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FTTH European Panorama

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IDATE

Consulting & Research

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Understanding
the
Digital World

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▶ Study Background: Objectives, available results

▶ FTTH in Europe: Overview

- Projects
- Global figures
- Players involved

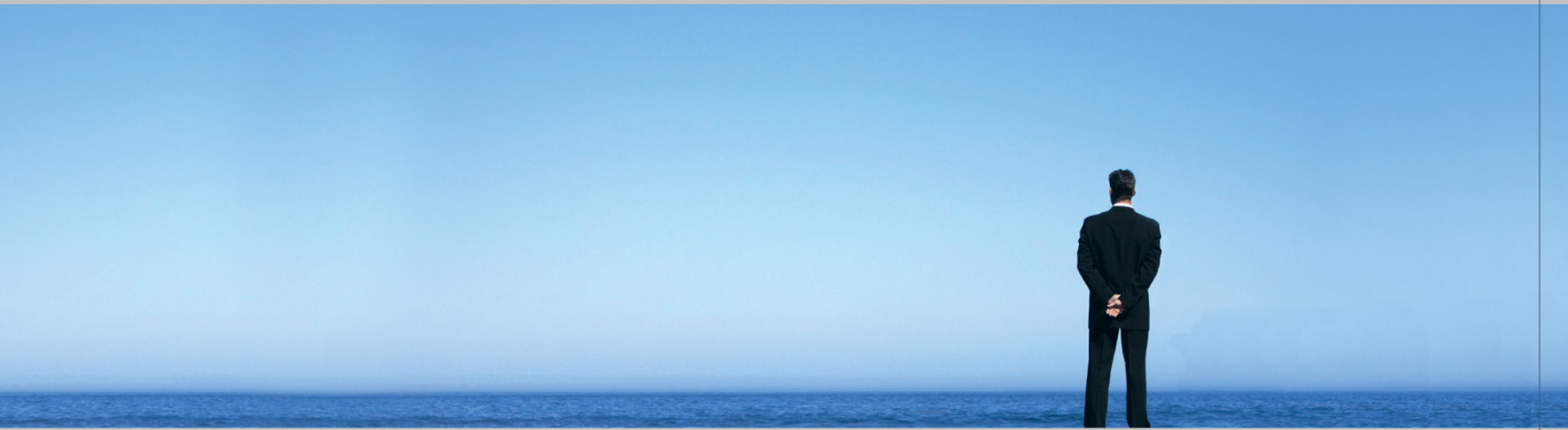
▶ Europe's FTTH leaders

- Countries subscribers bases
- Countries Homes Passed
- Architecture & Technologies

▶ FTTH/B in Eastern Europe

▶ FTTH/B in Middle East

▶ Conclusion



Study Background

Objectives, available results

Background of the Study

- ▶ **IDATE has been commissioned by the FTTH Council Europe to provide a comprehensive overview of FTTH deployments in Europe (EU 27 + Norway, Iceland, Switzerland & Andorra) as well as five countries in Eastern Europe and global panorama in Middle East at December 2008 (6th 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 Eastern Europe and Middle East

Available results for Europe

► 224 projects listed

Qualitative



Quantitative



	December 2008 (1)	
	FTTx subscribers	Homes/Buidings passed
Sydvst Energi	6 500	42 000
SEAS-NVE	7 700	50 000
EnergiMidt	7 800	75 000
HEF	2 000	40 000
SEF	6 000	18 000
NEF	1 000	3 000
DONG Energy	15 500	150 000
Energi Fyn	4 500	25 000
TRE FOR	10 000	60 000
MidtVest Bredband	5 000	55 000
NRGi Fibernet	na	9 000
ComX	3 500	na
Other (2)	21 000	95 000
Denmark (*)	90 500	622 000
TDC	26 400	na
Denmark (**)	116 900	622 000

T2

Identification Operator/Organisation

T2 is an alternative ISP in Slovenia which launched its services in 2004. Today the ISP covers 75% of population.

Key parameters

T2 launched its FTTH services in October 2006, so before the Incumbent. According to various sources, T-2 is solely an ISP, the infrastructure is build and owned by a Slovenian construction, telecommunication and communal company called Gratel. Gratel is building this network for leasing it to all ISP that would show interest in providing fiber services. Network covers cities of Ljubljana, Kranj and Koper.

T2 also deployed a VDSL network across Slovenia covering most of the cities since October 2005. T2 by his VDSL & FTTH offers is very competitive in the Slovenian market.

The roll-out of FTTH infrastructure began in January 2007.

T-2 currently has FTTH network live in the following cities : Ljubljana, Kranj, Koper, Novo mesto, Murska Sobota, Velenje, Šenčur, Destriak. T-2 will add Maribor and Nova gorica to this list shortly.

FTTH offers start at 14euros per month for 10Mbps connections until 100euros per month for 100 Mbps.

Figures

Number of Households/Business Units passed
2,000 houses passed (June 2007, IDATE Estimates)
100,000 HH passed (end 2007 - information from Annual Report according to Telekom Slovenije)
125,000 HH passed at June 2008 (IDATE estimates)
200,000 HH passed at end 2008

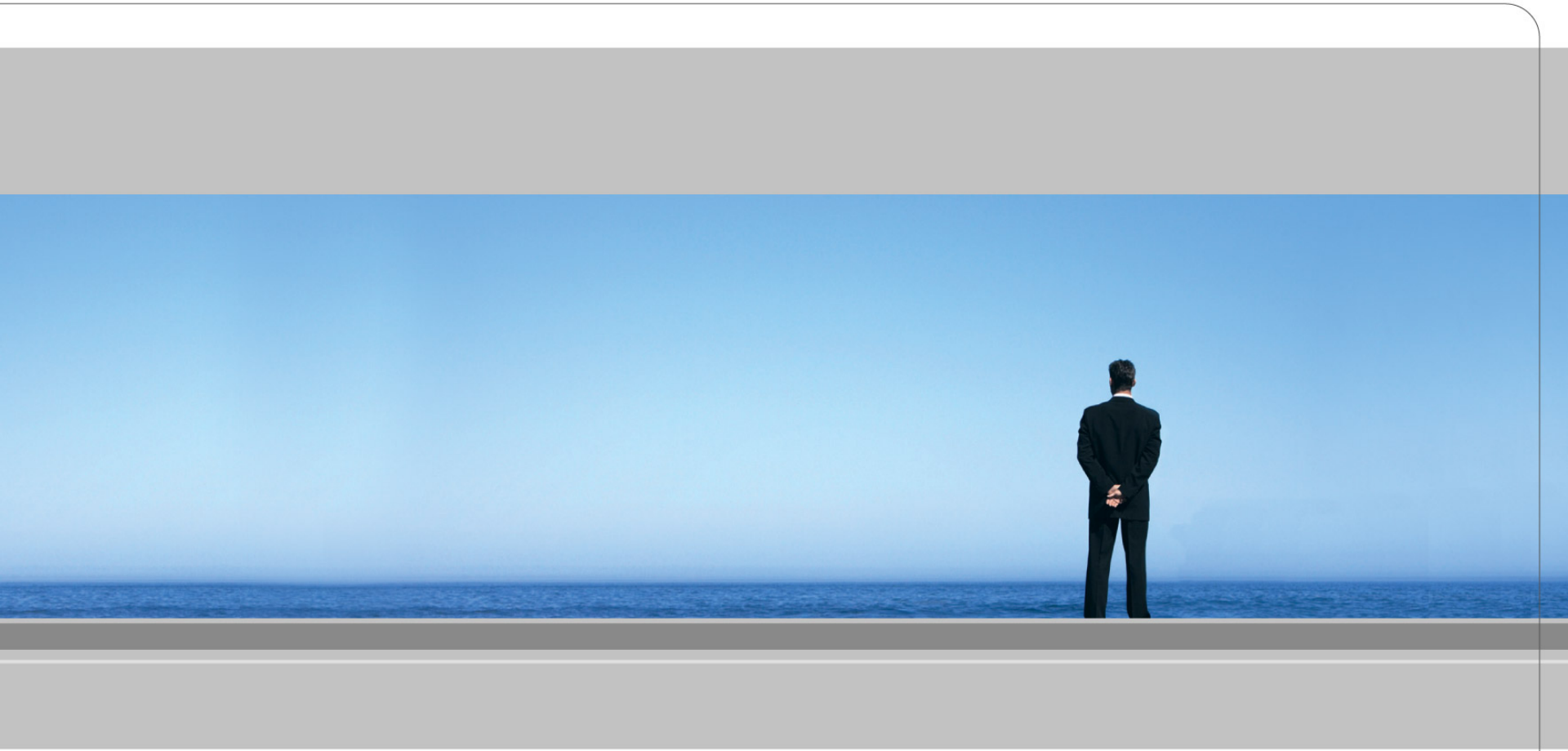
FTTx subscriber base
500 Subscribers (June 2007, IDATE Estimates)
9,000 subscribers (end 2007 - information from Annual Report of Telekom Slovenije)
25,000 subscribers at June 2008 (IDATE estimates)
31,000 FTTx subscribers at end 2008

Technical parameters

Each user is connected to the node with a pair of optical fibers. T-2 is using point to point Ethernet with an end user capacity of 1Gbps symmetrical.

The main provider of FTTH edge equipment is Extreme Networks

Source: IDATE for FTTH Council Europe



FTTH in Europe

Overview

FTTH in Europe - Overview: Projects

- ▶ IDATE has identified 224 FTTx projects in Europe of which 111 are new initiatives since mid 2005
- ▶ Some significant FTTH/B European deployments at December 2008

Countries	Players		Home/Building passed (December 2008)
Denmark	DONG Energy	Power utility	150 000
	Energie Midt	Power utility	75 000
	TRE FOR	Power utility	60 000
Finland	TeliaSonera	Incumbent	400 000
France	France Telecom	Incumbent	500 000
	Illiad/free	Alternative	300 000
	SFR	Alternative	250 000
	Numericable	Cable operator	3 400 000
Germany	Wilhelm Tel	Public	100 000
	M-Net	Public	80 000
Italy	Fastweb	Alternative	2 000 000
Netherlands	Reggefiber	Infrastructure operator	350 000
Norway	Lyse	Power utility	170 000
Slovakia	T-COM	Incumbent	200 000
	Orange Slovensko	Alternative	215 000
Slovenia	T2	Alternative	200 000
Spain	Telefonica	Incumbent	250 000
Sweden	B2	Alternative	390 000

Source: IDATE for FTTH Council Europe

FTTH in Europe - Overview: Global Figures

- December 2008, nearly 1.7 million FTTH/B subscribers in the EU 31 and around 11.2 million Homes Passed...penetration is low!

Europe	Penetration subs/Homes passed		
	Dec 2008	June 2008	June 2007
Global FTTH/B without VDSL, FTTN/C/LA	14,77%	15,07%	25,02%

- A growth of 25% in terms of subscribers and 27% in terms of Homes Passed compared to June 2008

Europe	Subscribers			
	December 2008	June 2008	June 2007	Growth Dec 2008/June
Total without VDSL, FTTN/C/LA	1 661 895	1 332 331	989 049	25%
Total FTTx + VDSL + FTTLA	2 694 038	1 877 074	1 079 099	44%

Europe	Homes/Buildings passed			
	December 2008	June 2008	June 2007	Growth Dec 2008/June
Total without VDSL, FTTN/C/LA	11 248 595	8 840 890	3 953 619	27%
Total FTTx + VDSL + FTTLA	26 829 195	23 564 155	14 643 669	14%

FTTH in Europe - Overview: Players

- **Municipalities and Power utilities continued to initiate FTTH/B projects in 2008**

Players involved in FTTH/B				
	December 2008		June 2006	
Incumbents	22	9,8%	12	8,6%
Municipalities / Power Utilities	131	58,5%	92	66,2%
Alternative operators / ISPs	61	27,2%	20	14,4%
Housing companies & Other	10	4,5%	15	10,8%

Source: IDATE for FTTH Council Europe

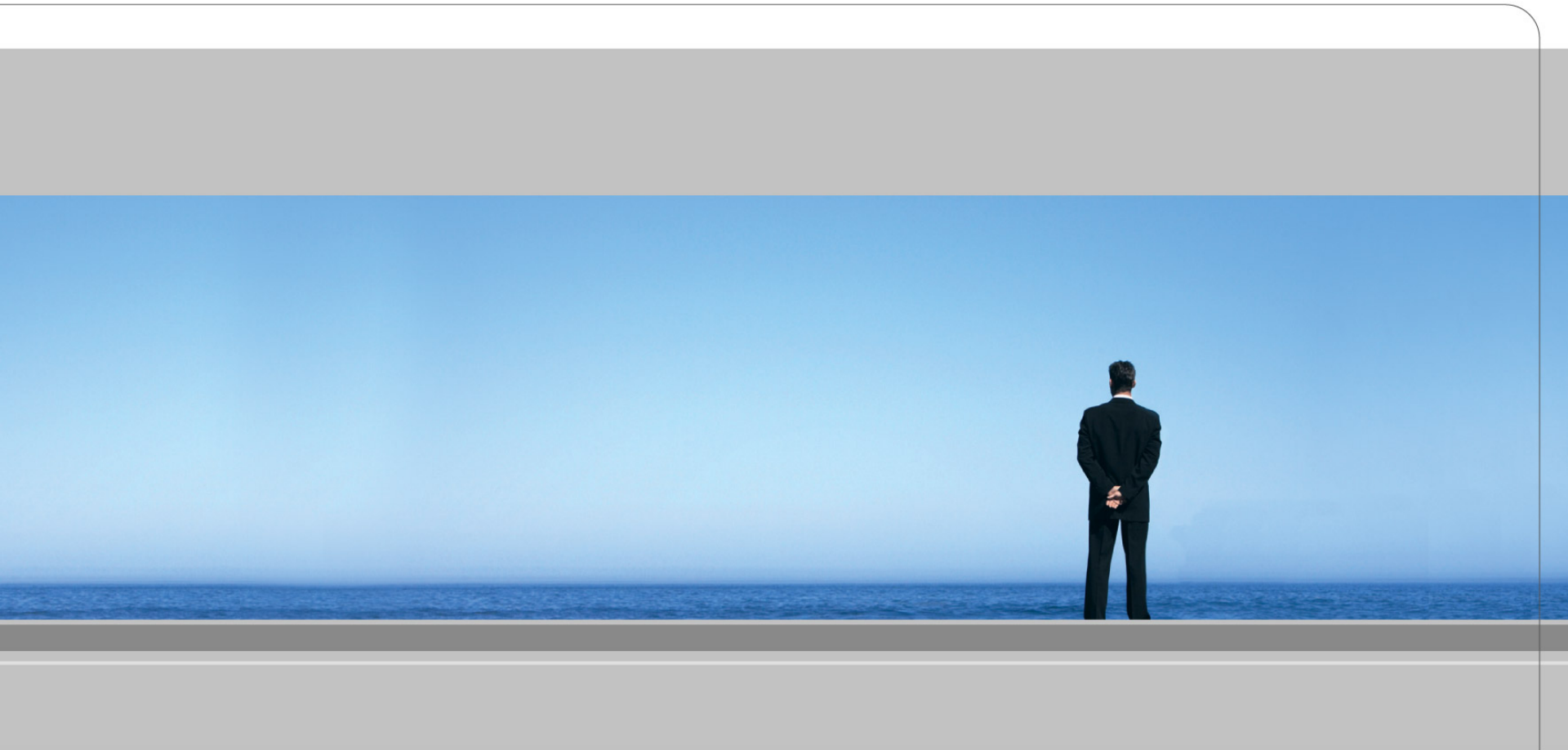
- **Open Network Models are often chosen by Municipalities**
- **Alternative operators are still dynamic and represent at end 2008, nearly 40% of total European FTTH/B subscribers base (adding Fastweb –Italy, B2 –Sweden, Numericable –France, T2 –Slovenia)**

FTTH in Europe - Overview : Players

► Breakdown of homes passed for FTTH/B

Breakdown of players involved in FTTH/B (Number of homes passed as of December 2008)				
European Countries	Incumbents	Municipalities/Utilities	Alternative operators/ISPs	Housing companies and Other
Andorra	16 500			
Austria	3 500	32 500	5 000	
Belgium	500		4 000	
Croatia			14 000	
Cyprus			100	
Czech Republic		25 000		
Denmark		550 000	72 000	
Estonia	20 000			
Finland	400 000	12 000	4 470	3 500
France	500 000	5 200	3 950 000	
Germany		231 800	50 000	
Greece	na	na	na	
Iceland	1 500	22 000		
Ireland	100		21 000	
Italy	7 200	103 000	2 000 000	
Latvia	3 000		60 500	
Lithuania	40 000			45 000
Netherlands	na	355 260	45 840	171 900
Norway	na	248 500	1 500	24 500
Poland	265	40 000		
Portugal	50 000		150 000	
Romania			10 000	
Slovakia	200 000	15 000	215 000	
Slovenia	82 000		200 000	
Spain	250 000	38 000	10 000	
Sweden	120 000	316 000	426 600	47 400
Switzerland	10 000	11 500	780	
The UK	na	4 180	1 000	
Total homes passed	1 704 565	2 009 940	7 241 790	292 300
in %	15,2%	17,9%	64,4%	2,6%

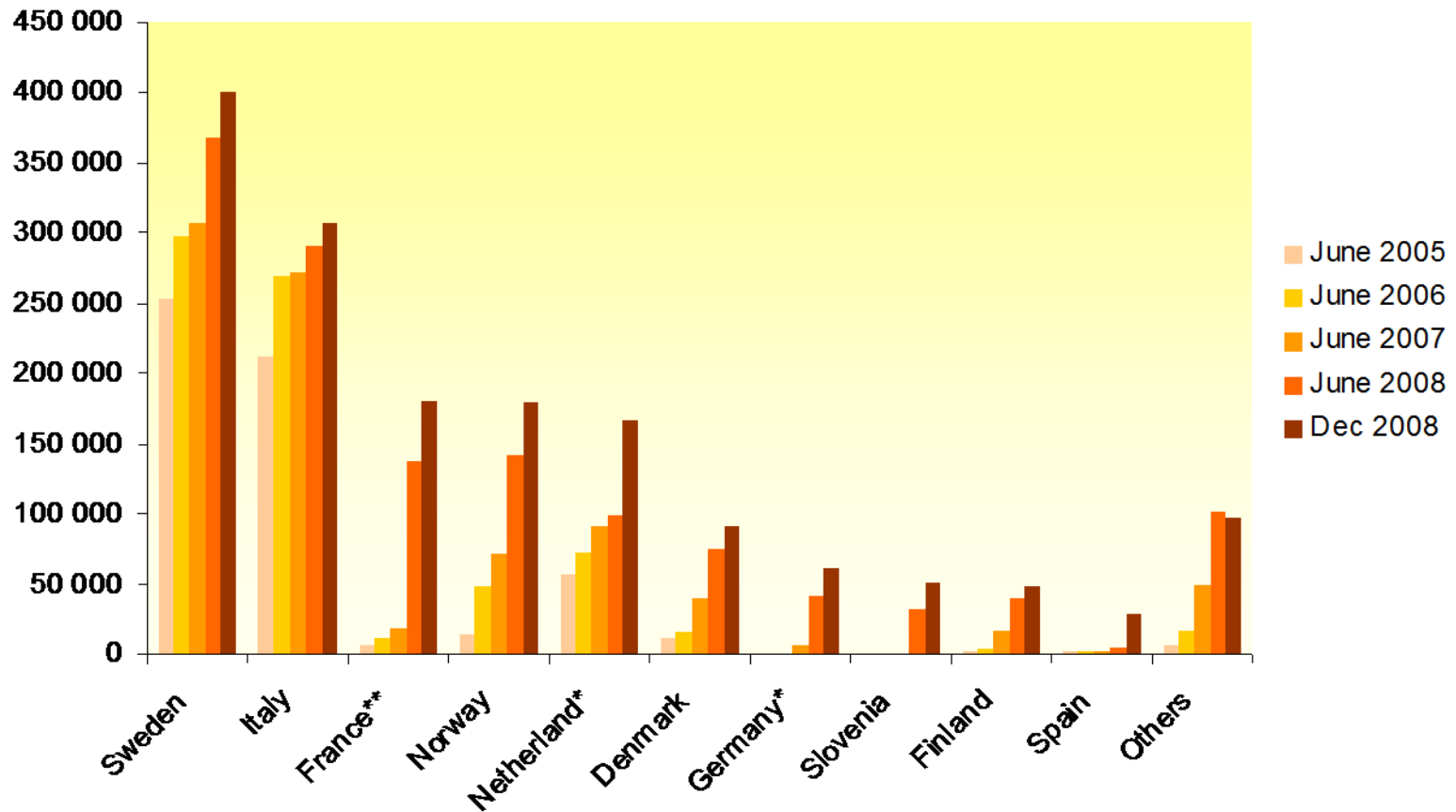
Source: IDATE for FTTH Council Europe



Europe's FTTH leaders

FTTH/B subscribers in Europe by country

Evolution of FTTH/B subscribers in Europe (1)



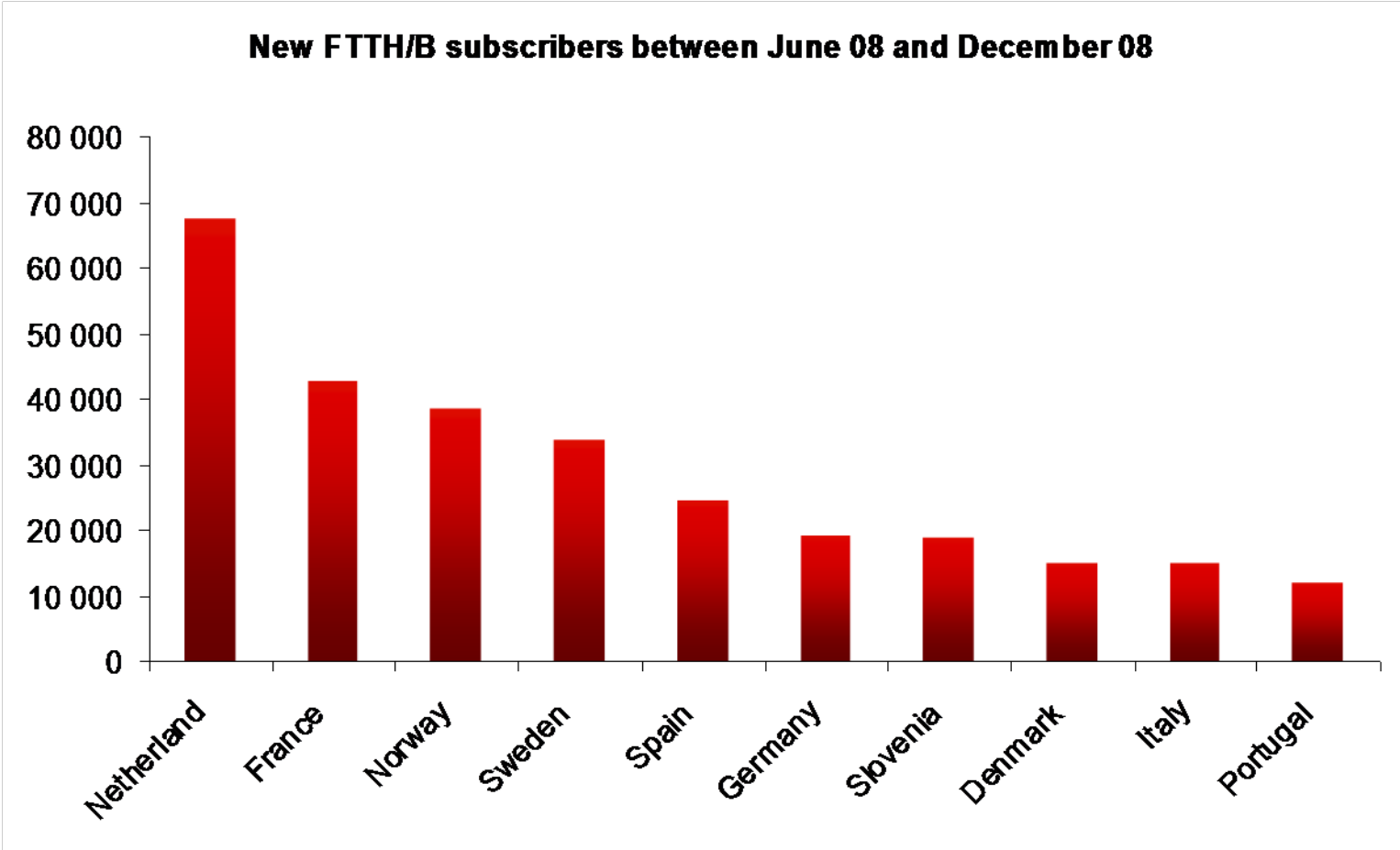
(1) Here FTTx means Fiber-to-the-Home or Fiber-to-the-Building or Fiber-to-the-Office or Fiber-to-the-Dormitory

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

** Including FTTB deployments from Numericable

Source: IDATE for FTTH Council Europe

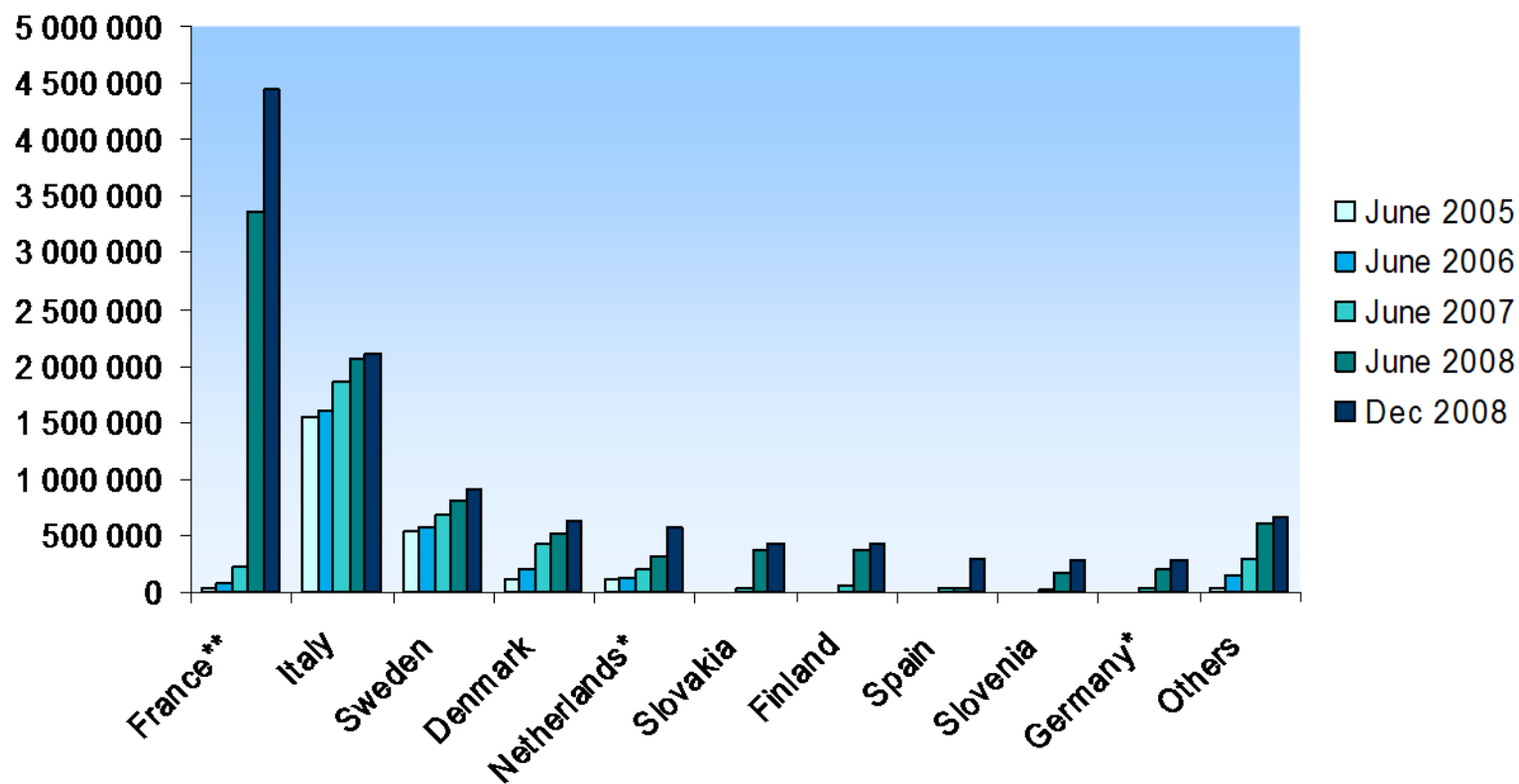
New FTTH/B subscribers in Europe by country



Source: IDATE for FTTH Council Europe

FTTH/B Home Passed in Europe by country

Evolution FTTH/B Homes Passed in Europe (1)



(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: Countries

- The majority of subscribers is still concentrated in 6 countries - Sweden, Italy, Norway, the Netherlands, Denmark and France: 79% of FTTH/B subscribers at end December 2008 (to be compared to 83% in June 2008)

Penetration rate subscribers/Homes passed for European leaders (December 2008)

Countries	Subscribers vs Homes Passed
Sweden	44,1%
Italy	14,5%
France	4,1%
Norway	65,6%
Netherland	29,0%
Denmark	14,5%
Germany	21,5%

Source: IDATE for FTTH Council Europe

- ... with a disparity of penetration rate between countries: 65.6% for Norway and 44.1% for Sweden vs 4.1% for France or 14.5% for Italy and Denmark)
- ... Players have now to increase their subscribers bases in order to recoup their investments ... for example Numericable in France stopped FTTB deployments

FTTH leadership in Europe: Technologies

Architectures FTTH & FTTB and choice of technology PON & Ethernet
(in % of subscribers as of December 2008)

- In the last 6 months, the momentum is more on the side of FTTH and PON
- But at end 2008, FTTH architecture and Ethernet technology are clearly leading NGA deployments in Europe

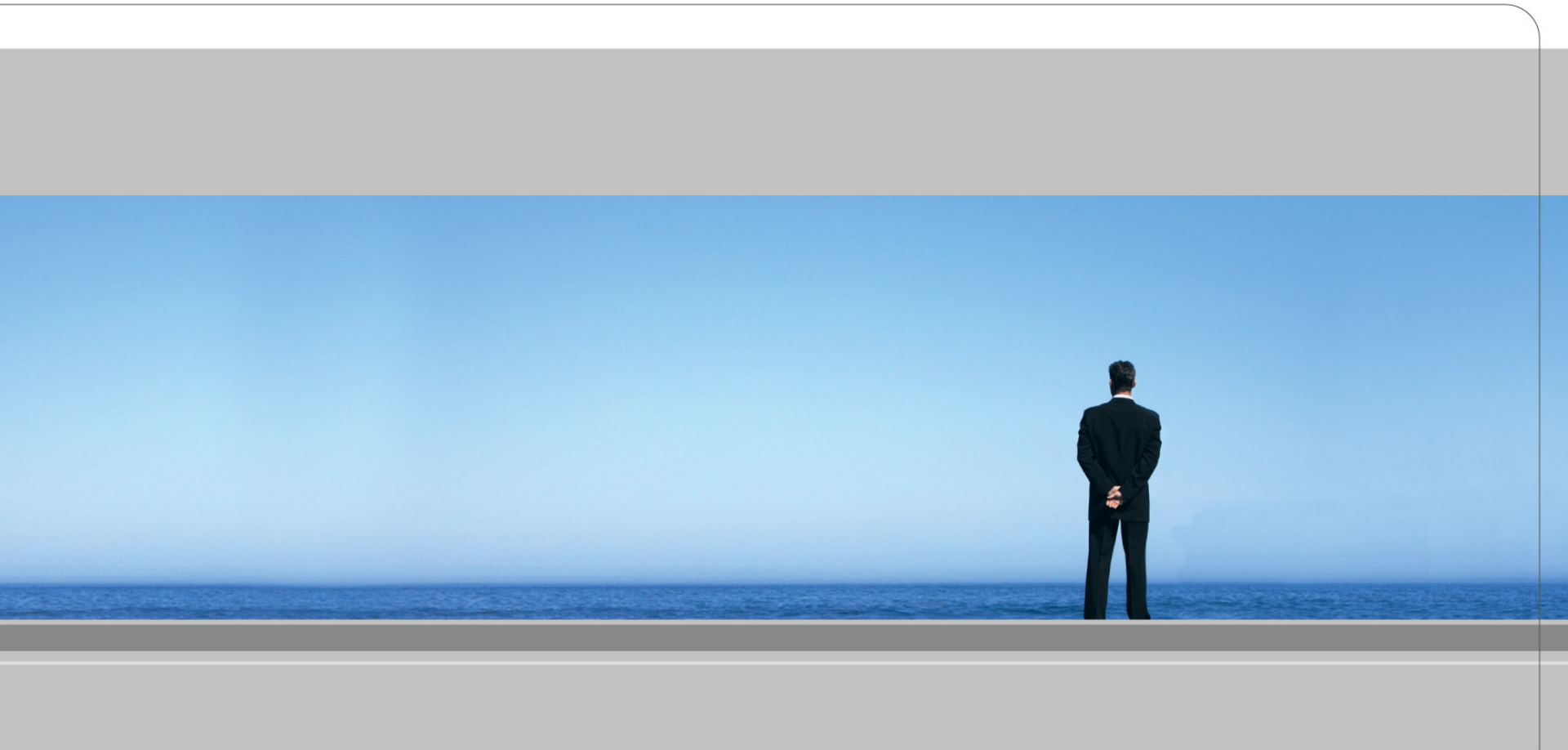
Total Europe at end 2008

- **52.8% of subscribers on FTTH**
(from 50.2% in June 2008)
- **47.2% of subscribers on FTTB**
(from 49.8% in June 2008)
- **80.8% of subscribers on Ethernet**
(from 83.8% in June 2008)
- **19.2% of subscribers on PON**
(from 16.2% in June 2008)

Architecture and technology deployed (in %)				
	FTTH	FTTB	PON	Ethernet
Andorra	100	0	100	0
Austria	80	20	0	100
Belgium	na	na	na	na
Croatia	90	10	10	90
Cyprus	100	0	100	0
Czech Republic	80	20	20	80
Denmark	80	20	15	85
Estonia	50	50	100	0
Finland	50	50	0	100
France (*)	35	65	55	45
Germany	10	90	0	100
Greece	0	100	0	100
Iceland	100	0	5	95
Ireland	80	20	5	95
Italy	5	95	5	95
Latvia	100	0	na	na
Lithuania	0	100	0	100
Netherlands	90	10	5	95
Norway	100	0	0	100
Poland	100	0	0	100
Portugal	100	0	100	0
Romania	na	na	na	na
Slovakia	100	0	95	5
Slovenia	100	0	0	100
Spain	100	0	100	0
Sweden	50	50	10	90
Switzerland	100	0	10	90
United Kingdom	100	0	na	na

(*) excluding Numericable

Source: IDATE for FTTH Council Europe



Panorama of FTTH/B in Eastern Europe

FTTx deployments in Eastern Europe

- ▶ **The situation of FTTx developments in Eastern Europe is very different from one country to another**
- ▶ **Croatia is already included in the European panorama**
 - ▶ 2 500 FTTH/B subscribers and 14 000 FTTH/B homes passed
- ▶ **In Russia, FTTB is becoming the main Internet access platform**
 - ▶ Deployments have been made by private operators VimpelCom and Comstar-UTS
 - ▶ The main architecture is FTTB
 - ▶ There are, at December 2008, more than 6.3 million FTTB homes passed, with a take-up rate of nearly 10% (630 000 FTTB subscribers)
- ▶ **In Ukraine, the players involved in FTTH/B deployments are the same as in Russia**
 - ▶ Both chose to target different towns : Odessa first for Comstar-Ukraine and Kiev first for VimpelCom (via Golden Telecom)
 - ▶ The number of homes passed and active subscribers are still confidential but expansion projects have been announced during the fourth quarter 2008

FTTx deployments in Eastern Europe

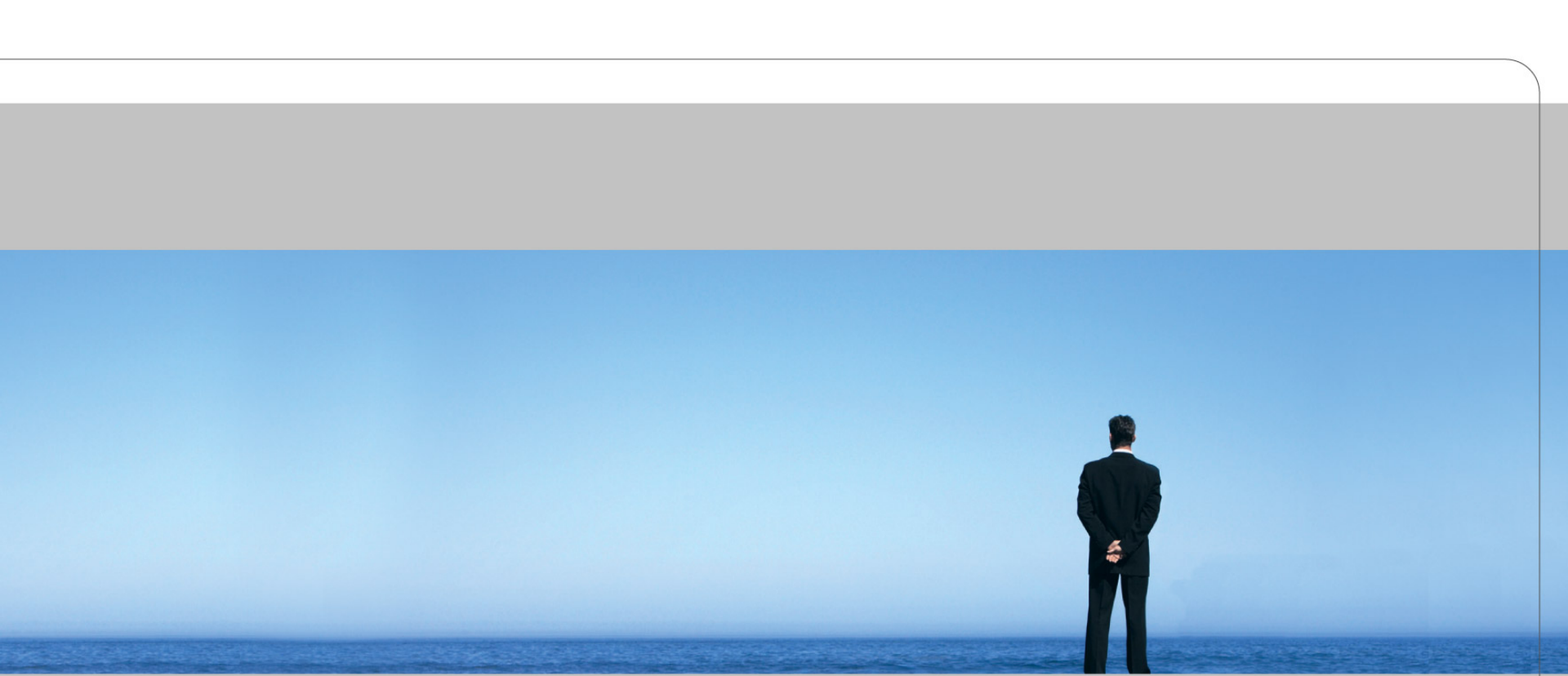
- ▶ **In other countries, there are no or at least very small FTTx projects**
 - ▶ Turkey is more VDSL2 oriented (incumbent)
 - ▶ In Serbia, dial-up connections are still the main access technology!
 - ▶ Macedonia is on tracks for deploying FTTH during 2009

- ▶ **Total number of FTTH/B subscribers and Homes Passed at end 2008 in Eastern Europe... vast majority located in Russia**

Zone	FTTH/B subscribers	FTTH/B homes passed
Eastern Europe (1)	635 000	6 400 000

(1) Russia, Serbia, Ukraine, Turkey, Bulgaria, Macedonia

Source: IDATE for FTTH Council Europe



Panorama of FTTH/B in Middle East

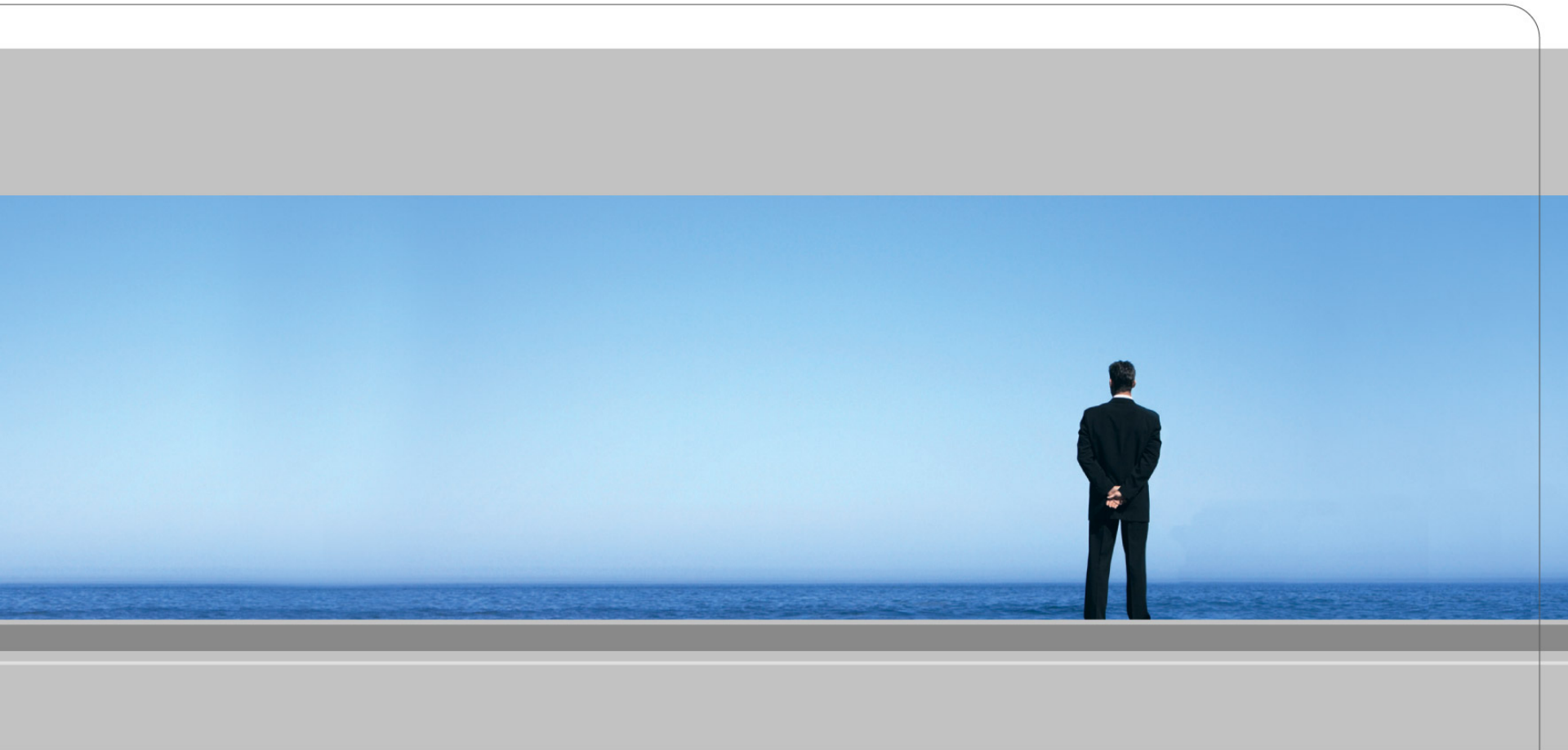
FTTx deployments in Middle East

- ▶ Key driver for FTTH/B deployments in the region is massive new housing programs
- ▶ First deployments started in Dubai in 2000 but nothing really happened until 2008
- ▶ Abu Dhabi, Dubai and Saudi Arabia (new cities programs) have the greatest potential
- ▶ Total number of FTTH/B subscribers and Homes Passed at end 2008 in Middle East

Zone	FTTH/B subscribers	FTTH/B homes passed
Middle East (1)	7 500	62 000

(1) EAI, Israel, Qatar, Bahrain, Saudi Arabia, Kuwait

Source: IDATE for FTTH Council Europe



Conclusion

Conclusion

- ▶ **The panorama of FTTx deployments in Europe as of December 2008 shows that the FTTH market in Europe continues to grow**
 - ▶ Especially in terms of Homes Passed (+27%) reaching around 11.2 million
 - ▶ Subscribers shows a +25% growth but are concentrated in 6 countries
 - ▶ Dynamism of countries like Netherlands (with Reggefiber's leadership) and France (FTTB/DOCSIS 3 deployed by Numericable to nearly 3.5 million homes)...but also Norway, Sweden, Denmark and Spain where Telefonica started an important roll out
 - ▶ Dynamic Eastern Europe countries like Slovenia (2 players involved), Slovakia
 - ▶ Major FTTH/B plans announced in Greece, Portugal
 - ▶ Main European incumbents are deploying or will soon deploy FTTH/B: France Telecom, Telefonica, Telecom Italia, Belgacom, KPN, Swisscom... others are still mainly positioned on VDSL: BT, Deutsche Telekom...
- ▶ **Nevertheless**
 - ▶ With nearly 1.7 million FTTH/B subscribers as of December 2008, Europe is still lagging behind the US and Japan (nearly 15 million FTTHB subscribers expected at end 2008)
 - ▶ **Players have now to increase their subscribers bases in order to recoup their investments** ... Numericable in France stopped FTTB deployments to concentrate on marketing/advertising
 - ▶ **Strong Barriers remains in Europe**
 - ▶ Facilitate access to MDU for operators (43% of subscribers on FTTB architecture),
 - ▶ Mutualise Civil Engineering costs, in particular outside dense urban areas: sharing infrastructures, operators co-investments
 - ▶ Key role of the regulators and governments

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Thank You!



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