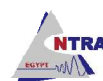




ITU-D Regional Development Forums 2010 on NGN and
Broadband for the Arab Region
"NGN and Broadband, Opportunities and Challenges"

Cairo, Egypt, 13-15 December 2010



NGN DEPLOYMENT IN DEVELOPING COUNTRIES

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OUTLINES

- × NGN DEPLOYMENT
- × DIFFERENCES BETWEEN DEVELOPED AND DEVELOPING COUNTRIES TOWARDS NGN DEPLOYMENT
- × MODELS FOR NGN DEVELOPMENT
- × ANALYTICAL FRAMEWORK FOR PPP
- × EXAMPLES
- × CONCLUSIONS



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NGN DEPLOYMENT

- ✘ The dominant trend in global e-communications sector
- ✘ Although technological requirements are known, NGN networks are looking for a new generation of users, sources for revenue and regulation.
- ✘ Telecom sector from developing countries meets new challenges in managing NGN deployment and try to find the way, which is very often based on developed countries experiences.
- ✘ However the differences in technological needs, market profitability and legislative framework are remarkable and the mapping of those experiences is not always possible.
- ✘ These differences can lead to the infrastructural digital divide instead of the digital inclusion.



DEVELOPED COUNTRIES

- ✘ Why telecom operators/service providers in developed countries completely or partially replace its "good old" PSTN network which brought them in the past decades enormous revenues and profits?
 - + Some global vendors **find answer** that now in industry there is an unstable and unsustainable business model between web world and networks that is sub-optimized for everyone involved. the Web World exists - it is a space where application and content providers (like Google, YouTube, Amazon) run various applications and services, many of which are Web 2.0 centric and targeted at the Digital Youth. This is the generation that grows up with the internet, broadband, mobile phones and will be the main driver
 - + CAPEX and OPEX
 - + Competition
- ✘ BUT
 - ✘ Traffic is growing 1000% for some customers, but revenues are only growing at a fraction of that rate
 - ✘ Networks enabling those new services are capital intensive and require new investment source
 - ✘ Private investment in the sector hangs on greater certainty over revenue, regulation, and technology—and many telecom operators are not willing to move forward without some kind of support



SITUATION IN DEVELOPING COUNTRIES

- ✘ Slow introduction of new services due to the lack of broadband infrastructures
- ✘ Considering investment, the situation in developing countries (devC) could get even worse, because investments are limited and return is in long run.
- ✘ The devC can't stay behind and increase the already existing digital divide.
- ✘ They should find the model to continue the way towards digital economies and deployment of the NGN
- ✘ Is it all about developed countries experiences ?



NGBN RELATED CHARACTERISTICS IN DEVELOPED AND DEVELOPING COUNTRIES

Characteristics	Developed Countries	Developing countries
1. Country's policy and strategy for broadband	implemented with government funds	It is foreseen in related strategic document but no funds for implementation
2. Fixed broadband penetration	above 20%*	5-10%*
3. Mobile broadband	above 20%*	below 5%*
4. Monthly cost of fixed BB in PPP\$	28 PPP\$*	289 PPP\$*
5. Broadband (BB) access	Driven by new NGN services – like IPTV and multimedia communications	lack of BB access – lack of demands for new NGN services
6. BB access in rural areas	70+%, target 100%	<30%, target ? ?
7. Economy	ICT based	not ICT based
8. Drivers for NGN development	Competition and Operators Profit	<i>Not clear (Policy makers, Regulator, Operators, or Customers)</i>
9. Services	Quadro play, Triple play	Internet
10. New revenue stream/ ROI	Yes/ quickly	No/ slowly
11. Expected ARPU per NGN services	above 30 \$ for triple play	below 10 \$
12. Expected average bandwidth	8 – 20 Mb	<= 4 Mb
13. Technologies for today	Optics, 3G, transition to HSPD and LTE	Same but slow development, remain expensive
14. Spectrum	digital dividend, spectrum refarming	Usually limited or restricted
15. Approach to NGN	Evolutionary	no money for evolution, existing networks not ready for revolutionary approach
16. Customer behavior	size of innovators are bigger, time interval of early majority and late majority is longer	size of innovators are smaller, early adopters is larger, time interval of early majority and late majority is shorter than in DC
17. Time frame for NGN	2010 – 2015	2012 – 20x0

* Source ITU statistics

DEVELOPED COUNTRIES EXPERIENCE

✘ TYPICAL MODELS APPLIED

- + a) *New Business Models*- Multilayer models (R. Friedrich, at al., "Digital Highways - The Role of Government in 21st Century infrastructure" Booz & Company, Sept. 2009)
- + b) Models of state participations

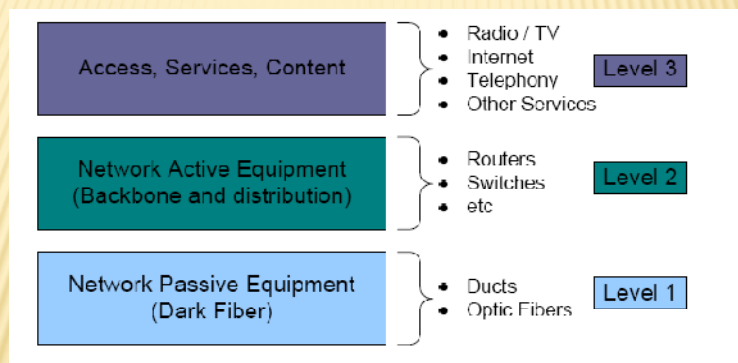


MULTILAYER MODELS

- ✘ Typically consisting of up to three different entities/layers:
 - + Passive Equipment (PassiveEq),
 - + Active Equipment (ActiveEq) and
 - + Service.
- ✘ PassiveEq operations are the most capital-intensive, 12-15 years of ROI, face the least competition, allowing for low-risk, utility-like returns.
- ✘ ActiveEq entity, 5-7 years ROI, operates in middle competitive industry;
- ✘ Service entity, with 1-3 years ROI, operates in highly competitive industries, with higher returns but also higher risks.
- ✘ These new multilayer business models are increasingly being implemented globally in DC



EXAMPLE: GREECE BUSINESS MODELS: BASIC LEVELS



Source: Christos Bouras et al.
Broadband Municipal Optical Networks in Greece: A Suitable Business Model

MULTILAYER MODELS AND DEVELOPING COUNTRIES

- ✘ devCs, typically have vertically integrated sector, with operators owning and operating all elements of the network while also serving end-users.
- ✘ Functional separation requires serious regulatory steps

MODELS OF STATE PARTICIPATION

- ✘ **Government with stimulate policies** (Sweden, Norway)
- ✘ **Government as drivers in deploying NGN** facilitating new business models (Japan, South Korea)
 - + Nations that have adopted “driver” policies regarding their NGNBNs have much higher penetration rates
- ✘ **Government as investor** (USA, Australia)
- ✘ **Hybrid model** (investing in infrastructure, facilitating new business models, and stimulating demand)



NGN BB INVESTMENT PER CAPITA

COUNTRY	DATE ANNOUNCED	TOTAL INVESTMENT (US\$ IN MILLIONS)	INVESTMENT PER CAPITA (US\$)
New Zealand	2009	840	205
Australia	2009	3,300 ¹	159
Singapore	2008	710	154
Portugal	2009	1,060	100
Greece	2008	1,030	92
Malaysia	2008	720	27
Ireland	2009	110	25
U.S.	2009	7,200	24
South Korea	2009	890	18
Germany	2009	200	2

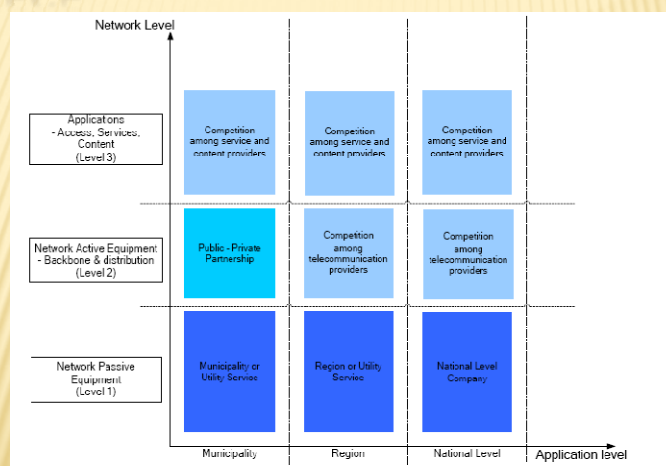
Source: R. Friedrich, et al., “Digital Highways - The Role of Government in 21st Century infrastructure” Booz & Company, Sept. 2009

MODELS OF STATE PARTICIPATION IN DEVELOPING COUNTRIES

- ✘ They will fit in devC structure, but...
 - + Lack of government budget
 - + Lack of investors
 - + Slow regulatory adaptation for new market trends
 - + NGNBN regulatory regimes are still being defined
- ✘ The Government role in deploying NGN is crucial in proposing the right approach because next-generation broadband is a form of long-term national economic investment
- ✘ Public Private Partnership
 - + PPP arrangement needs to be carefully drawn up to ensure distribution of risk and returns between the government and the private player.



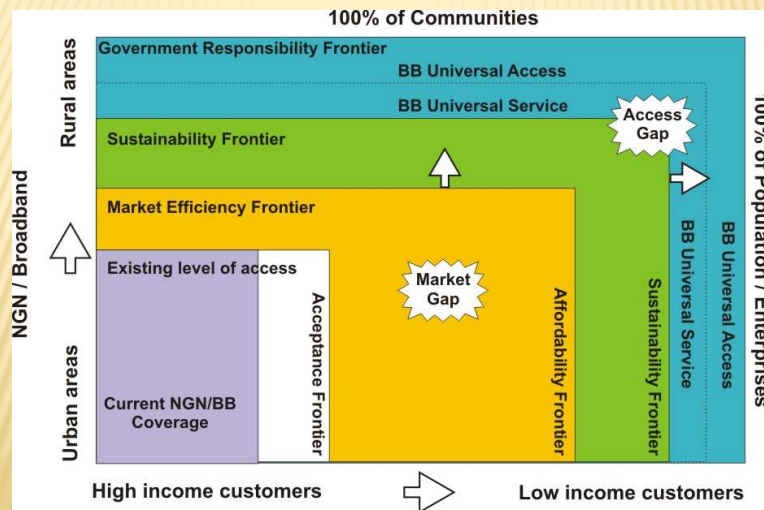
BUSINESS MODEL SCENARIOS FOR GREECE



Source: Christos Bouras et al. ITU-D Regional Development Forums 2010 on NGN and Broadband for the Arab Region
 "NGN and Broadband: Opportunities and Challenges"
 NTRA

Broadband Municipal Optical Networks in Greece: A Suitable Business Model

An analytical framework for the Public Private Partnership model for NGN and broadband in devC



THE ANALYTICAL FRAMEWORK

- ✘ To transform the proposed framework into a model for the particular devC, it is necessary to determine:
 - + The existing level of access,
 - + Frontiers of market efficiency,
 - + Financial feasibility, in terms of customer (household) income and
 - + Sustainability in terms of the size of total cost for potential investors

STRUCTURAL FRAMEWORK COMPONENTS

- ✘ Structural components of the model include:
 - + Detailed input data related to market-specific features;
 - + Algorithms that represent the process of building the infrastructure, based on geography, population, and penetration;
 - + Assumptions about the cost; income; and
 - + Calculation of the net profit

- ✘ RECOMMENDATION:
 - + Develop the project to define frontiers and data
 - + Pilot project to test this framework



APPLICATION OF ANALYTICAL FRAMEWORK IN SERBIA

- ✘ Research into the Serbian territory covered by ADSL and 3G services indicated that market oriented approach lead to good coverage in urban areas and poor coverage in rural areas.
- ✘ The frontier for the existing level of acceptance is set to 600 € and the affordability frontier at 300 €. (The average monthly income of households in Serbia in 2009 amounted to around 500 €; the average net salary in Serbia in February 2010 amounted to 322€).
- ✘ Support of government should be emphasized at the government responsibilities frontiers



CONCLUSIONS

- ✘ There are substantial differences between developed and developing countries in deploying NBN
- ✘ Costs and financial feasibility are vital and cannot be ignored.
- ✘ The PPP is probably the only way to solve the financial problem.
- ✘ The tendency for partial NGN deployment will to increase the existing digital divide and indicates the need for devCs' governments to proactively plan out their PPP for coverage in rural areas
- ✘ An analytical framework for NGN/broadband development in devCs is proposed as guidelines for particular project.
- ✘ For the framework, the frontiers between the effective market, self-sustainable areas, and non-sustainable areas should be determined



**THANK YOU FOR YOUR
ATTENTION !**

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