



# **ECONOMIC ASPECTS AND COSTING OF NGN IN BROADBAND ENVIRONMENT**

Experience of Lithuania

## Content:

- Madness about development of NGN
- NGN development in Lithuania
- Regulatory environment of NGN in Lithuania
- Lessons learned: combining policy, economics and costs

# “Madness” about NGN development in Europe:

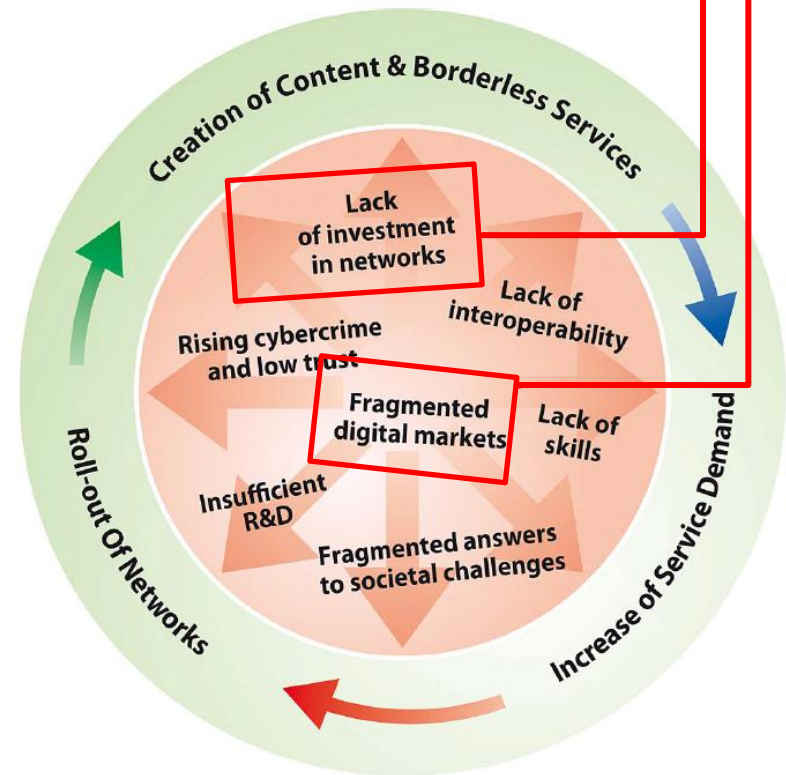
- I assume NGN is a network (core and access network) and broadband is a service of the NGN network that can provide services to customers – wholesale or retail.
- NGN and broadband is part of ICT and lots analyses show ICT has brought benefits to economy: it is part of GDP, it influences productivity, it may increase competitiveness of a business and region, it may attract investments, it may help inventing businesses.
- EU wants to be a competitive region, because competitiveness has positive effect on welfare of region and its citizens and to some extent it means some kind of power of a region.
- Time to time (approximately every 3 to 5 years) EU compares itself against other regions (USA, Asia) and unfortunately EU lags in picking benefits of ICT: ICT share in GDP is lower, increase in productivity is lower, usage of e-services is also lower.
- In order to learn from mistakes and use the benefits of ICT as others have did, the policy makers of EU adopt policies: eEurope 2002 in 1999; eEurope 2005 in 2002; i2010 in 2005; Digital Agenda 2010-2020 in 2010.
- The problem is that EU is still learning for about 10 years and is looking for remedies.
- In the last policy package “Digital agenda 2010-2020” policy makers have identified 3 large activities (dimensions) that could bring benefits to economy via ICT and 7 problems (risks) that should be resolved in order to achieve potential benefits...

# “Madness” about NGN development in Europe:

And two problems that are directly related with development of NGN and broadband are:

And actions to solve these problems are:

- Create fast and ultra fast internet access with these instruments:
  - Recommendation on regulation of NGA networks;
  - Initiative of Universal broadband coverage with increasing speeds;
- Development of National Broadband Plans.
- Reinforce the single market for telecommunications with instruments:
  - Market analyses of market susceptible to ex-ante regulation: Wholesale Broadband Access (WBA) and Access Network Infrastructure Access;
  - Harmonization of Spectrum Bands.



# “Madness” about NGN development in Lithuania:

## Point of view of policymakers:

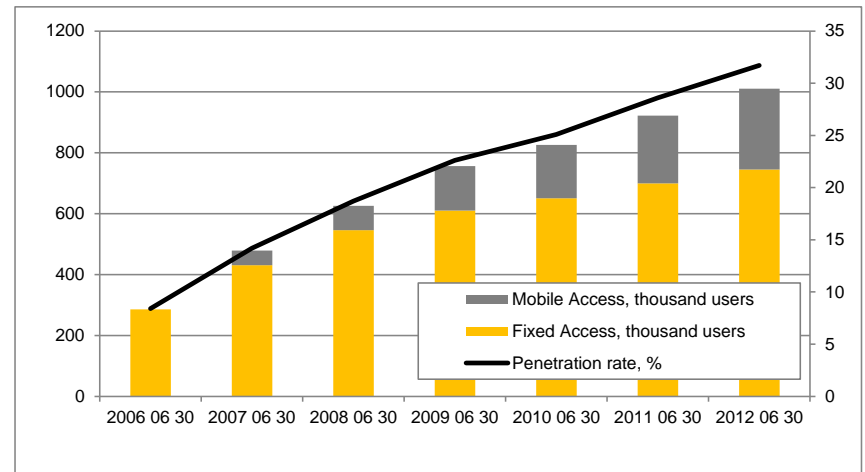
- Lithuania is a member of EU, so we have to fulfill EU obligations and success of the policy depends on commitment of every member state:
  - Perform market analyses and apply recommended remedies;
  - Develop broadband plan.
- Lithuania does have a good ICT base: high mobile penetration, mobile 2G/3G/4G networks, good fiber penetration, good IT stuff.
- Policymakers can promote this and attract investments, that results in job creation, tax revenues, demand for intermediate services. Examples: Barclays Technology Centre and Service Centre of Western Union in Vilnius.
- In order to be competitive and attractive you should improve.

## Point of view of Business :

- New opportunities for traditional business: provision of network (or connectivity) can transform into provision of services (content and platforms for content);
- Invention of new business (content or manipulation of content and information);
- Improvement of competitiveness (improvement in productivity, saving in costs);
- Alternative financial resource from EU funds.

# NGN development in Lithuania:

- Number of internet service providers as of 1 July 2012 – 101.
- Broadband penetration as of 1 July 2012 – 31 %, but slowing down.
- 74 % use fixed access, 26 % - mobile access (UMTS, HSDPA/U, LTE).
- Fiber is dominant technology for fixed access (51 %), followed by xDSL (25 %).
- Local Loop unbundling services are not popular and operators are developing their own infrastructure.



- Fiber has overtaken xDSL in 2009 Q3.
- In 2005 project “Plačiajuostis internetas” (Broadband internet) has been initiated for development of fiber backbone networks in rural and remote areas. This project involves development of physical infrastructure as well as provision of data transmission services. Some 700 mobile towers will be connected to fiber network and this would foster development of mobile internet services in rural areas. Project is cofinanced by EU funds.
- Average revenues per user from internet access services have dropped from 17 EUR/month in June 2006 to 9 EUR/month in June 2012.

# Regulatory framework of NGN regulation in Lithuania:

- Regulatory framework is based on EU directives and Recommendations of EC. Directives are transposed to national legal acts whereas Recommendations are applied directly:
  - Framework Directive;
  - Access Directive;
  - Recommendation on markets susceptible to ex-ante regulation (WBA and Access Network Infrastructure Access);
  - Recommendation on regulation of NGA networks;
- Regulation is split in General regulation and specific Regulation of operators having SMP (Significant Market Power).
- General regulation: Rules on construction and sharing of network infrastructure:
  - Infrastructure is shared on commercial bases. If parties do not agree parties sharing they may bring dispute to RRT. In solving the dispute RRT may set reasonable prices (number of methods that could be used is not exhaustive);
  - Infrastructure provider shall make public charge on technical analyses for possibility to provide the service. This charge should be cost based and RRT may require to change it.
  - General regulation is in force since 2003 and since 2003 TEO LT, AB (historical monopolist who owns major part of underground infrastructure for electronic communications: ducts, manholes, premises for technical equipment) the offer for ducts and premises for technical equipment is publicly available.
- Regulation of operators having SMP:
  - During market (WBA and Access Network Infrastructure Access) analyzes RRT investigates whether there is a SMP operators in those markets. It is assumed that SMP operator may behave anticompetitive and limit efficient competition;
  - RRT may impose particular remedies, that shall limit SMP operator's power of anticompetitive behavior: non discrimination, obligation of transparency, obligation to provide access, price control, accounting separation, functional separation.
  - Variety of price control measures is wide, but according to Recommendation on NGA networks, price control remedies for physical infrastructure products (copper and fiber local loop, access to ducts, access to dark fiber) and wholesale broadband services (xDSL or Ethernet) shall be consistent, i. e. same cost base and same pricing rules should be applied.

# Regulatory framework of NGN regulation in Lithuania:

## Access to Network Infrastructure Access market

Status	Market analyses finished in end of 2011. Regulation applicable from January 2012
Services that have to be provided	<ul style="list-style-type: none"> <li>-Access to ducts;</li> <li>-Access to full or shared copper LL;</li> <li>-Access to fiber LL;</li> <li>-Access to dark fiber;</li> <li>-Access to UTP/STP</li> </ul>
Remedies imposed	<ul style="list-style-type: none"> <li>-Obligation to provide access;</li> <li>-Non discrimination;</li> <li>-Transparency (public offer);</li> <li>-Price control;</li> <li>-Accounting separation</li> </ul>
Price control measures	Prices shall not be higher than costs, calculated according to FDC+HCA
Relationship with General regulation	Remedies do not change General regulation. Remedies improve General regulation to solve problems related with transparency and non discrimination.

## Access to WBA market (current status)

Status	National consultation is finished. Market analyses and remedies have been submitted to EC for consultation
Services that should be provided	-WBA via copper, FTTx, UTP/STP – xDSL and Ethernet services.
Remedies planned to impose	<ul style="list-style-type: none"> <li>Obligation to provide access;</li> <li>Non discrimination;</li> <li>Transparency (public offer);</li> <li>Price control;</li> <li>Accounting separation</li> </ul>
Price control measures	Prices shall not be higher than costs, calculated according to FDC+HCA



# Regulatory framework of NGN regulation in Lithuania:

## Price regulation in more details:

- NGN services could be split into passive (ducts, access lines) and active infrastructure (switches, routers, etc.)
- Passive infrastructure is difficult to duplicate: underground construction costs lots of money and nobody is willing to duplicate it. So there is no need to foster duplication of ducts, manholes, etc. Better it is to guaranty that service provider does not set excessive prices for passive infrastructure. But recovery of costs should be guaranteed as an incentive to develop passive networks. Therefore we have chosen price regulation based on costs already incurred (Historical Cost Accounting). In order that costs would not be transferred from non-regulated services to regulated services, costs of services should be distributed according to Rules set by RRT. In general these Rules are based on Activity Based Costing cost distribution method. So at the end we have a Fully Distributed Costs (FDC) valued according to Historical Cost Accounting (HCA) method.
- Access lines could be duplicated, but as investments are made recently (TEO LT, AB has begun development of its FTTx network in 2008), HCA would present recently incurred costs and potential competitors could decide themselves what is cheaper: to build its own network, or to lease it. As ducts and access lines are vertically integrated network elements in internet or access line value chain, the price setting methodology should be the same in order to send right signals to the market and leave the decision what to buy to themselves.

# Regulatory framework of NGN regulation in Lithuania:

## Price regulation in more details (continued):

- Active infrastructure is related with WBA. WBA is also a vertically integrated service with ducts and access lines in the value chain of internet access. So in order to send right signals to the market and leave the decision what to buy to themselves, the pricing of WBA should be consistent with pricing of access to ducts and access lines.
- In order to implement price control and accounting separation remedies, SMP operator has to implement cost accounting and accounting separation system.
- In order to verify price control remedies imposed, SMP operator within 6 months after the end of financial year has to submit report on cost accounting, cost distribution, accounting separation, information on revenues and costs calculated.
- SMP operator is guaranteed a reasonable Rate on Investment ( $ROI = \text{Capital Employed} * WACC$ ) and this “profit” is treated as costs. According to Recommendation on NGA Networks, operator may face additional risk related to NGN investments. Wherefore a percent to WACC for compensation for that specific risk, may be added. But SMP operator must prove that specific risk firstly.

# Combining policy, economics and costs for NGN: lessons learned

**Policy is quite clear** – ubiquitous fast and ultra fast broadband internet access: by 2020 30 Mbps availability to all Europeans, 100 Mbps speed should be available for 50 % of Europeans at least.

**Policy instruments** – SMP regulation in Access to Network Infrastructure Access and WBA markets, harmonization of radio spectrum.

**Economics** – is science about the choice of individuals. So the question could be who would supply those speeds, and who would buy those speeds. The supply depends on ability to recoup investments (potential demand and competition). The demand depends on need for the service, price and the availability. There is demand and supply, and competition in populated areas, but competition depends on key inputs – ducts and to some extent access lines (if ducts are not available). So we focus on regulation on key inputs – primary on ducts, secondary – on access lines.

Demand for internet access is low or there is no demand in rural areas. The networks are also less developed here. We would guaranty a fair playing field via regulation, “Plačiauostis internetas” may lower entry costs, but investments would be made only if business case would be available, or after services providers would move to rural areas looking for new revenues, or after demand would be created, i.e. those in rural areas would be persuaded they need internet. Mobile networks may be treated as internet service providers in rural areas, but even with HSPA or LTE, they would not move there until business case...at the end investments still need to be recouped.

**Costs** – price of access to ducts is 142 EUR/km for technical analyses (one off charge) and 28 EUR/km/month (periodical charge). Ducts are heavily used by service providers. Price of unbundled fiber is 31 EUR on of charge and 8-18 EUR/month depending on number of fibers leased. Until now there are no lines unbundled.

Prices of ducts is cost oriented. Prices of fiber unbundling is under review.

FDC+HCA is useless for new products: low demand and low economies of scale lead to high costs per unit. If prices would be based on such costs, competition would not be guaranteed. If there is no demand, it would be impossible to calculate costs. In order to overcome limitation of FDC+HCA, additional rules for cost calculation should be set. For example reference to costs of retail services or modeling of regulated services.

**The end**

# Thank You

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