



Osservatorio NGN

Telecom Italia Strategic Issues for Fiber Access Deployment

Milano, June 13th

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Agenda

- ▶ **Market scenario & drivers for FttX**
 - **TI Group strategic guidelines '07-'09**
 - **International benchmark on FttX projects**
 - **“Bandwidth budget” in the next future**

- ▶ **International regulation arena**

- ▶ **Next Generation Network 2 Project**
 - **Network architecture: As is and NGN target**
 - **Impact on Capex/Opex**

Market scenario: risks & opportunities

MARKET TRENDS

- ▶ Decreasing revenues for traditional telephony services and slowdown of Internet broadband's growing rate
- ▶ New “bandwidth hungry” services (e.g., IPTV, Video-communication, Personal Content services, ...) & “on line” devices (gaming consoles, ...)
- ▶ No more clear separation between TLC & Media value chain items
- ▶ Competition is moving towards 3Play and 4Play business model and the number of “actors” is growing up

RISKS

- ▶ Traditional services are going to become a “commodity”
- ▶ Low efficiency when managing two different and overlay platforms (traditional & new “ALL IP”)
- ▶ Asymmetric regulation for incumbents

OPPORTUNITIES

- ▶ Moving competition from the infrastructure to the “services” arena
- ▶ Intercept new economic flows coming from vertical segments (Health care, E-Learning, Info-mobility, ...)
- ▶ Possibility to change the current regulatory model
- ▶ Solution for obsolescence problems (TDM switching network and copper access network)

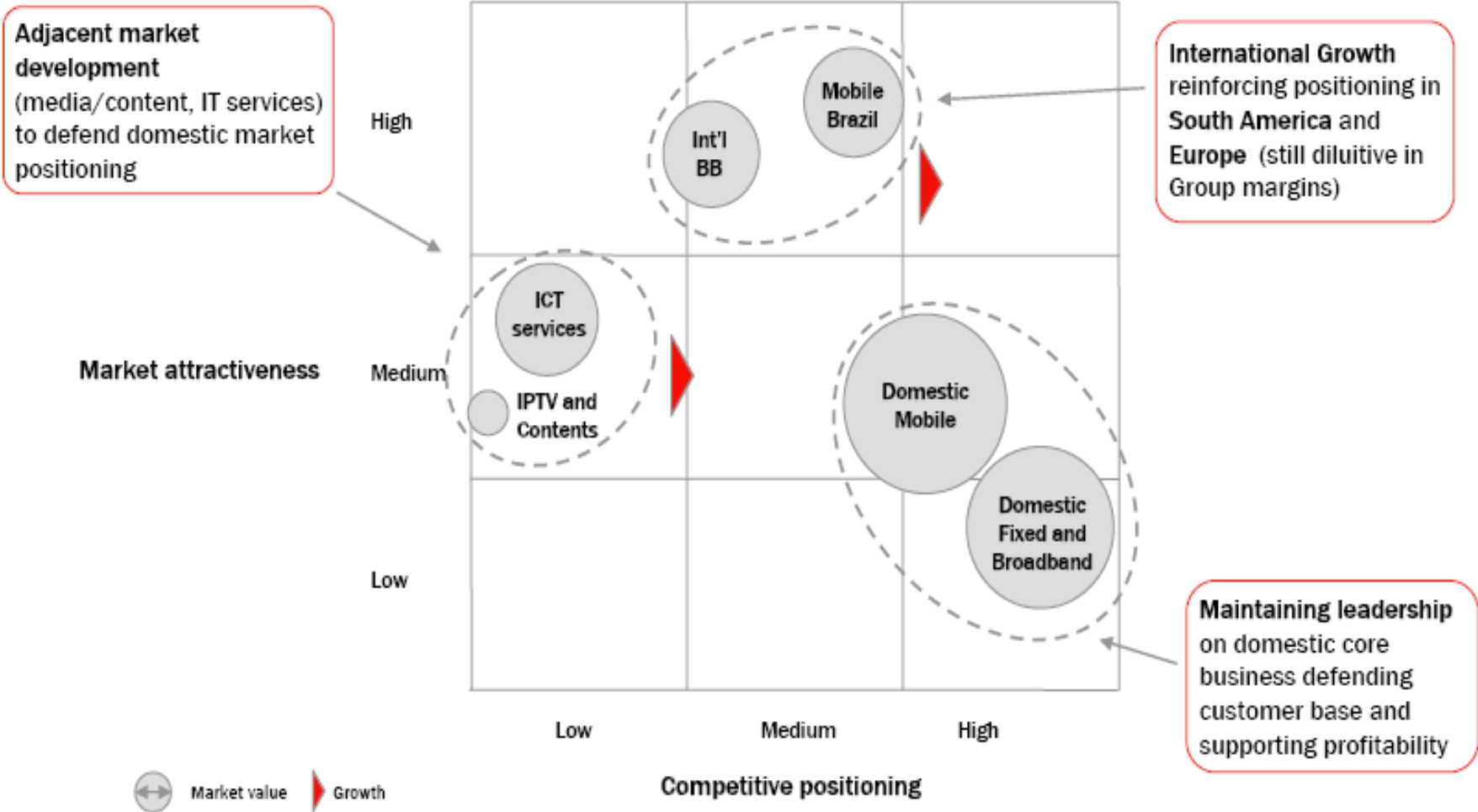
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TI Group strategic guidelines '07-'09









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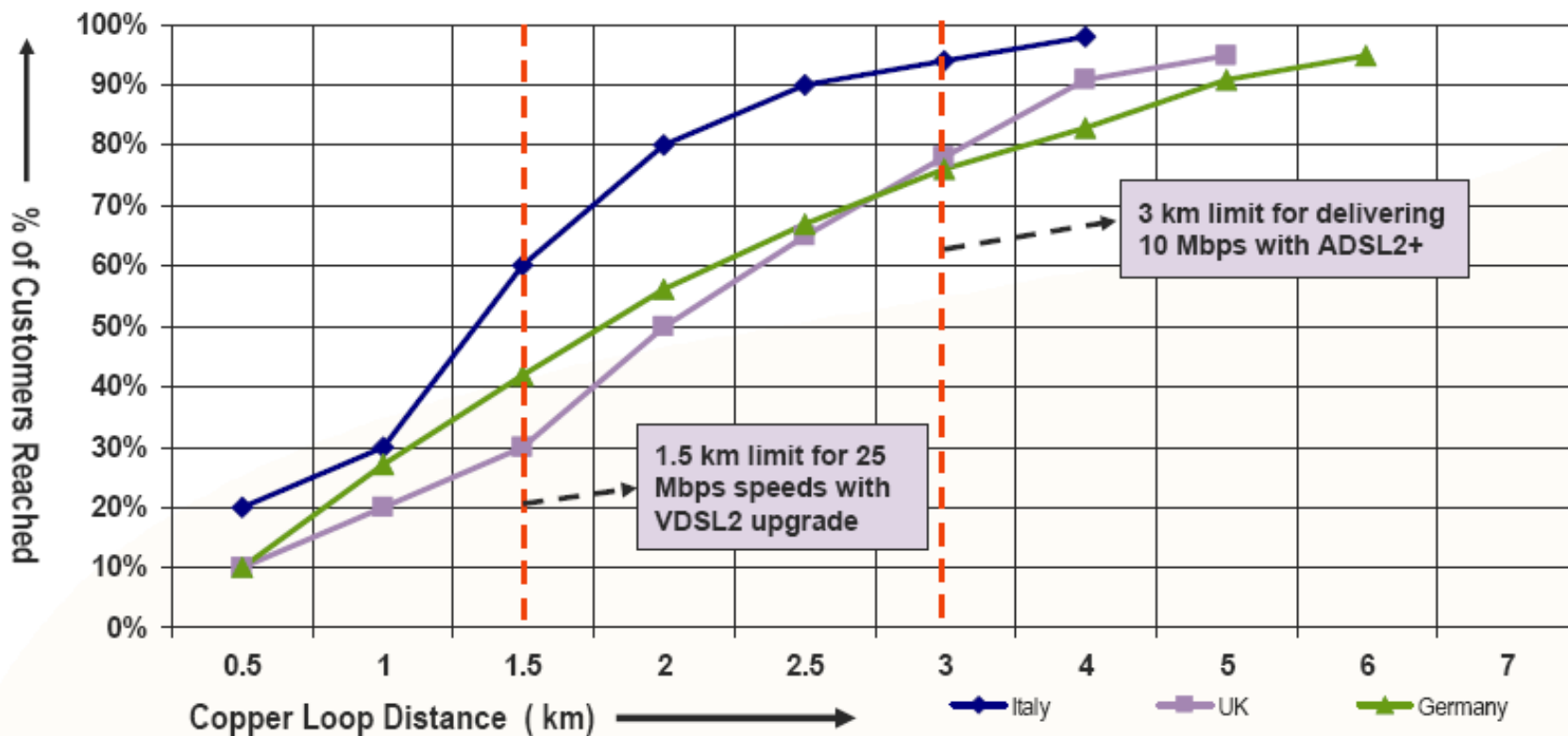
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Benchmark on CAPEX for FTTx projects

Network Operator	Investments (Mld €)	target (Mln home lines)	Timing	Technology
	13,8	18,0	2004 - 2010	FTTH
	37,0	47,0	2004 - 2010	FTTH
	2,9	5,0	2007-2012	FTTH
	1,0	4,0	2007-2012	FTTH
	1,5	5,5	2006-2010	FTTCab/ VDSL
			2007-2016	FTTCab/ VDSL

International benchmark – Italian VDSL peculiarity



- ▶ **Average copper loop length boost VDSL potential in Italy**

International benchmark – Savings

▶ Verizon

- ▶ **Cost reduction for maintenance & provisioning (around 50% within 2-3 year after complete upgrade FTTH)**

▶ AT&T

- ▶ **FTTC obtain 70% operational savings estimated after FTTH adoption**
- ▶ **Reduction of operational cost around 300 Mln US\$ /year since 2007**

▶ KPN

- ▶ **Around 10% man power saving**
- ▶ **Cost savings about 200 Mln €/year.**

▶ DT

- ▶ **OPEX reduction about 30% and CAPEX reduction about 15% after full rollout**

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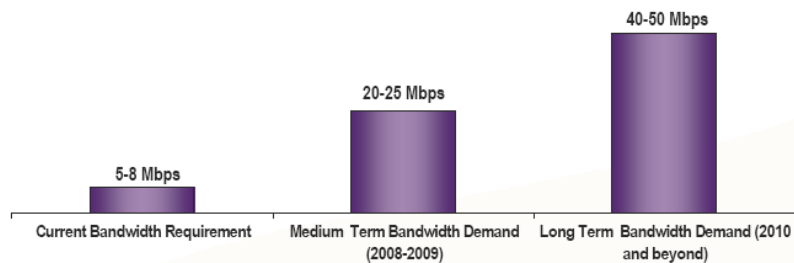
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Consumer Bandwidth

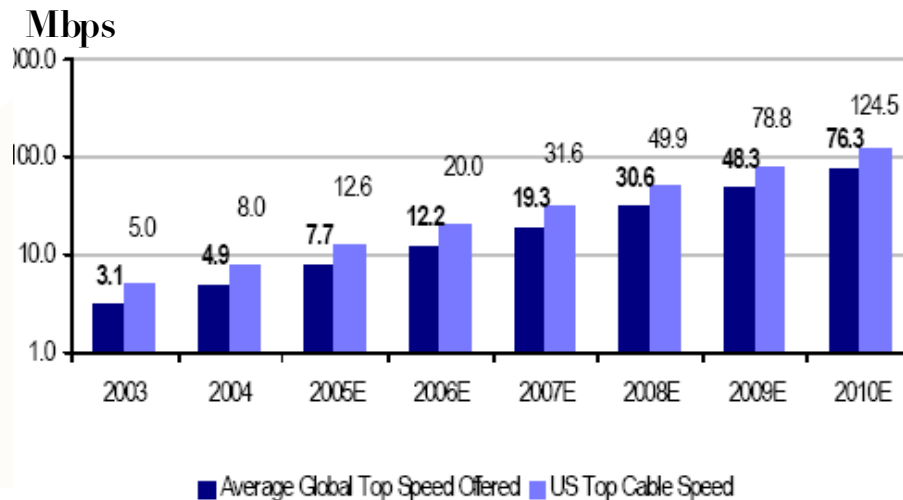


- ▶ 1 HD TV, 2 SD TV
16 Mbps
- ▶ 2 Gaming channels 512 kbps
- ▶ 2 Voice calls and Visio 220 kbps
- ▶ High Speed Internet 3 Mbps
- ▶ TOTAL >20Mbps

Bandwidth needs



Typical Service Package	1 Standard Definition TV (SDTV) stream; 2 Mbps Internet access	1 High Definition TV (HDTV) Stream; 2 SDTV Streams; 6-8 Mbps Internet access	3 HDTV; 15-20 Mbps Internet access
Explanation	<ul style="list-style-type: none"> One SDTV with MPEG2 compression requires 4-6Mbps bandwidth 	<ul style="list-style-type: none"> One HDTV with MPEG4 compression requires 6-8 Mbps bandwidth One SDTV with MPEG4 compression requires 2-3 Mbps 	<ul style="list-style-type: none"> Over time most TVs and channels will be supported on HD



Source: Between

▶ **Bandwidth development is going to reach a “Moore Law” slope**

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Regulation – international

USA	Japan	France	Germany
<ul style="list-style-type: none"> ▶ AT&T and Verizon starts FTTx projects as reaction to Cable Operators competition ▶ FCC relax regulatory constrains for new access networks 	<ul style="list-style-type: none"> ▶ Japan authority launched a Japan program in 2001 in order to obtain a world wide leadership for ICT applications ▶ FTTH projects starts on 2002 ▶ End 2006 ADSL market (about 15 Mln users is considered “mature”) ▶ 1 Qo5 NTT net acquisition on FTTH over ADSL acquisitions 	<ul style="list-style-type: none"> ▶ FT start FTTH project in order to react to a very aggressive competitive scenario ▶ Regulation scenario still under development 	<ul style="list-style-type: none"> ▶ Very aggressive competition on broadband market. ▶ DT start FTTCab+VDSL2, project asking for no regulatory constrains.

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Fttx: an option or a “must”

Network status

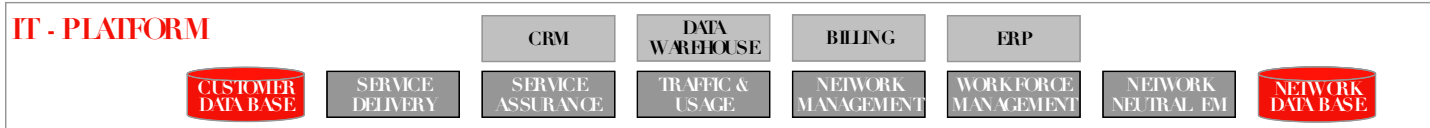
- ▶ Increasing Capex & Opex **to face up** network obsolescence and inertial evolution
- ▶ Not enough bandwidth for launching innovative “bandwidth hungry” services (media, ICT, ...)
- ▶ Broadband penetration growth is **going to speed up the** achievement of saturation of copper cable’s performances **for ADSL systems, deployed from Central Office**

Fttx key milestones

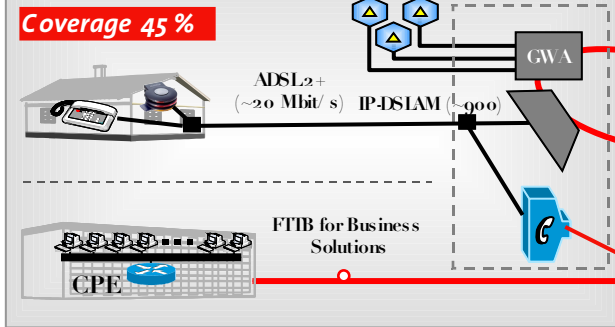
- Massive introduction of Fiber (Fttx) in the access network & installation of **VDSL2 technology**
- Strong push on ADSL2+/ 3-Play (FTTE) **platform deployment to be ahead of Fttx’s time and to eliminate the 1st Generation Digital Divide**
- Implementation of “Full IP” network
- Progressive full migration to ToIP
- Introduction of ultra-broadband connectivity for mobile access (**deployment of fiber-based access solutions**)

Network Architecture: As is (2006)

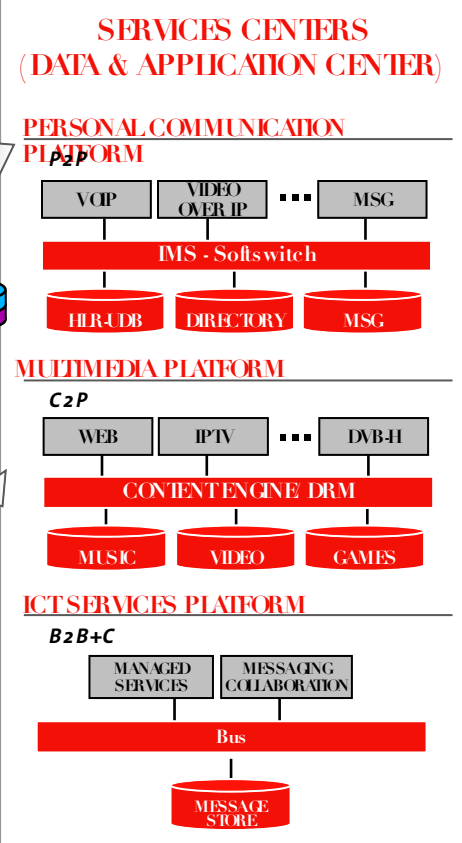
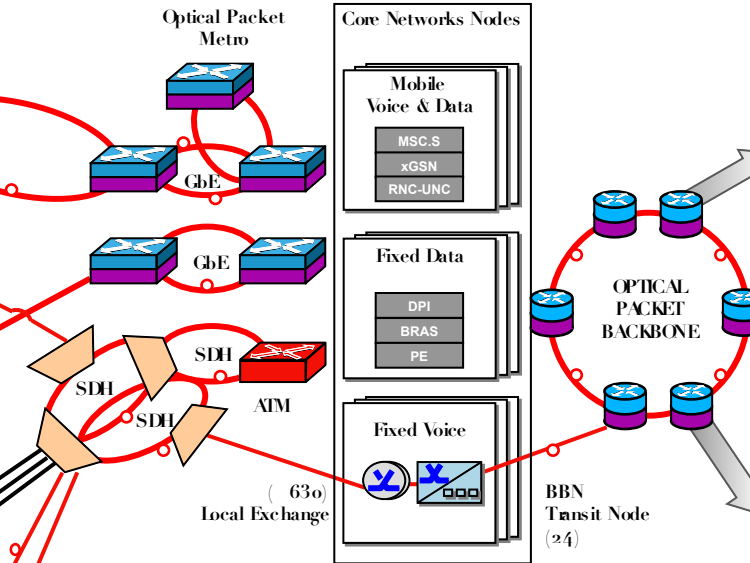
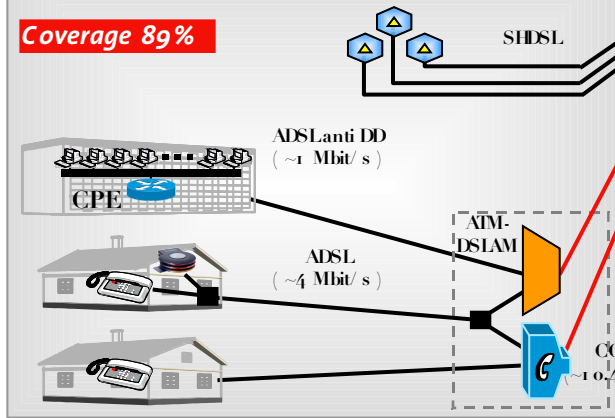
- ATM Broadband
- IP Broadband
- Copper
- Fiber



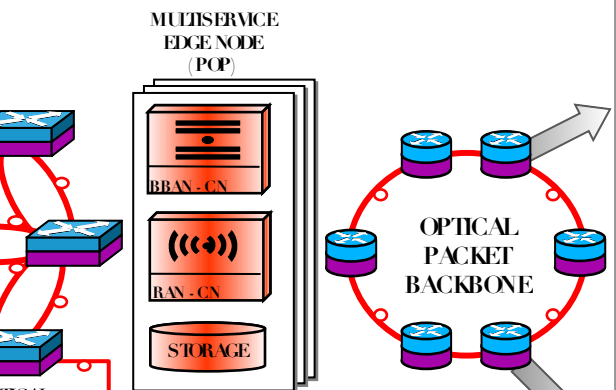
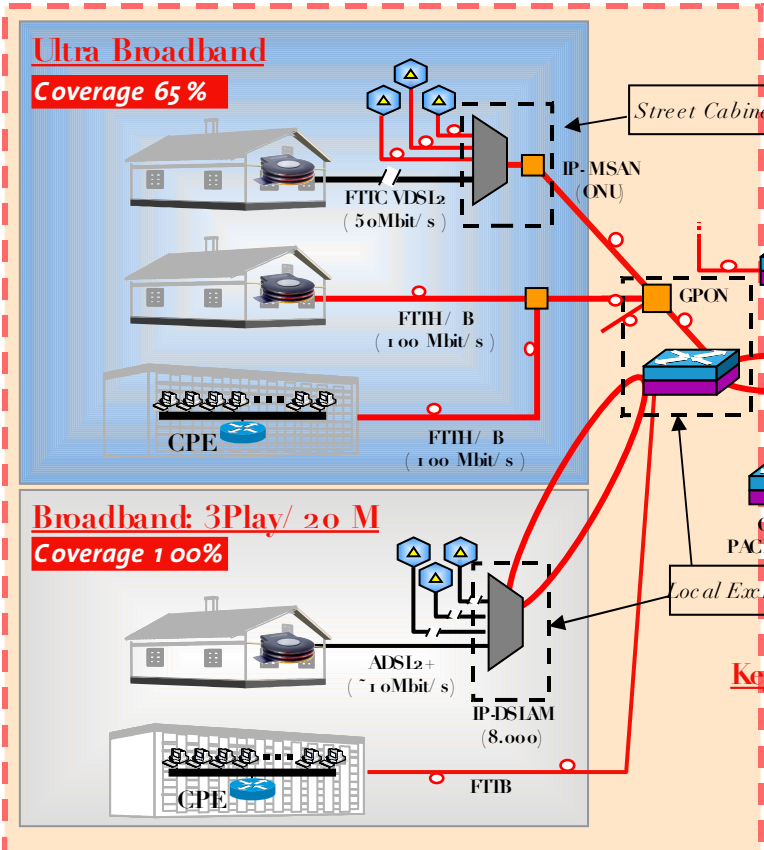
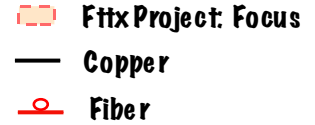
Broadband: 3Play/ 20 M



Broadband ADSL

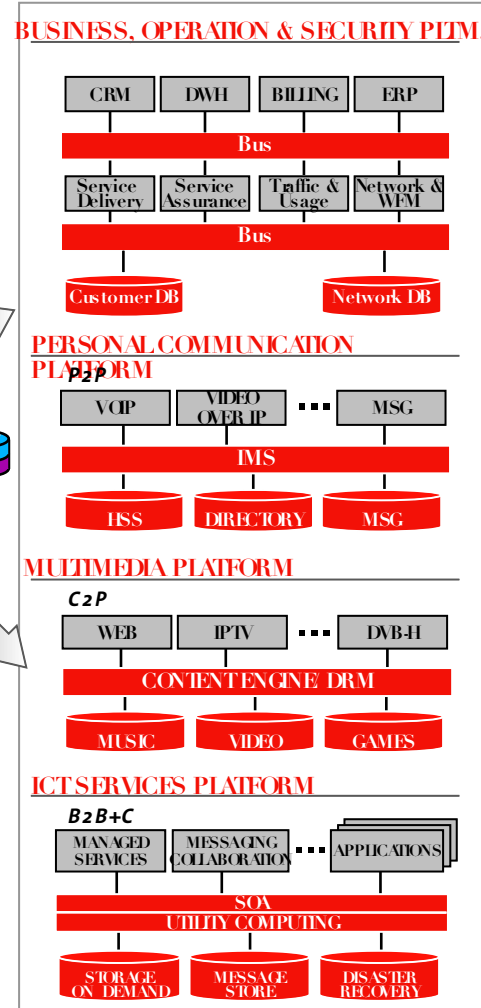


T.I. Next Generation Network target architecture



Key Project Figures (2016)

- ~ 75.000 street cabinets **out of 145.000**
- ~ 270.000 buildings **covered**
- ~ 1.600 COs **releases/compacted**
- ~ 60.000 Km of new fiber optics paths



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Looking for benefits: opex decrease

- ▶ **Network simplification (lower number of networks and elimination of traditional TDM networks) and Fttx implementation in the access network will generate significant savings for lower costs of maintenance and power consumption**
- ▶ **Lower costs of provisioning and assurance, thanks to possibility of remote management of new cabinets without technicians operation ("zero touch")**
- ▶ **Strong reduction of location's rental, due to a reduced number of local exchanges and consequent buildings release;**
- ▶ **A reduction of hospitality's lease for mobile antennas, gradually replaced by Radio over Fiber solutions (RoF), more and more distributed and with reduced space occupation.**

Conclusions

- ▶ **Many incumbent network operators have announced FTTx projects with the perspective to provide triple/quadruple play services (50-100 Mb/s) to a large part of their customers**
- ▶ **Important benefits come from OPEX and CAPEX saving against legacy programs for ADSL deployments**
- ▶ **At the moment no “killer application” for revenues boost related to FTTx development**
- ▶ **Complex and differentiated regulatory scenario in Europe, Japan and North America.**

TELECOM ITALIA: ACCORDO CON METROWEB PER LO SVILUPPO DELLA RETE IN FIBRA OTTICA A MILANO

L'intesa è alla base del progetto di Telecom Italia grazie al quale saranno collegati in fibra ottica 70.000 edifici nella città di Milano e in alcune aree limitrofe e rientra nella strategia di sviluppo della rete di nuova generazione NGN2

Milano, 30 maggio 2007 - Telecom Italia ha siglato un accordo con Metroweb per lo sviluppo della rete in fibra ottica sul territorio di Milano. Grazie all'accordo Telecom Italia raggiungerà 70.000 edifici avvalendosi anche dell'infrastruttura di rete di Metroweb.

Il contratto, che prevede investimenti per circa 50 milioni di Euro e il diritto d'uso dell'infrastruttura per 15 anni (rinnovabile per ulteriori 15) si inserisce nel progetto di sviluppo della rete di nuova generazione a banda larga (NGN2) di Telecom Italia, il cui piano, avviato a partire dalla città di Milano, prevede la copertura progressiva della popolazione sul territorio nazionale.

In particolare, in base all'accordo, Telecom Italia potrà utilizzare oltre alle proprie infrastrutture anche quelle in fibra ottica messe a disposizione da Metroweb per la realizzazione di una rete di apparati posti all'interno degli edifici che consentirà l'accesso ultra broadband VDSL2 con una capacità trasmissiva fino a 50 megabit/s in grado di supportare l'offerta di servizi evoluti.

L'intesa siglata con Metroweb, che dispone già di una estesa e capillare rete di cavi ottici su tutto il territorio di Milano, consentirà a Telecom Italia di ridurre i tempi di realizzazione degli impianti, limitare al minimo l'impatto delle opere civili e valorizzare al massimo l'investimento.

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