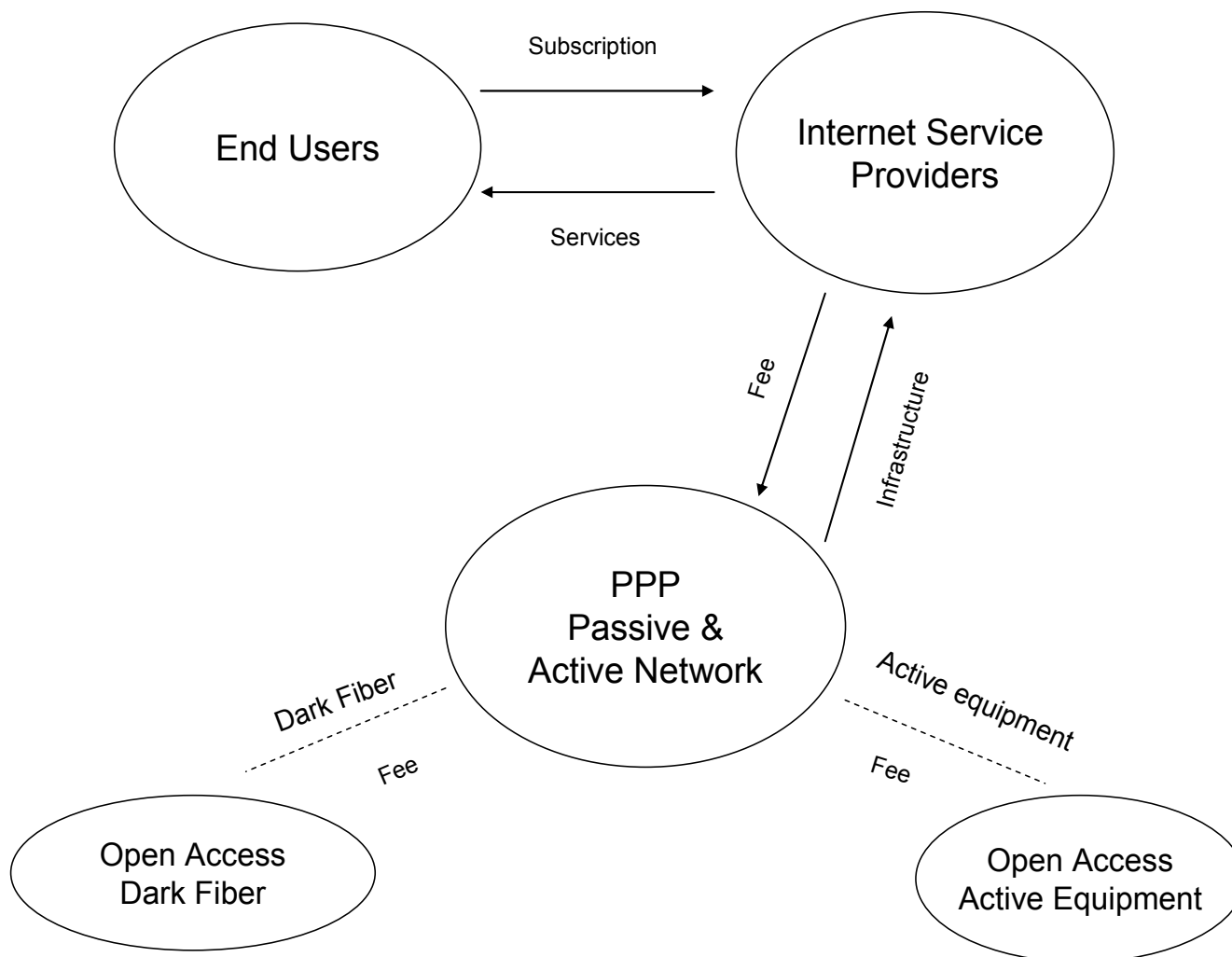


Business model "Public Ownership – Outsourcing Administration"



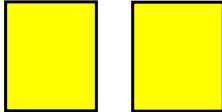
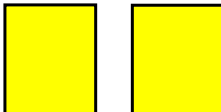

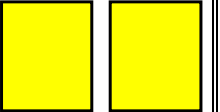
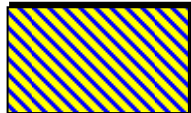
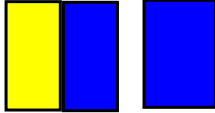
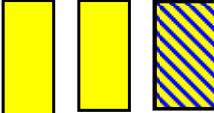
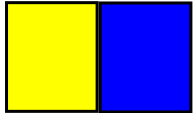

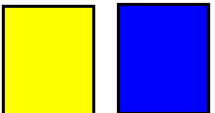
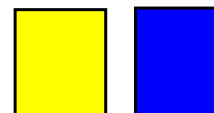
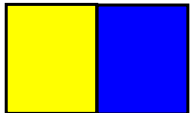



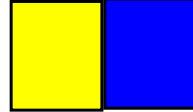


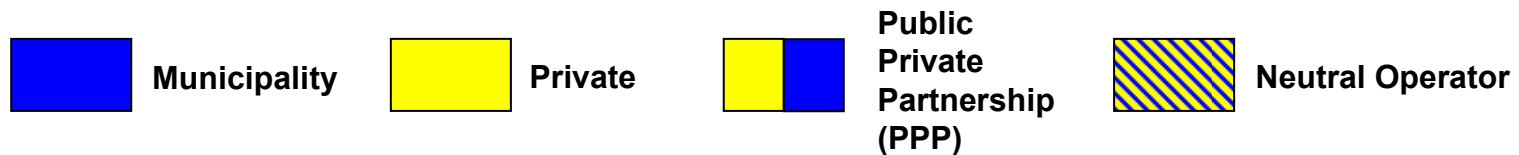
Business model "PPP in infrastructure"





BPlans proposed

| Network Layers | Proposed Models | | | |
|--|--|---|---|---|
| | S1 | S2 | S3 | S4 |
| Content & Services |  |  |  |  |
| Administration (Access & Maintenance) |  |  |  |  |
| Active Network |  |  |  |  |
| Passive Network |  |  |  |  |





Qualitative Evaluation

| | Public Ownership- Outsource Administration (S1) | PPP in Active Layer (S2) | Private initiative in Active Layer (S3) | PPP in Infra Structure (S4) |
|--|--|---|--|--|
| Easy Decision Making | +++ | + | ++ | ++ |
| Complexity | - | -- | - | - |
| Transparency | + | +++ | +++ | ++ |
| Total Value of Networks | +++ | ++ | +++ | ++ |
| Risk & Required Investments | -- | -- | - | -- |
| Time Scaling | +++ | + | ++ | ++ |
| Expected Performance | +++ | + | ++ | ++ |
| Competition | +++ | + | +++ | ++ |
| Functionality | +++ | + | ++ | ++ |
| Break-through Participation | + | +++ | +++ | ++ |
| TOTAL | 20+, 3- | 13+, 4- | 20+, 2- | 16+, 3- |



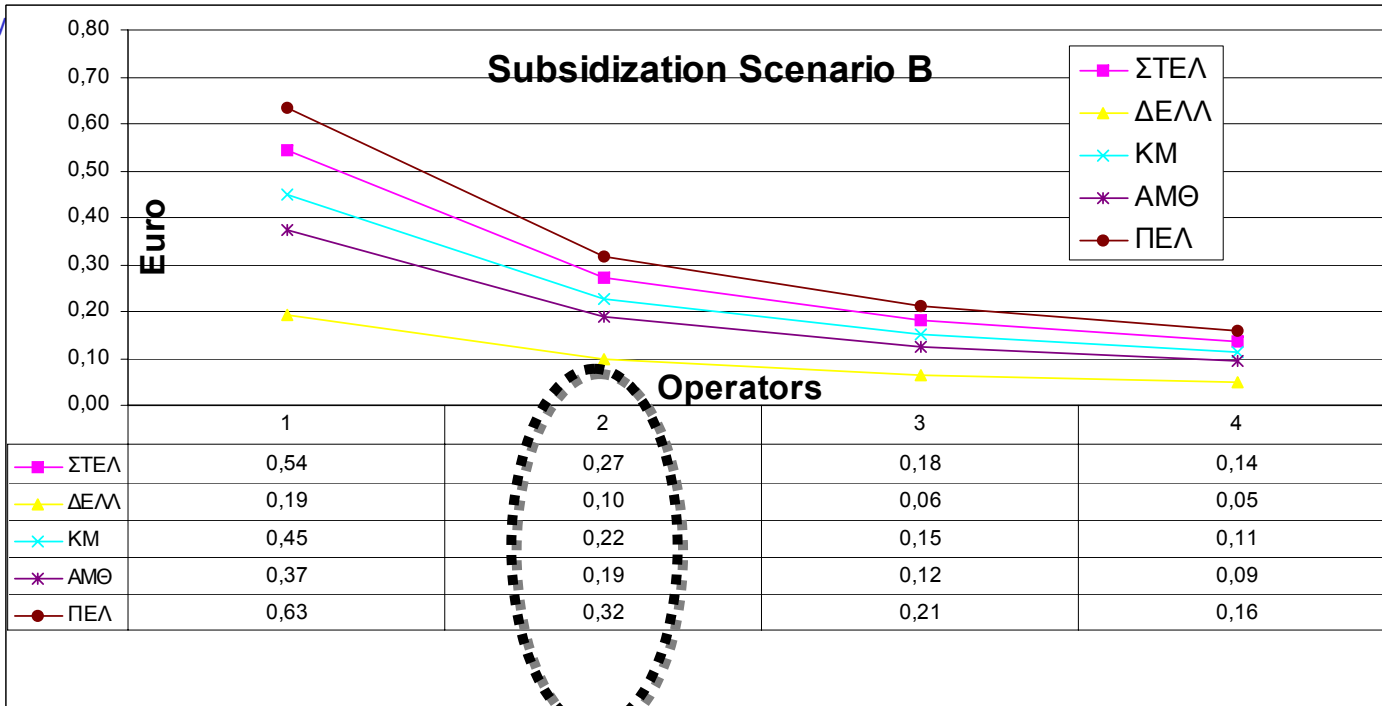
Cost model for fiber should be simple

$$\sum_{i=1}^n DCF_i = 0$$

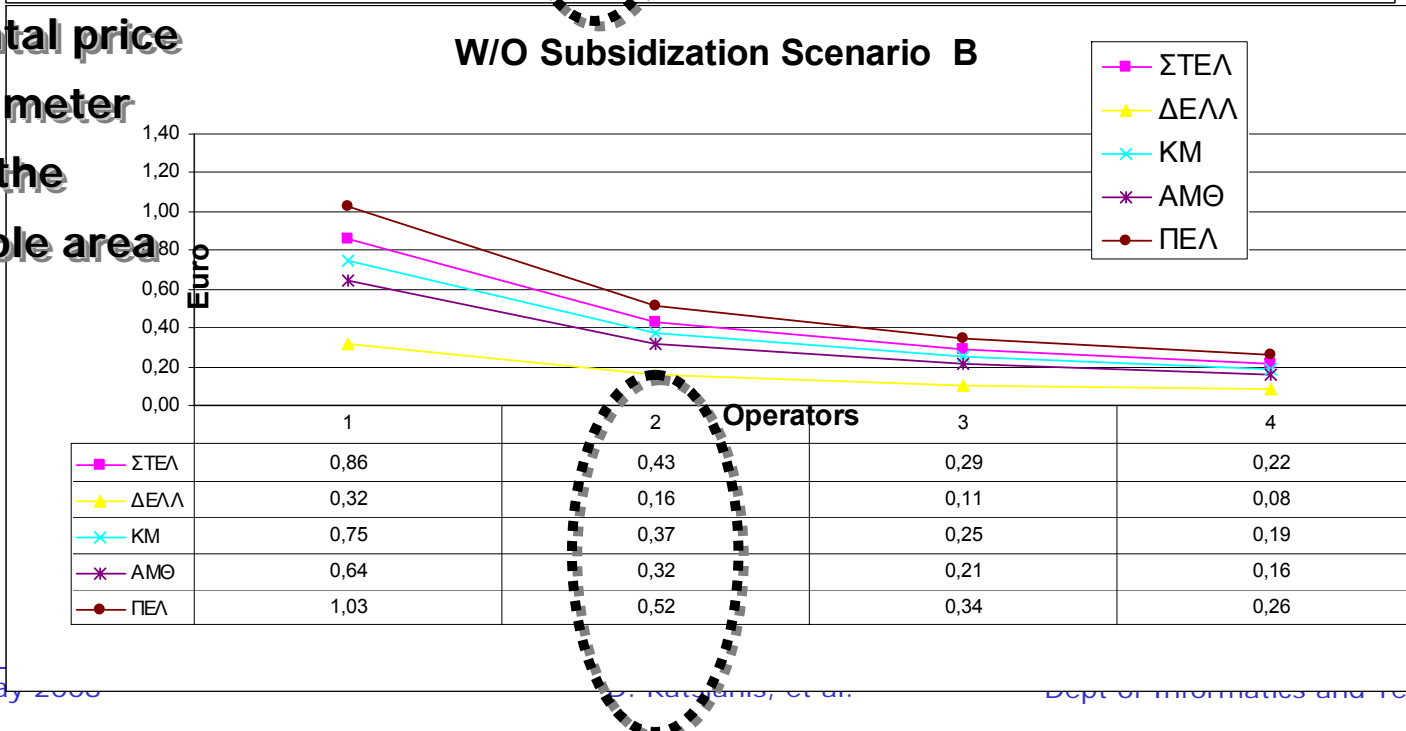
$$DCF_i = \frac{\text{Income} - \text{Expenses}}{(1+r)^i}$$

$$DCF_i = \frac{\text{Length} * \text{Price}}{(1+r)^i} - \frac{\text{CAPEX} + \text{OPEX}}{(1+r)^i}$$

- ✓ **DCF=Discount Cash Flows, r=discount rate (10%), i= years to n=study period**
- ✓ **Profit should be minimize – cost oriented approach**



✓ Rental price per meter for the whole area





Latest Results



Rental Cost

| | Revenue | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|------------|-----------------|---------|---------|---------|---------|---------|---------|
| Scenario B | Without funding | 224.095 | 558.926 | 833.744 | 833.744 | 833.744 | 833.744 |
| Scenario B | With funding | 137.626 | 343.258 | 512.034 | 512.034 | 512.034 | 512.034 |

- ✓ **Population aprox 200.000**
- ✓ **Users 60.000 (100%)**
- ✓ **Network size 160 KM**

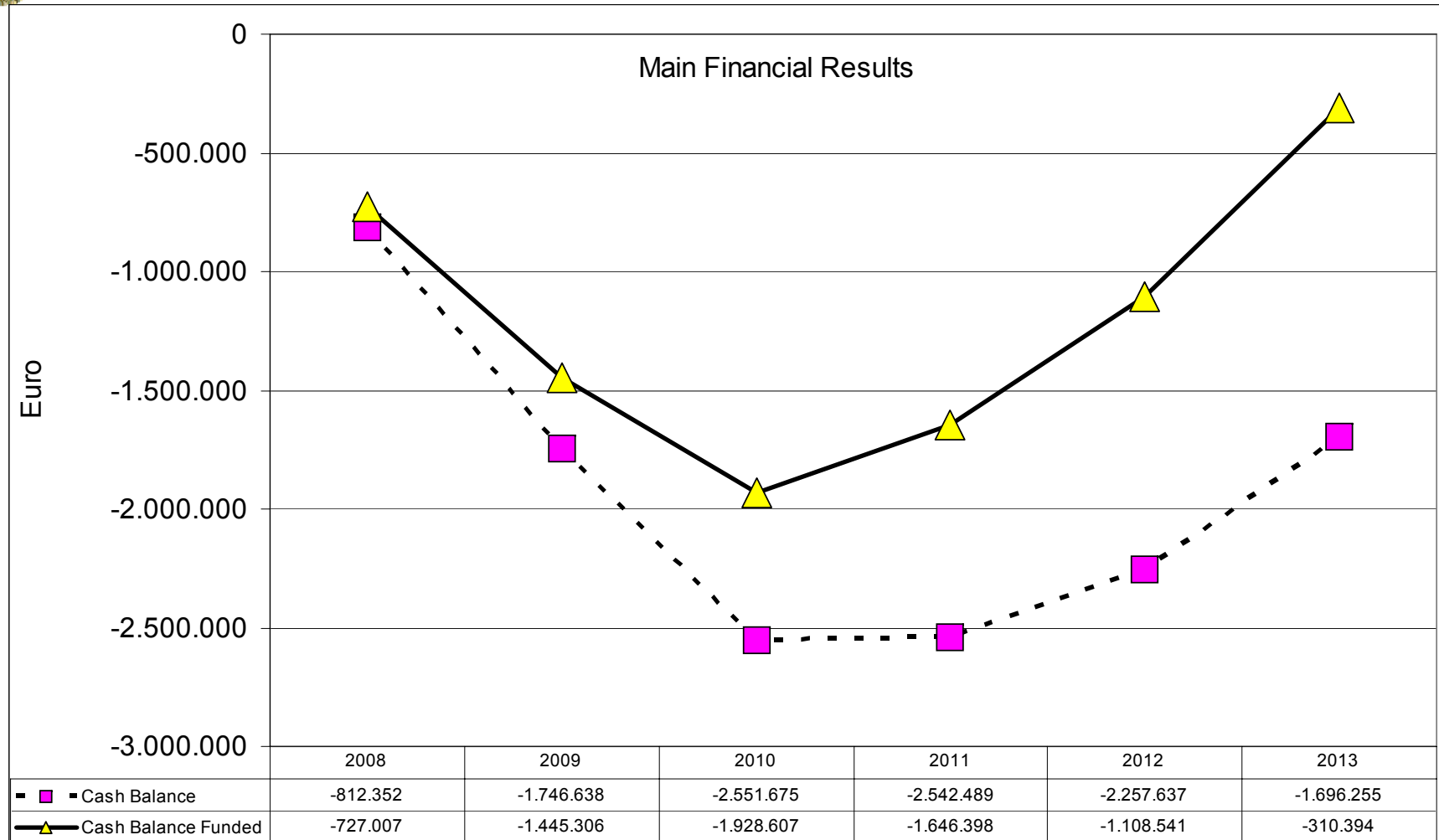


BC for Telcos Services and Assumptions

- Services
 - Basic, 24 Mbps double play, 33,5 incl VAT
 - Medium, 48 Mbps 3 Lines, 46,5 incl VAT)
- National cost cost (OPEx ~ 20%)
- International (OPEx ~ 20%)
- LLU (OPEx ~ 16%)

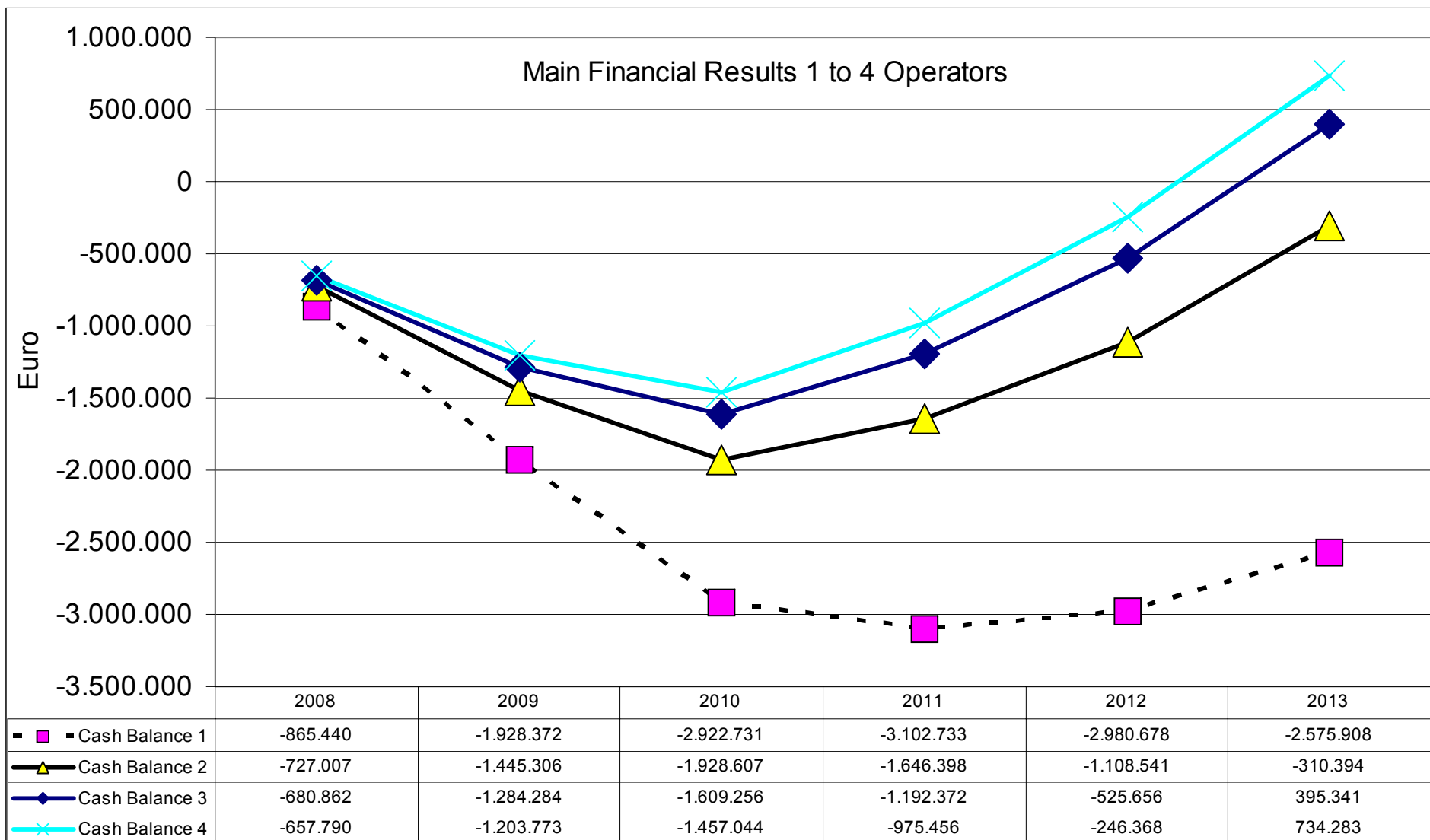


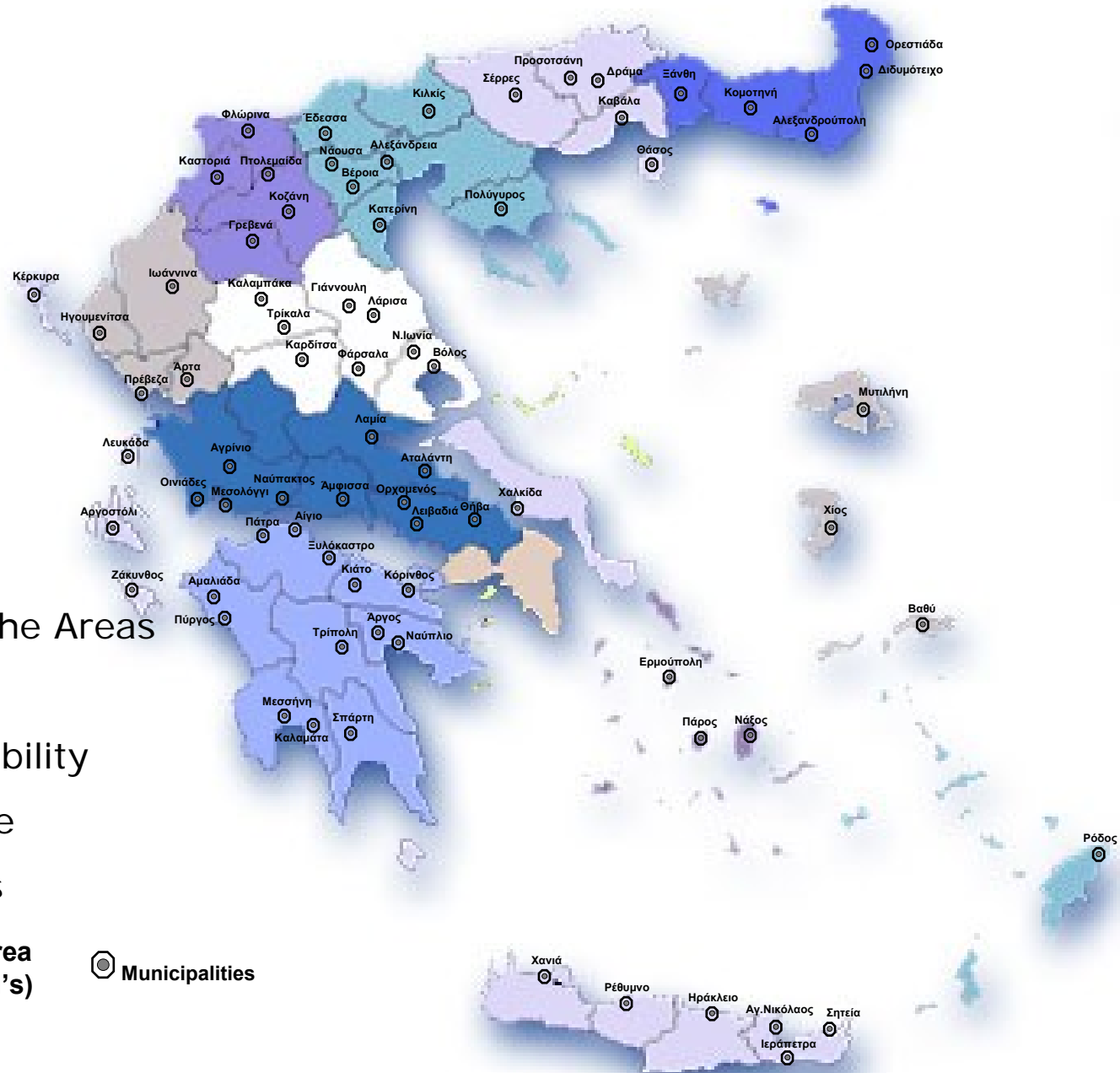
Technoeconomic Results FTTcurb (20% MS)





Cash Balance vs Number of Operators rent the infrastructure (funded) Selected Area





Selection of the Areas

Criteria

- Financial viability
- Market share
- Investments

Metropolitan Area Networks (MAN's)

 **Municipalities**



Integration of Tariff Policy

- MAN administrations in regions (8-20 MANs) could:
 - Reduce rental cost for the Operators per KM per duct or fiber
 - Reduce administrations complexity
 - Increase the negotiation ability of Passive network owners



Conclusions (Public MANs)

- Private initiative in Active Layer (S3) is the most attractive scenario following by the Public Ownership-Outsource Administration (S1)
- Integration of MAN administration could reduce the yearly costs in collaboration with private schemes
- FTTB or FTTH is probably too expensive for the time being in Greece - Discussion to follow



Time for Questions & Answers



D.Katsianis@di.uoa.gr