

Very High Broadband –FTTx- in the local loop *Moving Europe towards the future?*

- **Fiber based broadband access is considered the long-term goal for last mile access**
- **Regulation is taking place in many European countries to enable the development of these New Generation Networks**
- **VDSL and FTTx disrupt current strategies of alternative operators and highly impact their broadband positioning.**

Network Migration

Competition and the appetite of the consumers for multimedia offerings entice operators to deploy the Next Generation of Local Loop Infrastructure, enabling higher Data Rates up to the Consumer. Fiber based broadband access is considered the ultimate and most future-proof last mile platform since its capacity for high bandwidth is unmatched by any other delivery platform. Major European operators have so far started their first launch of Fiber based network deployment.

This is a real change as up to recently fiber deployments in Europe were mainly outspringing from public initiatives, be it in France (among others: Sipperec, Conseil Général Hauts de Seine....) or in Netherlands (Amsterdam Rotterdam, Eindhoven....) Sweden (176 municipal projects with according to B2, 5-7% of all subscribers connected to a neutral active network), Iceland (Reykjavik...).

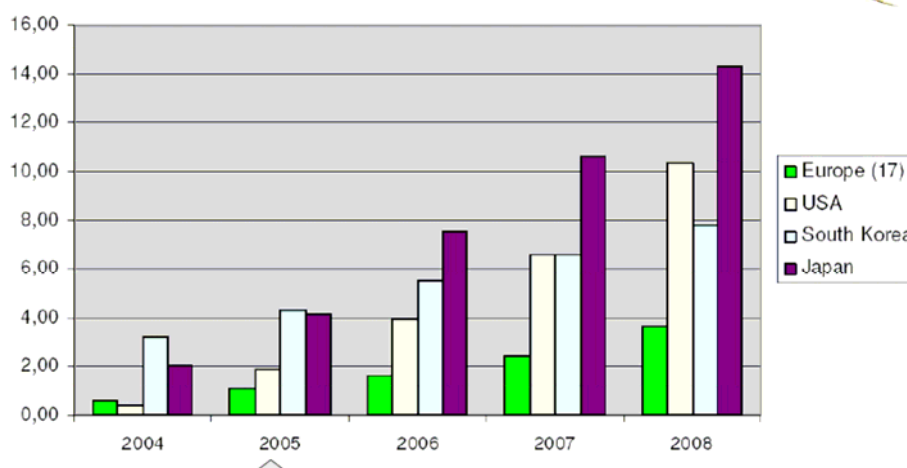
Despite these new activities outspringing from private operators, Europe is still expected to

lag behind the growth of FTTH occurring in North-America or in Asia.

In April 2007 NTT revealed that fibre-optic networks have overtaken ADSL lines as NTT's most popular broadband internet access method. According to the telco, ADSL subscribers fell for the first time since the introduction of ADSL in 2000, down 360,000 in the last year to 5.32 million. Meanwhile, during the same period 2.66 million fibre-optic users were added, taking the total to 6.08 million. The Japanese giant hopes to sign up 30 million subscribers to its fibre-optic networks by 2010, with 3.4 million coming in this fiscal year alone. At the end of 2006 NTT held a 67.5% share of the country's fibre-optic market.

One push for FTTH is the will of public authorities or governments, such as the French one declaring to have 4 millions FTTH households connected by 2012.

FTTx in mio 2004-2008



source: FTTH council 2006

Threefold barriers: costs, regulation and services

Announcements from operators have been multiple within the last months, especially in markets experiencing high competition. France seems to be one of the most active in this regard, where as

- France Telecom has claimed to skip the step of VDSL, deploying (PON) fiber networks in Paris and by 2009 in 10 major or medium cities in France. After this phase a mass market roll out is foreseen .
- 9cegetel having acquired Erenis and having started its roll out, intends to invest 300 million euros in FTTx over 2007-09, to connect 1 million homes with FTTH and acquire 250,000 customers.
- Iliad (Free Telecom) having announced to deploy in the main cities and having overtaken Cité Fibre and its FTTB network in Paris, plans to invest 1 billion € by 2012, covering 4 millions of households by then.
- and the national cable operator Numericable Noos has decided to cover 5 millions Households by 2010 with FTTB.

Investments are considerable, in total exceeding several billions of € within the coming 5 years for the French market alone. Other markets have already experienced significant private FTTx deployments: just to name the most significant ones: fastweb (acquired by Swisscom), B2 (acquired by Telenor) or electro-com in Russia.

Announcements have also occurred, even if broadband is still emerging such as in Slovakia, where Orange intends to invest 32 million € in 2007 and to reach 200 000 homes passed in ten cities at the end of 2007. The final objective is to cover the entire country according to Orange. Same plans have been initiated by various actors in CEE (Vestitel, Vodatel....).

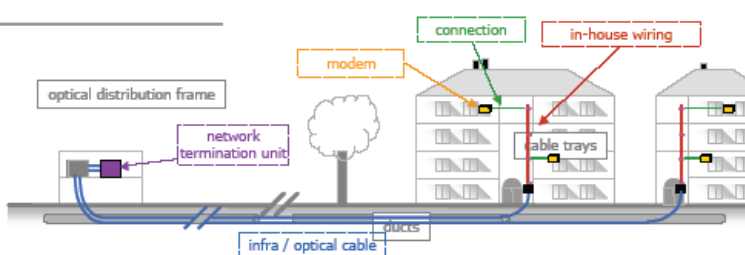
Costs for connecting the end user with fiber remain the main barrier, 60% to 80 % of the investments have to be done for the network and optical infrastructure (*based on bmp TC analysis, orange and arcep indications).

A key reason for the late uptake of European incumbents is the potential threat of having to unbundle the new investments to challenging operators. The US regulatory authority FCC clarified in October 2004 that new fiber network need not be shared with competitors. Following this SBC and Verizon have announced large deployments with SBC's "Project Lightspeed" fiber initiative targeted at 18 million households by the end of 2007, though plans have not been realised as announced up to now. In a similar way, the regulatory holiday for Germany's Deutsche Telekom has impulsed its investments of 3 billion € into VDSL.

Regulatory bodies in all European markets evaluate these NGN activities and are in the process of designing regulatory set of measures (SLU, bitstream offers, ducts/pipes sharing....). these will have a decisive impact on the deployment of FTTx infrastructure.

Last issue is the business plan for such deployment, operators involved into FTTx deployments require a high penetration (usually- according to bmp sources, a 16% to 25 % penetration is being forecasted). Main applications are HDTV, multi-access, multi-screen TV, photos, video, home working, sharing of contents... ARPU must be definitively higher than current DSL offerings in order to sustain the specific business case for FTTx.

source: Arcep 2007.



CapEx per subscriber	
Infrastructure & buildings	€1,000
Optical cable	€50
In-house wiring	€350
Connection	€100
Active network components	€300
Active subscriber components	€200
total	€2,000

Fttx- a disruptive technology for the alternative operators

VDSL and FTTH deployments by the incumbent hold a strong disruptive potential for alternative operators.

The challenges for altnets are highly dependent on defined factors such as length of the subloop, central office dismantling, price set by the incumbent for the new offers...

Alternative operators have so far and for most invested into LLU and own infrastructure in order to enhance their competitive broadband offerings and enable differentiation. Following the "ladder of investment" into FTTx endangers the business model/plan of the alternative telcos, this being in the first place solely to be realised in dense urban areas. Indeed implementing VDSL is cost intensive for the alternative operators, (according to a recent study of JPMorgan on some markets with a varying penetration rate assumption) the migration to VDSL might represent from 5% to 25% more investments than their current DSL deployments.

So what is the strategies to be employed by alternatives? Firstly the regulatory environment has a strong impact on their prospects for success. The business case is determined by local market conditions such as dark fiber rental costs, the structure of MDUs, and consumers characteristics and demand on top of the regulation issues.

Access to ducts and dark fibre infrastructure is one key for setting up the business case, the incumbent being mostly in a (more) favourable position. This topic has to be embraced by regulatory authorities and is recognised as key, it is thus in discussions in many markets be it Sweden, France, Germany, etc...

In order to gain (or maintain) full control of their service offerings and customer relationships, SLU (Subloop Unbundling) and FTTx seems for any significant alternative to be a must however.

These various forms of Very High Broadband platforms will co-exist, according to the market specifics. However the alternative operators will strive for significant or total coverage as it is important to challenge the incumbent. And scale advantages arise from volume...

A strong driver for Fttx deployments –beneath the competitive advantage of being able to offer bandwidth hungry services to a higher proportion of the population- is the cost reduction on OPEX (operational expenditures) Opting for VDSL or FTTH strategy enables the alternative telco to save the LLU (Line rental, Co-location....) related costs and to reduce its manpower expenses. According to analysts FTTH deployment is about 12 times the costs for unbundling, but solely 2,5 times the costs for a VDSL deployment, still implying strong business case and demand forecast.

Conclusion

While an overall surge in fiber deployments is expected, many uncertainties remain in order to secure the development of FTTx strategies of operators.

Key issue is about sharing the available infrastructure: national regulators have been increasingly addressing the mutualisation of ducts, pipes but also inbuilding ducts. Indeed a lack of regulation on access to the essential infrastructure might entail a new monopoly in markets, especially where competitive infrastructure such as cable networks is missing. It appears however that aside from very high population density areas, fiber will be

delayed or at least remain one of several platforms in the operator's technology portfolio. A key role for the FTTx market remain the public authorities which might develop policies to establish and operate neutral fiber networks or at least facilitate them as well as the utilities which have the opportunities to play a key role in this respect. (see our related market review scheduled later this year onto the subject). Clearly a panoply of different actors are diving into FTTx deployments, In view of current developments, one might think on the overall that this decade will see the beginning of the end of the copper era for broadband.

Previous Market Reviews are available on the website below.

bmp TELECOMMUNICATIONS CONSULTANTS GmbH	
Achillesstrasse 17, D – 40545 Duesseldorf GERMANY	
Tel.: +49 211-577973-0	Fax.: +49 211-577973-11
www.bmp-tc.com	
For further information please contact: Mrs. Nadine Berezak-Lazarus- CEO	
Tel.: +49 211-577973-0	Email: info@bmp-tc.com

We work with your visions !



About bmp Telecommunications Consultants:

bmp TC is a strategic consultancy in the field of telecommunications with a focus on central issues related to business models based on broadband platforms such as DSL, Wireless, Fiber or Powerline Communications. The longstanding experience & a wide-ranging industry view enables to create and launch new services for the market and support the implementation and introduction of unique and sound business models.

Selected recent references (complete references upon request)

Operators/ISPs	Utilities	Integrators, venues
<ul style="list-style-type: none">⇒ British Telecom⇒ Cegetel⇒ Electro-com, Russia⇒ France Telecom⇒ GTS Central Europe⇒ Smart Telecom	<ul style="list-style-type: none">⇒ Copel Brasil⇒ Compagnie Ivoirienne Energie⇒ Electricity Authority of Cyprus⇒ Electricité de France⇒ ESB Ireland⇒ RWE	<ul style="list-style-type: none">⇒ Cegelec⇒ EDEV-CPL⇒ Sogetrel⇒ Cmgj⇒ Tank & Rast
Investors	Public authorities	Suppliers
<ul style="list-style-type: none">⇒ Baring Vostok Capital Partners⇒ Bearing Point⇒ Durlacher⇒ Morgan Stanley	<ul style="list-style-type: none">⇒ African Telecom. Union⇒ Département Meurthe& Moselle⇒ DCMNR-Irish Government⇒ Luxembourg City⇒ Région Alsace/Alsace Connexia	<ul style="list-style-type: none">⇒ Hewlett Packard⇒ Itochu⇒ Legrand⇒ Mitsubishi⇒ Schneider Electric⇒ Siemens