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FTTH Global Panorama

Status of Public Funding

3ème forum national Très Haut Débit

Understanding the Digital World

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Caen , 14 Janvier 2010

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Agenda

- **FTTH Worldwide Status & Strategy**
  - Global Figures
  - Leaders: Japan, US, Hong Kong
  - European Situation – detailed situation at June 2009
- **FTTH Public Funding in Europe**
  - Infrastructure competition vs Wholesale & Open Model
  - National vs Local: French case
- **National Plan: Australian Case**
- **Dynamics for FTTH**

FTTH: Worldwide Status & Strategies

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FTTH/B Global Picture: APAC Strong leadership

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FTTx subscribers at June 2009

	FTTH/B	VDSL	FTTLA	FTTx+LAN	*Total FTTx*
Western Europe (1)	1 806 515	1 645 350	20 000	0	*3 471 865*
Eastern & Central Europe (1)	962 165	34 000	225 393	0	*1 221 558*
North America (2)	4 805 500	1 585 000	na	0	*6 390 500*
Latin America	2 000	0	na	0	*2 000*
Asia	26 293 000	1 500	na	16 900 000	*43 194 500*
Middle East & Africa	66 100	0	0	0	*66 100*
TOTAL WORLD	**33 935 280**	**3 265 850**	**245 393**	**16 900 000**	***54 346 523***

(1) Western, Eastern & Central Europe counts EU27+Norway+Switzerland+Iceland+Andorra+Luxembourg+Croatia+Russia

(3) USA, Canada & Mexico

Source: IDATE and FTTH Council Europe

- **Global FTTH/B market continues to make strides. Growth in 1H2009 was steady, with close to 4.9 million new subscribers (+17% over the past 6 months)**
- **Nearly 80% of Worldwide FTTH/B subscribers at June 2009 are in Asia**
- **Europe (including Russia) counting only for 8.3% of Worldwide FTTH/B Total**
- **In Asia at June 2009, estimated figures for FTTH/B Homes Passed: 71.2 million…. to be compared to the 20.5 million in Europe (including Russia)**

FTTH/B Global Picture: APAC Strong leadership

World's top 10 FTTx operators in terms of subscribers at June 2009

Rank	Operator	Country	Main technology & architecture	FTTx subscribers
1	NTT	Japan	FTTH/B GEPON	11 793 000
2	China Telecom (1)	China	FTTH - FTTx+LAN EPON LAN/DSL	11 160 000
3	KT	South Korea	FTTB EPON/GEPON	3 555 644
4	Verizon	USA	FTTH BPON/GPON	3 100 000
5	SK Broadband	South Korea	FTTB/LAN GEPON	2 733 141
6	AT&T	USA	FTTN VDSL2	1 585 000
7	LG Powercom	South Korea	FTTH/B EPON/GEPON	1 504 090
8	Chunghwa Telecom	Taiwan	FTTB GEPON	1 342 000
9	KDDI	Japan	FTTH/B EPON/GEPON	1 211 000
10	Beeline	Russia	FTTB EP2P	724 000

(1) 560 000 FTTH subscribers and 10.6 millions FTTx/LAN subscribers

Source: IDATE

- **In terms of operators, the gap between Asia and the rest of the world is still important**
- **Among the globe's ten largest FTTx operators, seven are Asian, two are North American and one is from Russia. No Western European operators in the Ranking**
- **NTT is still the largest FTTH/B operator with a base of 11.8 million subscribers but probably no more for a long time**
- **Indeed China Telecom is now counting 11.2 million FTTx subscribers at June 2009 being mainly FTTx/LAN (EPON LAN/DSL)**

FTTH/B worldwide Status & Strategy: leaders

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FTTH: Worldwide Status & Strategies: leaders

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Japan: the FTTH leader

- More new FTTH/B subscribers than new DSL subscribers since April 2005
- **16 Million FTTH/B subscribers at end of June 2009** and more than 46 Million Homes Passed...and still around 600 000 new FTTH subscribers each quarter …. **Nearly 40% are FTTB subs**
- At end of **June 2009**, **FTTH/B** subscribers represent **50%** of total Broadband subscribers and **nearly 90% of the population is already covered!**
- Attractive prices, closing the gap with ADSL tariffs… aerial deployments
- Government's proactive approach to FTTH deployments: 30 Million FTTH subscribers in 2010 as a ambitious initial objective…objective revised in November 2007 at **20 Million FTTH subscribers in 2010**
- **But not specific services….**

  ….with a few IPTV subscribers in Japan (probably less than 250 000)

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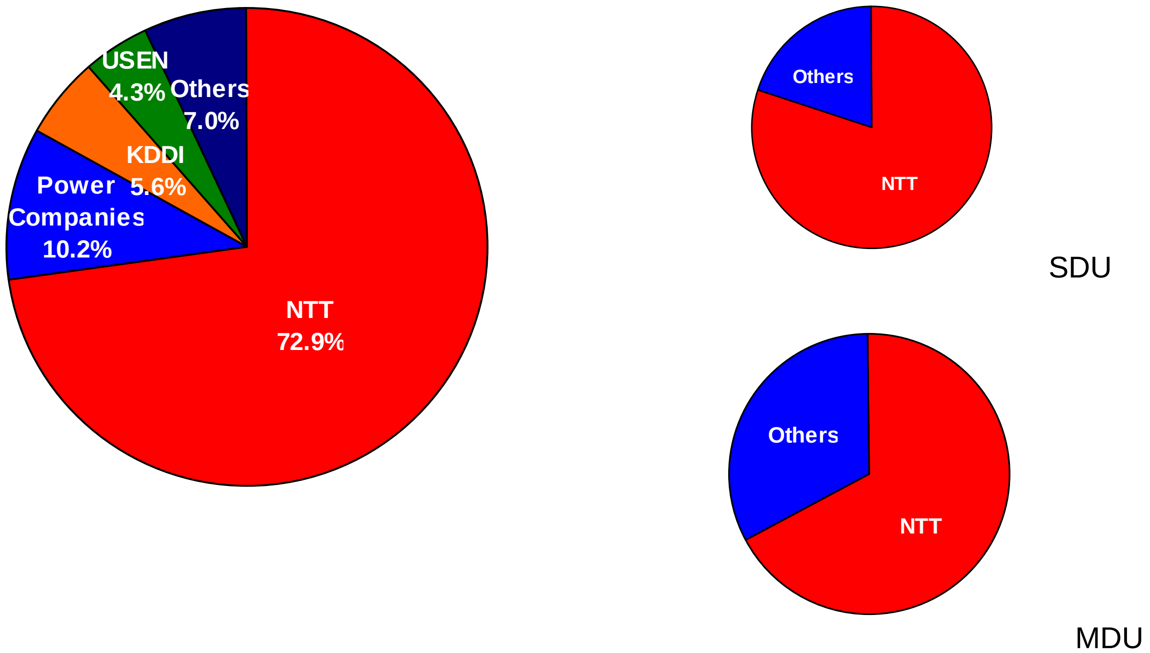
NTT: strong domination on FTTH/B

- Indeed, retail price for SDU was 5 460 Yens, was only around 10% more expensive than wholesale offer.
- But MIC has forced NTT to open up it's FTTH network at advantage prices for competitors: since June 2008, NTT East for example decreased his wholesale price of 14%.

NTT market shares on FTTH is nearly 73% compared to 37% on DSL (end 2008)

NTT market share On FTTH/B

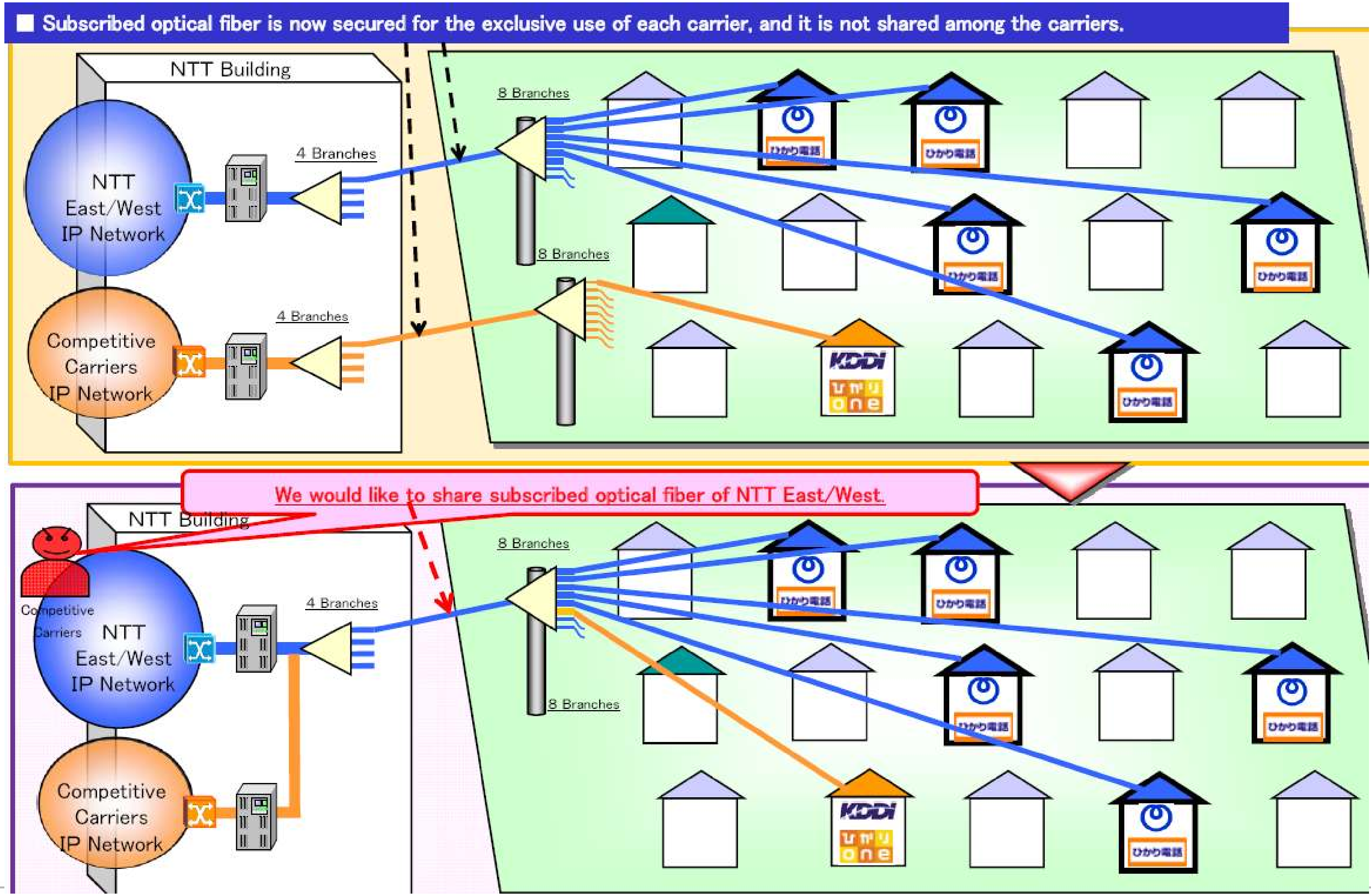


Source :NTT

At end of 1Q 2009 overall, NTT East and NTT West's combined share continued to increase, reaching 74.1% !!

NTT: How to share Fiber ?

KDDI wants to change the rules!



Source: MIC based on sources from KDDI

FTTH: Worldwide Status & Strategies: leaders

USA: FTTH is the unique solution for RBOC's

- Power of Cable operators: Time Warner, Comcast, launching 30 or 50 Mbps offers
- CableVision just announced a **101 Mbps** offer … more than twice what Verizon's much-touted FiOS offers (50/20 Mbps)

- **At September 2009 Verizon has signed 3.3 Million FiOS FTTH subscriber (28.5% penetration) and has 2.7 Million FiOS TV subscribers (24.9% penetration)**

- **At September 2009 it reached 14.5 M homes passed by FTTH (nearly 43% of all households in its service areas)**
- **At September 2009**, **Verizon has passed 10.9 M homes for FiOS Video**
- **By 2010**, the FiOS network will have passed **18 million homes**, or about half the households Verizon serves today

- AT&T (more FTTN oriented) and Verizon launched Fibre access **for delivering HDTV & Triple Play**
- **Verizon claims now to be the 6th largest cable operator in the USA.**

- **Churn is very low** for FiOS TV Subscribers: around **1%**

▶ USA: FiOS TV Packaging & Pricing - Example

FiOS TV Extreme HD ~ 400 channels for $57.99

- 100% digital lineup
- Local channels
- Digital audio music channels
- 120+ local and national HD channels

- Access to 17,000+ VOD titles/month, including 2,500+ HD VOD titles

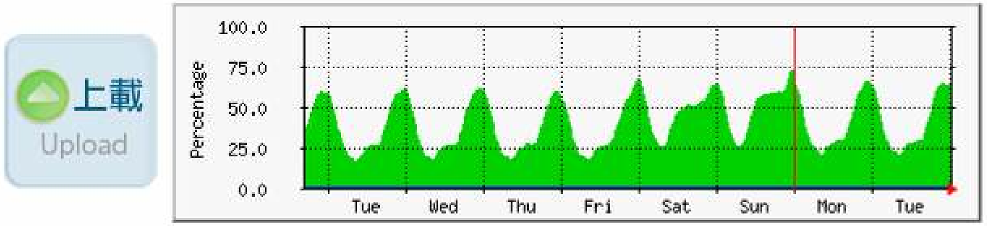
Source: Verizon – November 2009

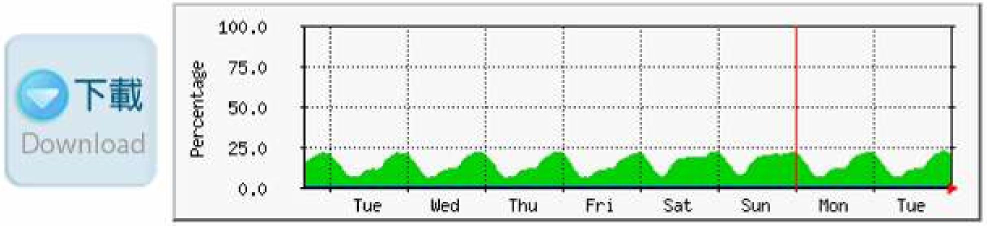
FTTH Leaders: Hong Kong Broadband: reversal Asymmetry!

3-year Guidance on Metro Ethernet Coverage					FY07A-FY10E
As of 31 Aug	FY07A	FY08E	FY09E	FY10E	Change
Fibre-connected Commerical Buildings	607	1,200	1,800	1,800	197%
Residential Homes Pass (mn)	1.38	1.55	1.70	2.00	45%
Depeciation on Fixed Assets as of 31 Aug 2007 (HK$ mn)	258	210	170	130	-50%
Capital Expenditure (HK$ mn)	132	850 for 3 years FY08E-FY10E*			na

Source: HKBN

- Hong Kong demography allows EUR 88 per home passed!!
- Recent offer at 13 USD (9 EUR) for 100 Mbps symmetric access!!
- Uplink traffic is 3 times of downlink traffic





Source: Weekly statistics from HKBN

FTTH: European situation

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Background of the Annual Study for the Council

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► **IDATE has been commissioned by the FTTH Council Europe to provide a comprehensive overview of FTTH deployments in Europe 31 (EU 27 + Norway, Iceland, Switzerland & Andorra) as well as five countries in Eastern Europe : Russia, Ukraine, Croatia, Serbia and Turkey (7th edition)**

► **Methodology used**

- Desk research
- Direct contacts with FTTH players (questionnaires, phone interviews)
- Information exchange with FTTH Council Europe members
- Direct contacts with IDATE's partners in several European countries

► **Objectives**

- **To** provide a complete summary of the status of FTTx in Europe
  - Identify new projects
  - Characterize each project: organization initiating the project, Key parameters& Figures (Homes and Buildings passed), Technical parameters, Financing & Business model
  - We distinguished FTTH/FTTB and FTTN+VDSL or FTTLA
- To establish a more global panorama for <u>Eastern Europe and Middle East</u>

FTTH in Europe

Overview

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FTTH in Europe - Overview: Projects

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► **At June 2009, IDATE has identified 233 FTTx projects in Europe of which 120 are new initiatives since June 2005**

► **Some significant FTTH/B European deployments at June 2009**

Countries	Players		Home/Building passed (June 2009)
Denmark	DONG Energy	Power utility	150 000
	Energie Midt	Power utility	70 000
	TRE FOR	Power utility	60 000
Finland	TeliaSonera	Incumbent	450 000
France	France Telecom	Incumbent	582 800
	Illiad/free	Alternative	350 000
	SFR	Alternative	350 000
	Numericable	Cable operator	4 100 000
Germany	Wilhelm Tel	Public	100 000
	M-Net	Public	110 000
Italy	Fastweb	Alternative	2 000 000
Netherlands	Reggefiber	Infrastructure operator	400 000
Norway	Lyse	Power utility	210 000
Russia	Beeline (Vimpelcom)	Alternative operator	7 500 000
Slovakia	T-COM	Incumbent	200 000
	Orange Slovensko	Alternative	280 326
Slovenia	T2	Alternative	250 000
Spain	Telefonica	Incumbent	200 000
Sweden	B2	Alternative	400 000

Source: IDATE for FTTH Council Europe

The diversity of players involved in FTTH/B in Europe

6 main categories of players

FTTH in Europe - Overview: Global Figures

- **June 2009, more than 2 million FTTH/B subscribers in the EU 35 (Without Russia) and around 13 million Homes Passed**
- **Representing a growth of 18% in terms of subscribers and also in terms of Homes Passed compared to December 2008**

- **June 2009, 2.8 million FTTH/B subscribers in the EU 36 (including Russia) and around 20.5 million Homes Passed**

Europe	Subscribers		
	June 2009 (incl. Russia)	December 2008	June 2008
Total without VDSL, FTTN/C/LA	2 768 680	1 661 895	1 332 331
Total FTTx + VDSL + FTTLA	4 695 030	1 877 074	1 877 074

Source: IDATE for FTTH Council Europe

FTTH in Europe - Overview: Players

► **Municipalities and Power utilities continued to initiate FTTH/B projects in 2009**

Players involved in FTTH/B	June 2009		June 2006	
Incumbents	26	10,8%	12	8,6%
Municipalities / Power Utilities	135	56,0%	92	66,2%
Alternative operators / ISPs	70	29,0%	20	14,4%
Housing companies & Other	10	4,1%	15	10,8%

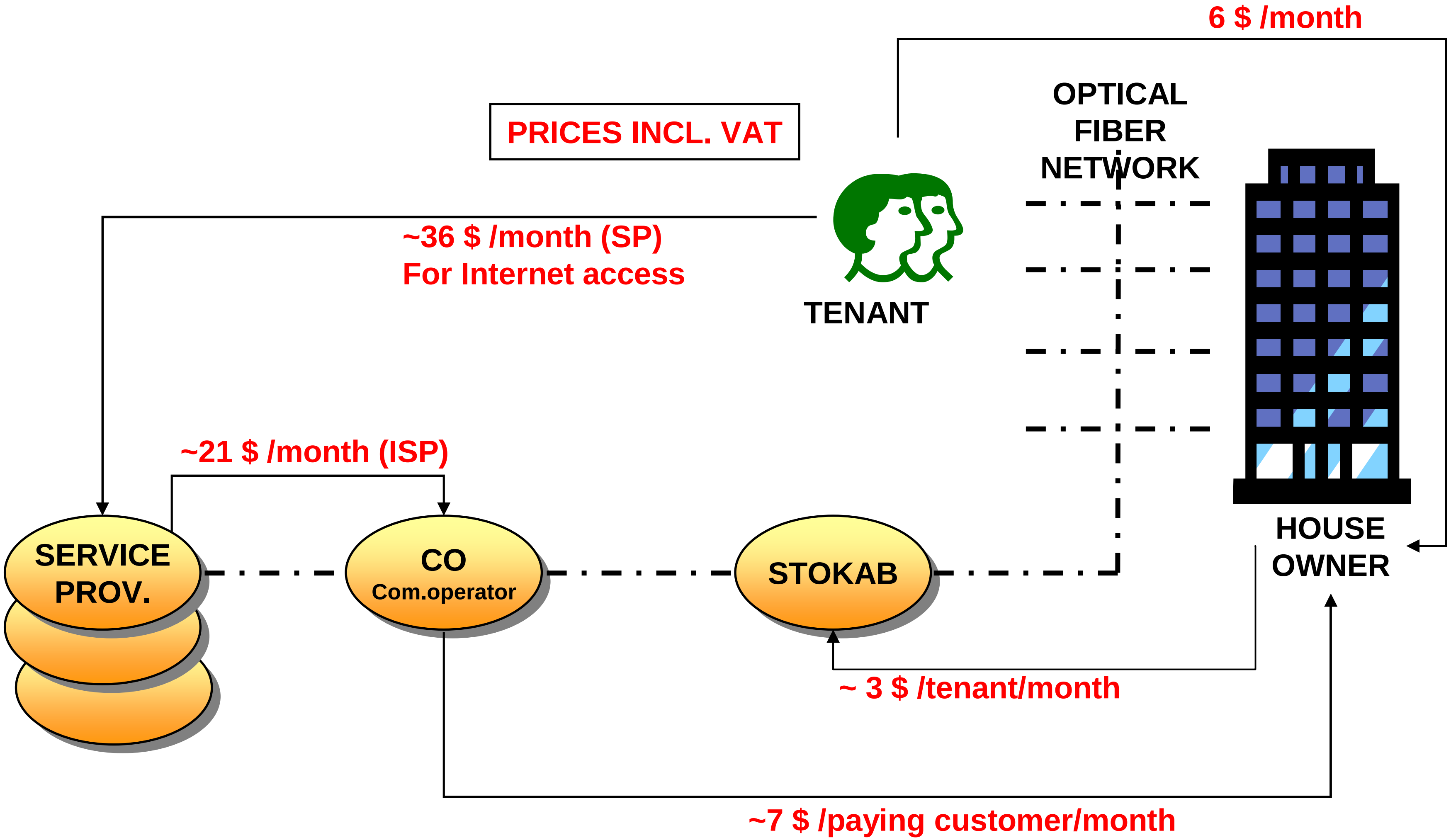
Source: IDATE for FTTH Council Europe

► **Open Network Models are often chosen by Municipalities**

► **Alternative operators are very dynamic and represent at June 2009, including Russia, <u>75% of total European FTTH/B subscribers</u> base (adding Beeline & Comstar – Russia, Fastweb –Italy, B2 –Sweden, Numericable – France, T2 –Slovenia)**

Familje Bostader: Housing Company in Stockholm

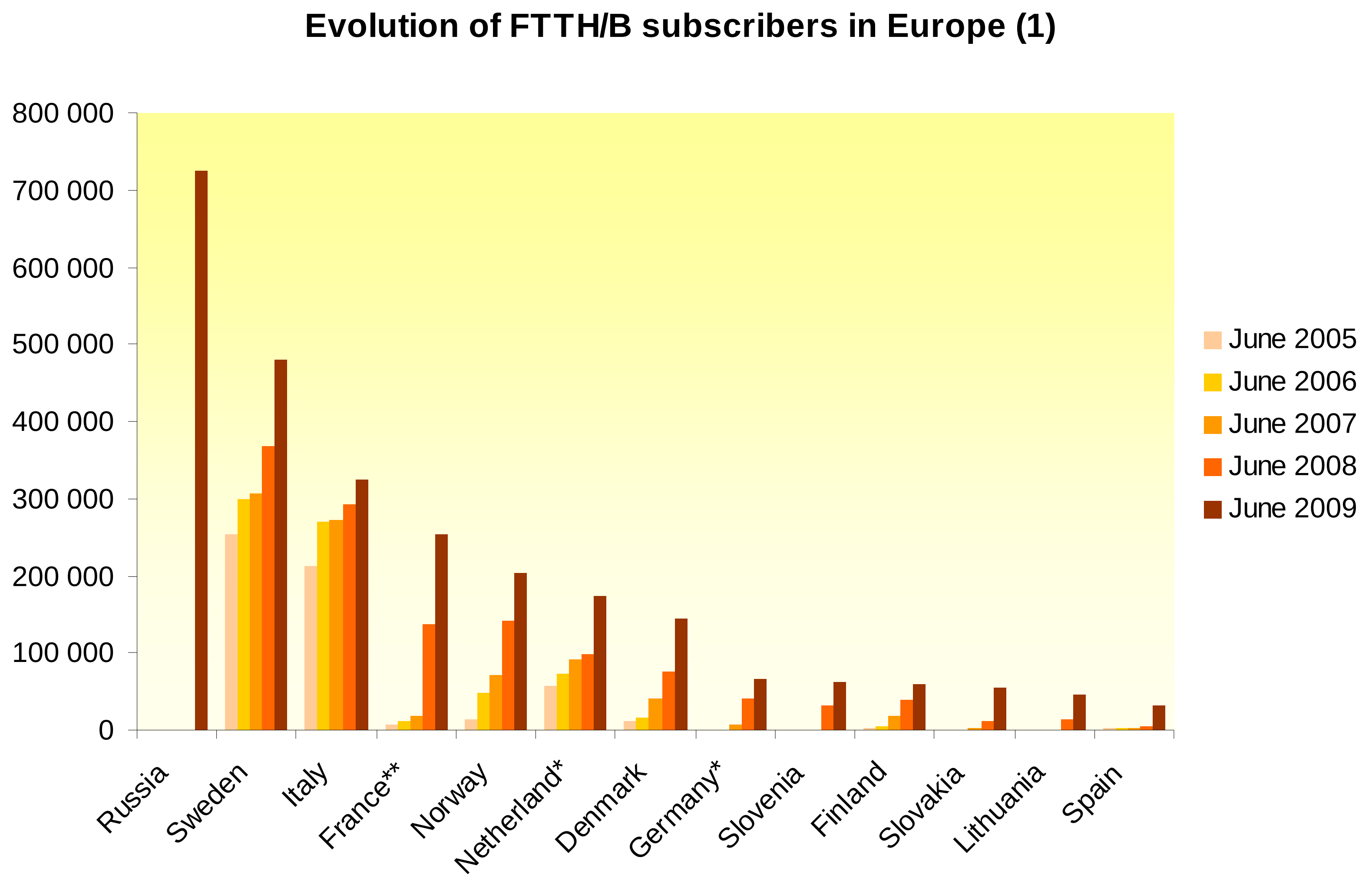
Exemple of Open Network Business Model: Familje Bostader



Source: IDATE - FB

Europe’s FTTH leaders

FTTH/B subscribers in Europe by country



(1) Here FTTx means Fiber-to-the-Home or Fiber-to-the-Building or Fiber-to-the-Office or Fiber-to-the-Dormitory

* Excluding VDSL / VDSL2, FTTC, FTTN deployments by incumbents

** Including FTTB deployments from Numericable

Source: IDATE for FTTH Council Europe

FTTH leadership in Europe: Technologies

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- In June 2009, FTTB architecture and Ethernet technology as well as MDUs passed are clearly leading NGA deployments in Europe

Total Europe at June 2009

- **42% of subscribers on FTTH**

  (from 52.8% in December 2008)
- **58% of subscribers on FTTB**

  (from 47.2% in December 2008)

- **71% of Homes Passed are MDUs**
- **29% of Homes Passed are SDUs**

- **81% of subscribers on Ethernet**

  (from 80.8% in December 2008)
- **19% of subscribers on PON**

  (from 19.2% in December 2008)

Architectures FTTH & FTTB, choice of technology PON & Ethernet and Dwellings (in % of subscribers as of June 2009)

	Architecture, Technology and Dwellings deployed (in %)					
	FTTH	FTTB	PON	Ethernet	MDU	SDU
Andorra	100	0	100	0	50	50
Austria	80	20	10	90	63	37
Belgium	na	na	na	na	50	50
Bulgaria	100	0	100	0	na	na
Croatia	90	10	10	90	70	30
Cyprus	100	0	100	0	50	50
Czech Republic	80	20	20	80	60	40
Denmark	75	25	15	85	43	57
Estonia	50	50	100	0	70	30
Finland	50	50	0	100	58	42
France	35	65	55	45	55	45
Germany	20	80	30	70	80	20
Greece	0	100	0	100	100	0
Hungary	na	na	100	0	na	na
Iceland	100	0	15	85	66	34
Ireland	80	20	5	95	52	48
Italy	5	95	5	95	95	5
Latvia	100	0	50	50	70	30
Lithuania	75	25	0	100	60	40
Luxembourg	100	0	100	0	na	na
Malta	na	na	na	na	na	na
Netherlands	90	10	5	95	57	43
Norway	100	0	0	100	44	56
Poland	100	0	5	95	60	40
Portugal	100	0	100	0	80	20
Romania	na	na	na	na	na	na
Russia	0	100	na	na	100	0
Serbia	na	na	na	na	na	na
Slovakia	100	0	95	5	70	30
Slovenia	100	0	0	100	73	27
Spain	90	10	100	0	63	37
Sweden	50	50	10	90	50	50
Switzerland	100	0	10	90	59	41
Turkey	100	0	na	na	na	na
Ukraine	30	70	90	10	80	20
United Kingdom	100	0	na	na	20	80

Source: IDATE for FTTH Council Europe

FTTH Public Funding in Europe

Infrastructure competition vs Wholesale & Open Model

National vs Local

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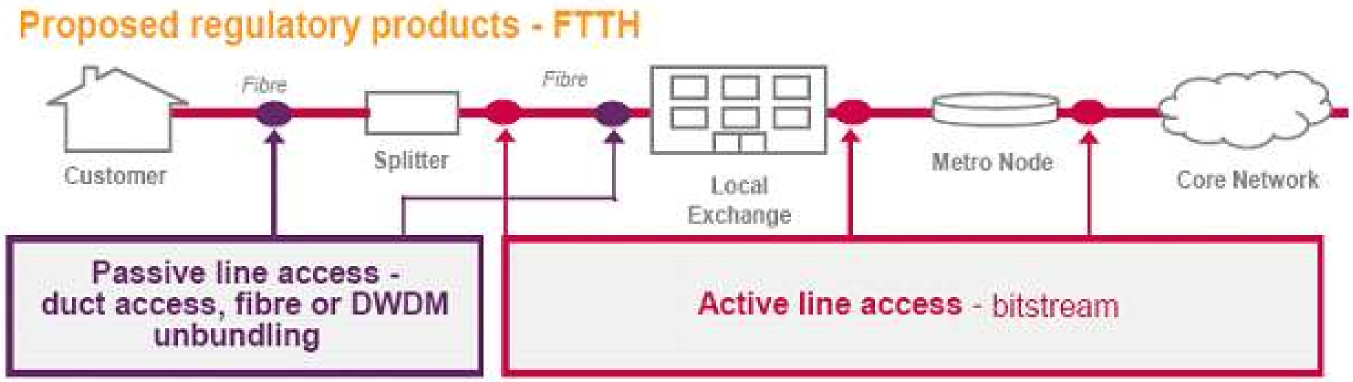
Infrastructure competition vs Wholesale & Open Model

► Wholesale & Open Model

- OFCOM in the UK promoting ALA (Ethernet Wholesale)



Source : OFCOM

- 2 or 3 Layers Open Model in Sweden, Denmark or the Netherlands

► Infrastructure competition: Portugal & France sharing ducts

- Incumbent's ducts are an essential infrastructure

- Access to Incumbent's civil engineering

must be guaranteed to allow all operators to invest

National vs Local

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► **National Approach: Greece…but also Portugal**

- Development of an open-access passive network that will provide FTTH to approx. 2,000,000 homes and businesses, in Athens, Thessaloniki and at least 54 other cities across Greece

- Indicative project budget: 2.1 billion EUR

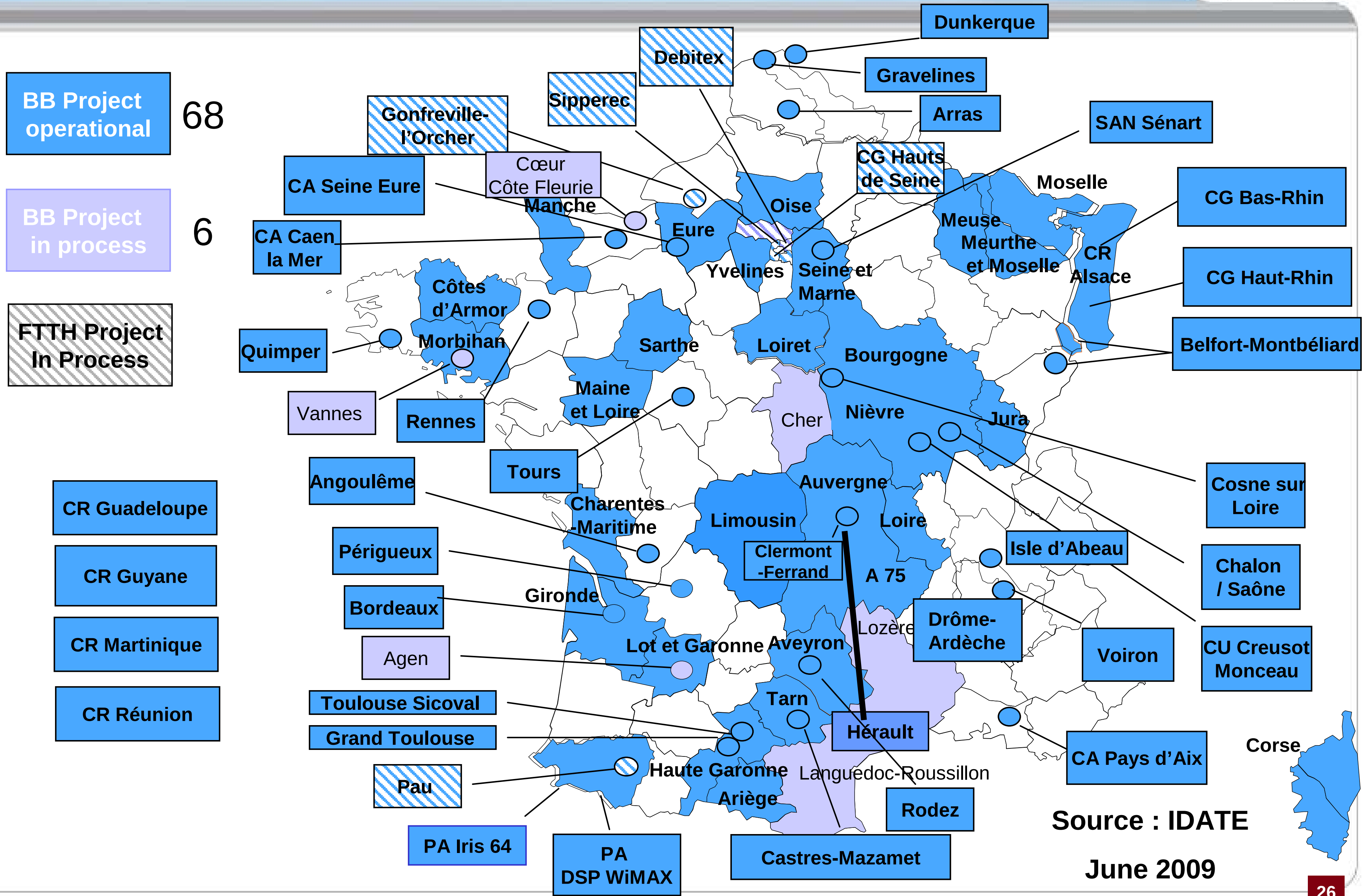
- There is a decision for project co-funding by the state and private investment.

► **Local Approach: France and investment of Regional & Local networks**

- These rollouts represent an investment of over 2 billion EUR (50% being private funds)

- They have had a real impact – especially on the development of unbundling and on bringing FTTx access to business parks and public sites

National vs Local: French Case & Local Bodies involvement



National Plan: Australian Case

National Australian Plan: First NBN

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- Initially, in April 2008, the Australian Government launched a first call for proposals (RFP) for the deployment of the NBN (National Broadband Network)

- The RFP specified that FTTN or FTTH deployments were required to provide download speeds of 12 Mbps minimum to cover 98% of the population

- Nearly A$ 4.7 billion (3 billion EUR) would be spent by the Government to NBN

- The RFP was completed in November 2008 and 5 consortia were selected to compete. Telstra, the incumbent, saw its bid rejected

- The total cost of the network was then estimated at A$ 15 billion (9.6 billion EUR) over 5 years

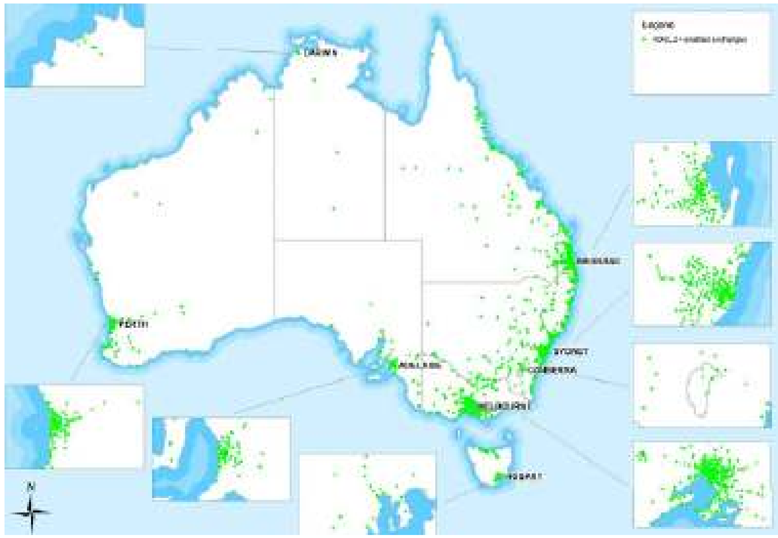
- Several voices were raised in the country about the utility of NBN.

National Australian Plan: First NBN

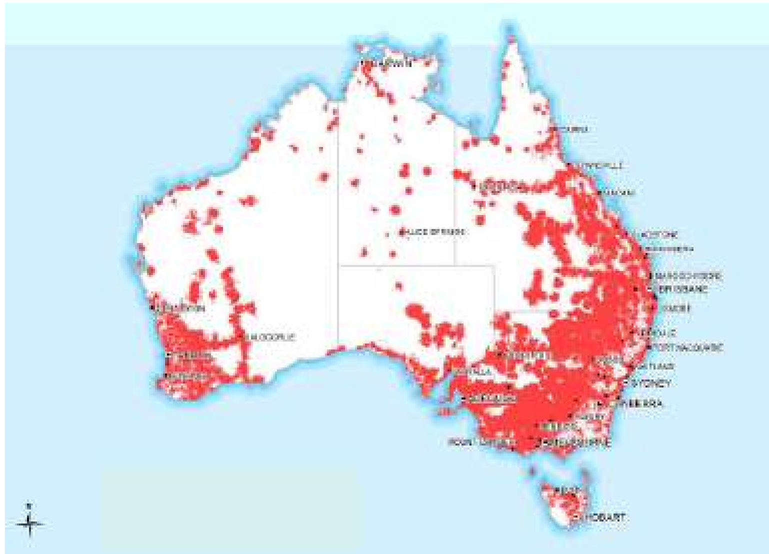
- **Currently, the network of Telstra ADSL2 + is available for 48% of the Australian population (20 Mbps max)**

- **The NBN would cover 98% of the population to a minimum of 12 Mbps**

Telstra ADSL 2+ network in 2008



NBN network coverage



Source: Australian Government

National Australian Plan: New NBN

- To general surprise, last April 7, Australian Prime Minister announced the cancellation of the NBN tender for a new plan far more ambitious

- Thus the Government will set up a public company and that he will own at 51%. This company will essentially build a FTTH network that will be able to grant access to 100 Mbps to 90% of the Australian population by 2018

- The estimated cost of the network is a $ 43 billion (27.4 billion Euros) and the state will initially invest A $ 4.7 billion (3 billion EUR)

- 49% stake in the company will immediately be opened to private operators and therefore in this process, Telstra is not excluded. Then within 5 years after the end of the network construction, the Government should sell its stake

- According to the Government, the construction of the network should create 25 000 jobs per year each year during its construction

- The network construction should begin in early 2010 in Tasmania

Dynamics for FTTH

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Conclusion – Dynamics for FTTH

- **Maturity of technologies**
  - Ethernet deployed in Northern Europe
  - PON technologies are deployed worldwide: Asia, US, Europe
- **ARPU & Triple play Potential…**
  - Today Broadband ARPU will be enhanced with FTTH as a vast portfolio of services will be possible
  - IPTV combined with Connected TV to be launched with offered possibilities for new services
- **FTTH to be deployed for final access… but also for LTE backhauling**
  - How to deploy a final access FTTH network and mutualise investment for Mobile Broadband Backhauling?
- **Government & Regulator as well as Local Bodies roles will be key**
- **FTTH : ARPU potential & New players**
  - New players will come: Housing companies, developers, Civil Engineering companies,…
  - VOD, SVOD, HDTV, Super HD, 3DTV . First services to leverage the ARPU… others to be invented … for Residential as well as for SMEs

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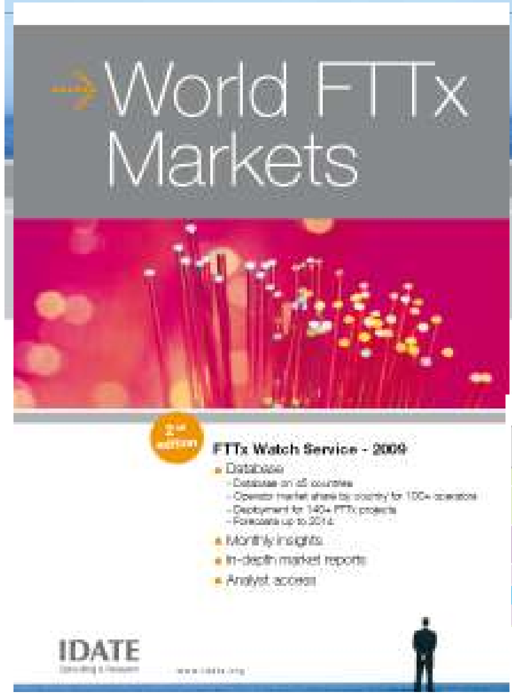

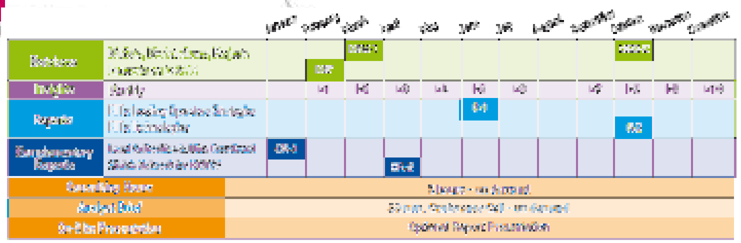

Understanding the Digital World

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