

Creating a brighter future

Webinar:

**FTTH: THE Solution for Mobile Broadband?
Focus on Europe**

FTTH Council Europe

Our Vision: A sustainable future enabled by Fibre to the Home

Our Mission

- To accelerate FTTH adoption through information and promotion in order to enhance the quality of life, contribute to a better environment and increased competitiveness

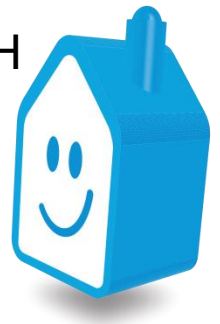
Organisation

- Founded in 2004, non-profit industry organisation
- More than 150 member companies



Webinar

- 20-25 minutes presentation
- 15-20 minutes Q&A
- Please write your questions in the questions box of the webinar system
- Relevant questions that are not answered during the webinar will be answered by email
- The slides will be available for download after the webinar
- The webinar is recorded and can be viewed as video-stream afterwards. The video will be available on the website of the FTTH Council Europe within one week
- Slides and information about the availability will be sent to registered attendees by email



FTTH: THE Solution for Mobile Broadband?

Moderator:

Jan Schindler

Chair

Market Intelligence Committee

Presenter:

Roland Montagne

Director Telecoms Business Unit

IDATE

_telecom
_internet
_media

FTTH: The solution for Mobile Backhaul

A study conducted by IDATE for FTTH Council Europe



IDATE

Consulting & Research

www.idate.org

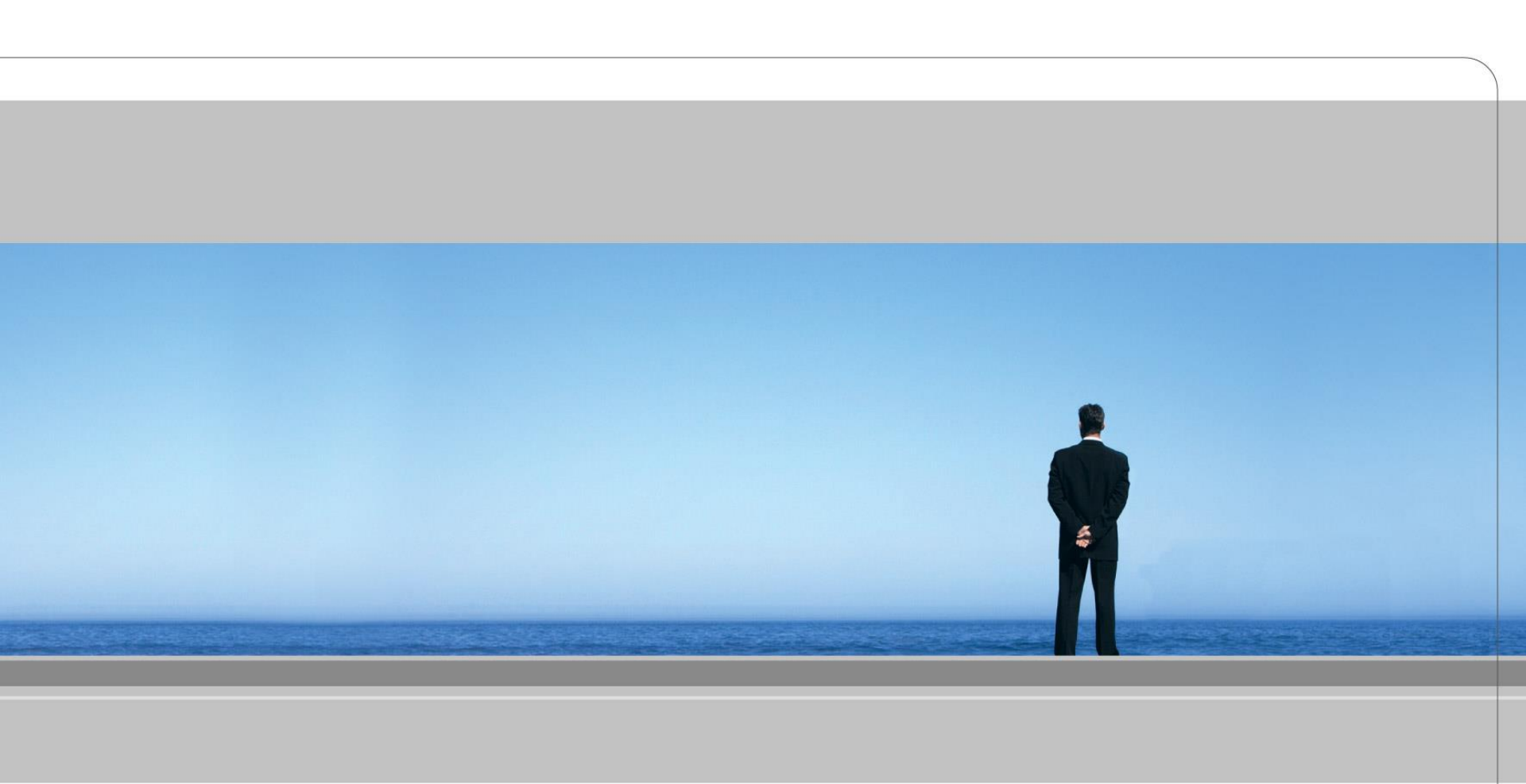
Understanding
the
Digital World

Contacts IDATE

Roland MONTAGNE
Director Telecoms Business Unit
+33 6 80 85 04 80
r.montagne@idate.org

June 6th 2013

- ▶ **New mobile technologies are improving network capacity and data rates**
- ▶ **Possible backhaul options**
- ▶ **Mutualise FTTH and LTE backhaul investments**
- ▶ **Context for Europe: A pioneer land and now LTE is starting!**
- ▶ **Study for FTTH Council Europe and APAC**
- ▶ **Key messages from Study Cases**



LTE will drive Mobile Data Explosion

New mobile technologies are improving network capacity and data rates

- Higher data rates and capacity are significantly impacting the mobile backhaul network
- The need is clear to invest in backhaul network upgrades to cope with rising traffic consumption

Mobile traffic consumption soaring sky-high

- Current mobile traffic growth is driven by data, strengthened by unprecedented intense adoption of tablets. IDATE estimates mobile traffic will exceed 127 Exabytes (127 million Terabytes) in 2020, an increase of 33-fold compared with 2010 figures.

LTE is delivering high data rates

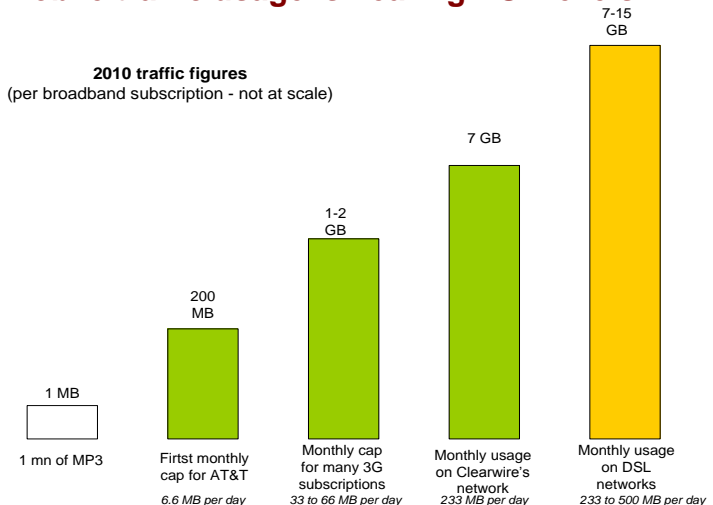
- LTE is providing more enhanced spectrum efficiency than previous radio access 3G technology. This implies an increase of data rates as well as capacity.
- Peak LTE theoretical downlink speeds can reach up to 300 Mbps.

LTE requires significantly more capacity

- The huge increase of mobile data traffic is provoking congestion in radio access and in backhauling networks
- LTE requires an average backhauling data rate of 80 Mbps for a 20 MHz spectrum bandwidth.

Mobile traffic usage is nearing DSL levels

2010 traffic figures
(per broadband subscription - not at scale)



Data rates of LTE networks

Operators	Peak downlink data rates	Peak uplink data rates
Verizon Wireless	75 Mbps	25 Mbps
TeliaSonera Sweden	35 Mbps	6 Mbps
NTT DoCoMo	37,5 to 75 Mbps	12,5 Mbps

Source: IDATE

Many backhaul options exist to cater the high-capacity demands of mobile networks

- ▶ Operators have a critical choice to make regarding the proportion of microwave links and fibre connections for their backhaul infrastructure
- ▶ They have to determine how long legacy services will be maintained, and how this impacts the pace of migration
- ▶ The choice of backhaul technology is heavily driven by cost considerations

Microwave or fibre?

- The decision on the appropriate physical support technologies is based on an operator's existing infrastructure, the related costs and the degree of urgency in completing its backhaul upgrade
- Microwave remains the best solution today for rapid migration without significant up-front investment. It is also suited to rural areas with a lack of fixed infrastructure
- Fibre remains a key long-term investment supporting both fixed and mobile access areas

Most operators tend to combine physical media

Operator	Country	Backhaul physical media
AT&T	USA	T1, fibre and microwave
BT	UK	E1, fibre and microwave
China Mobile	China	Fibre
NTT DOCOMO	Japan	Fibre
Orange	France	E1, DSL and microwave
T-Mobile	USA	50% fibre, T1 and microwave
TeliaSonera	Sweden, Norway	Fibre
Telstra	Australia	E1, DSL and fibre
Verizon	USA	Fibre and microwave

Source: IDATE

From smooth to straight pace of migration

- The integration of Ethernet can be achieved in several ways involving either the management of two separate networks or direct unique Ethernet network
- Each solution implies several levels of integration complexity and cost implications

One major key to backhaul upgrade is to mutualise FTTH and LTE backhaul investments

- Backhaul upgrade is definitely a superb opportunity for operators to share fixed and mobile investments : expanding fixed broadband access coverage while meeting backhaul needs

Backhaul: potential driver of FTTH deployment

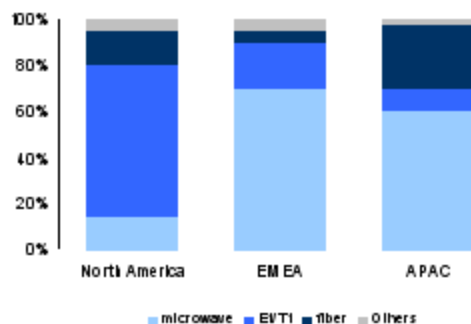
- LTE players – Verizon and TeliaSonera – are using deployed fibre infrastructure to backhaul LTE traffic
- Fibre expansion plans are being designed to include mobile backhaul needs (as with accelerated FTTx deployment by Deutsche Telekom)

Significant operators are using fibre as backhaul

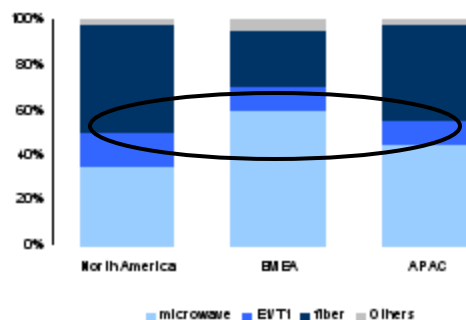
Operator	Number of fibre-fed cell sites	% of total cell sites	Strategy
China Mobile	260,000	95%	Reuse of TD-SCDMA backhaul for TD-LTE
T-Mobile USA	23,000	50%	Reduce costs significantly and expand footprint with new base station (with remote radio head)
AT&T	13,200	33%	Resell capacity to other operators
Verizon	8,900	20%	Resell capacity to other operators
Deutsche Telekom	8,000	50%	Maximise costs savings and optimise synergy between fixed and mobile infrastructure

Source: IDATE

Increasingly, cell sites will be fibre-fed

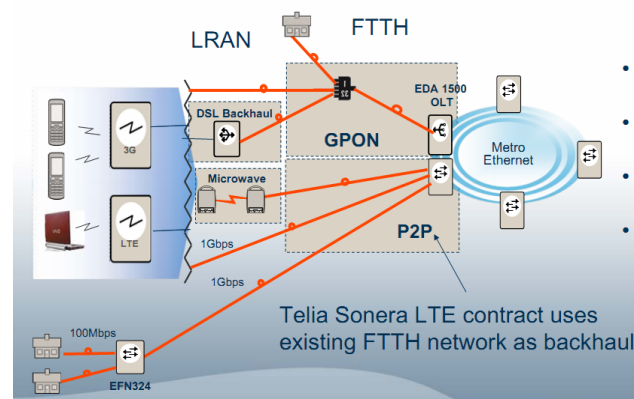


Source: IDATE



Source: IDATE

FTTH as LTE mobile backhaul

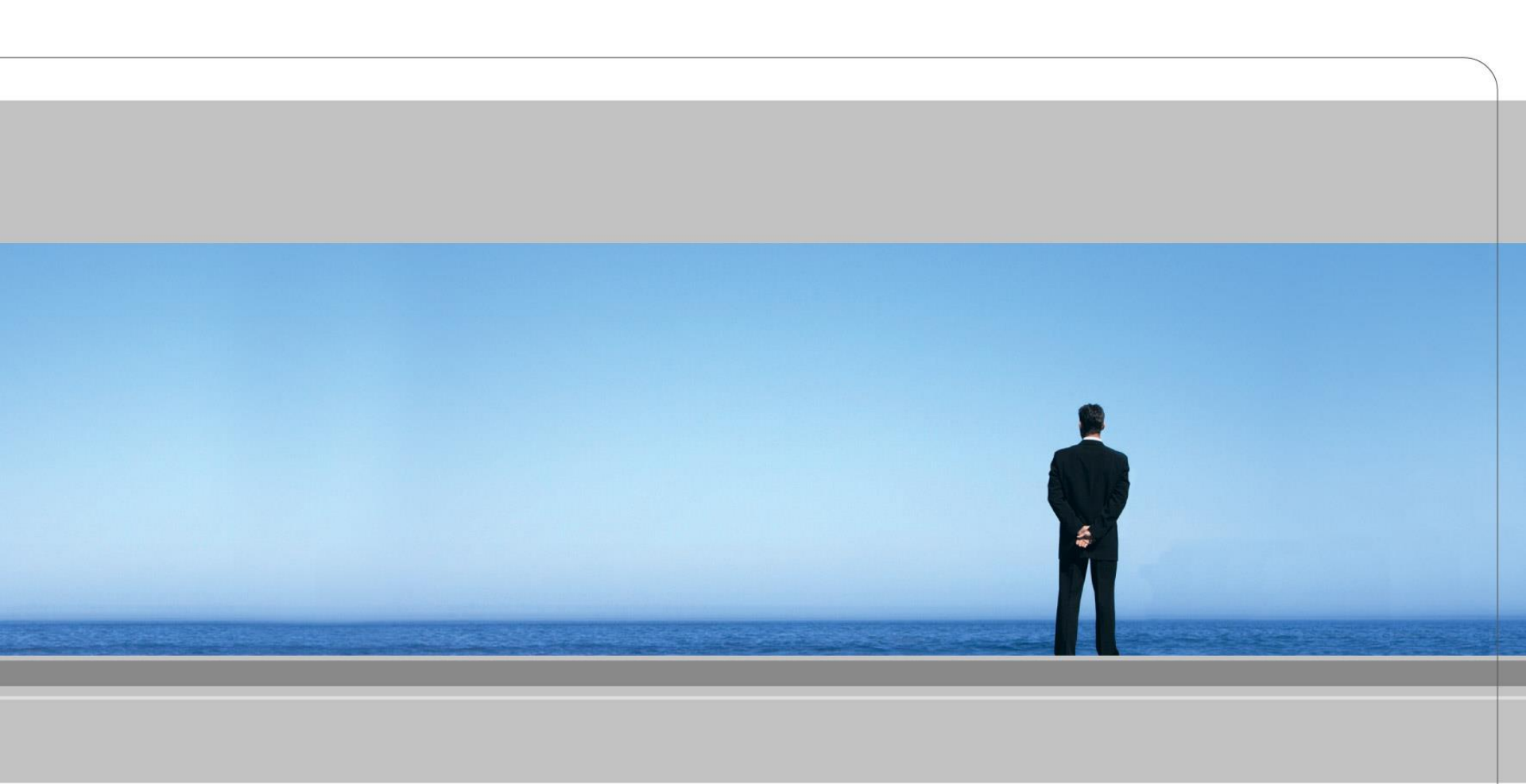


Source: Ericsson

Context for Europe: A pioneer land and now LTE is starting

It was at the end of 2009 that LTE entered the commercial sphere with TeliaSonera in Sweden and Norway. Even though these launches were restricted to the capital cities of Stockholm and Oslo, this was a very important landmark for LTE technology. In Europe we can mention the recent cases:

- Sweden: Following its initial launch in Stockholm, Telia has now expanded its LTE coverage to 17 Swedish cities in Sweden and it plans was to expand the coverage to 228 additional locations by the end of 2011.
- Finland: Sonera launched its commercial LTE network in December 2010. It was the first commercial LTE service in Finland. The service was started in Turku and Helsinki using the 2.6 GHz band.
- Denmark: TeliaSonera launched its LTE offering in Denmark, in December 2010. The network uses the 2.6 GHz band and, at the time of its launch, it covered Copenhagen, Aarhus, Odense and Aalborg where there is high demand for fast mobile broadband services. It expects to have covered 75% of the Danish population by end-2011.
- Germany: During the summer 2011, Vodafone, T-Mobile and O2 launched their commercial LTE services. In November 2011, Vodafone said that its LTE network was providing coverage to around 7.5 million German households.
- Central and Eastern Europe already have a clutch of commercial LTE networks in Estonia, Latvia, Poland). In Russia, in March 201, MegaFon, Vimpelcom, MTS and Rostelecom have agreed to share their LTE network. The network will be built by Yota and it will operate on the spectrum Yota already holds in 180 Russian cities, serving more than 70 million people by 2014.



Study for FTTH Council Europe and APAC

Study Cases

The main objectives of the study

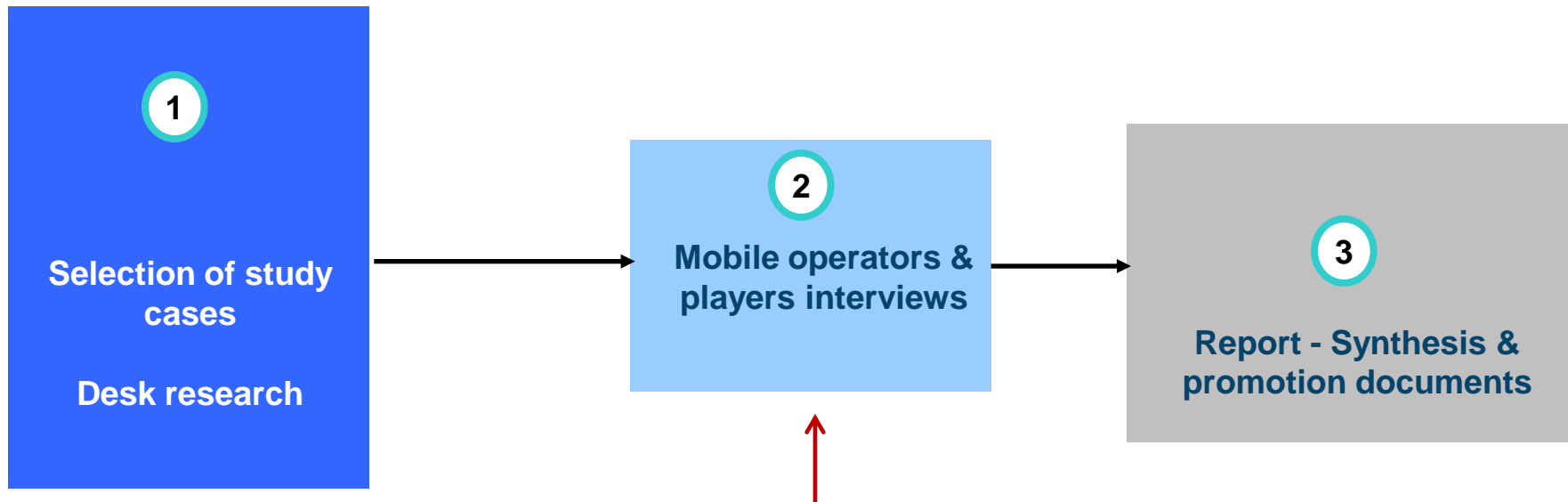
First objective will be to identify what will be the best study cases to handle for APAC and Europe in terms of FTTH for Mobile backhaul

Second objective will be to interview (by phone) key mobile operators & players in APAC and Europe on this specific issue

Third objective will be to propose to the FTTH Council APAC and Europe a report presenting key results of this interview campaign and corresponding analysis. A promotion document taking into account all the outputs of previous phases will be also delivered to the Councils APAC and Europe

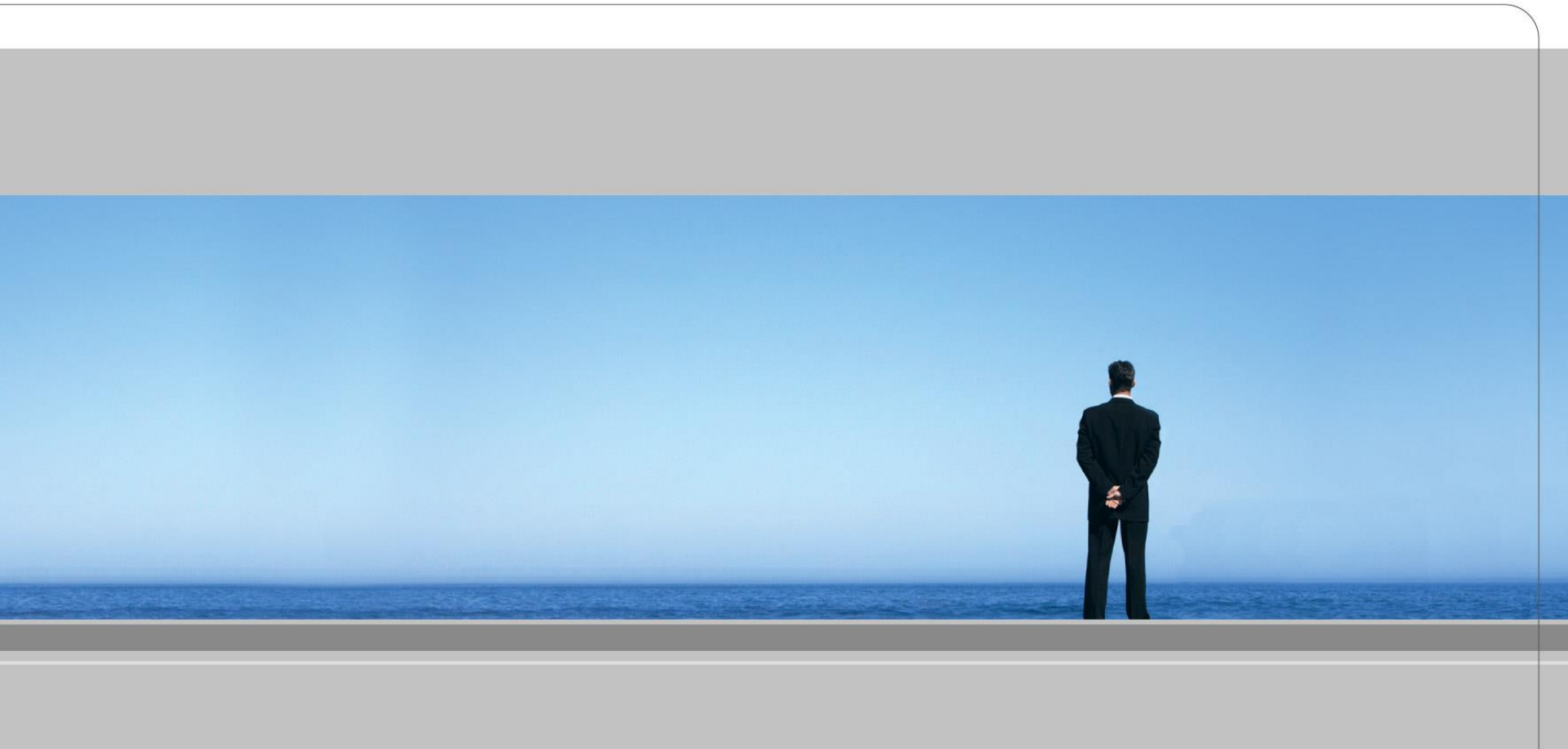
By this study, FTTH Councils APAC and Europe, by analysing key issues linked to FTTH usage for Backhauling, will have a powerful communication tool to educate and promote FTTH in their respective region, especially for Mobile Backhaul.

Proposed project general methodology: 3 phases



10 countries & 18 Telcos selected, for Phase 2 study cases:

- APAC Study cases: Japan (Softbank, NTT, KDDI), India (Bharti Airtel), Malaysia (Digi), New Zealand (Chorus), Australia (Telstra, Vodafone Hutchinson, Optus, NBN), China (China Mobile)
- Europe Study cases: Sweden (Telia Sonera, Telenor), Germany (Vodafone, T-Mobile), Portugal (PT, Vodafone), Italy (TI)



Key messages from Study Cases

Key Messages

- ▶ **With LTE Download and Upload Link will increase quickly driving Mobile broadband traffic explosion**
 - ✓ Study confirms that today LTE bases devices (smartphones) are already addressed with Download Link (DL) up to 100 Mbps and Uplink (UL) up to 50 Mbps.
 - ✓ In 2015 with arrival of LTE Advanced Terminals it is expected to reach 300 Mbps DL vs 50 Mbps UL.

- ▶ **Fibre for Mobile backhaul is already becoming the norm in advanced Mobile Network (LTE).....**
 - ✓ Nearly all the mobile operators here selected are increasing part of their backhaul network using fibre. Even if rhythms can differ and are linked to LTE rollouts, we can mention Vodafone, TeliaSonera, T-Mobile, Softbank, Telstra, China Mobile and PT
 - ✓ Portugal Telecom (PT) is probably one of the European leaders in this field: indeed end 2012, 90% of Mobile Base Stations are connected with Fiber.
 - ✓ PT did the choice in 2010 that he will use same Base Station sites for 2G, 3G and LTE. In 2011, PT also decided to engage a vast migration on his backhaul architecture migrating E1 SDH links to Ethernet based Links (1 Gb Ethernet for each BS).
 - ✓ This option gives no choice other than Fiber to connect Base Station. PT estimates that 8% of his BS will stay with MicroWave links (rural, mountain sites for example). So the connection with Fiber of BS will keep progressing in 2013.
 - ✓ China Mobile has 95% of its cell sites being fibre-fed !!

Key Messages

- ▶ **... But Telcos prefer at the moment to use dedicated P2P Ethernet link to connect BS, but this may change**
- ✓ When fiber is used for backhaul it is explain because of Mobile traffic explosion, but it is also linked to the migration on backhaul architecture from E1 SDH links to Ethernet based Links (1 Gb Ethernet for each Base Stations).
- ✓ Most of the time, and also because in players studied FTTH rollouts are not always well advanced (Deutsche Telekom, Vodafone, Telecom Italia, China Mobile), Ethernet P2P link are used and not at all GPON FTTH architecture.
- ✓ We have an exception that will shape the future of GPON for backhaul. This is the case of Portugal Telecom as the telcos has already deployed a vast FTTH and LTE network. Indeed GPON (coming from FTTH rollouts of PT) is also used for backhaul.
- ✓ PT is using the same Outside Plan (OSP) than FTTH network. PT over dimensioned his FTTH OSP and aside of the major use for residential FTTH, a part of the OSP is dedicated to connecting with Fiber (GPON or dedicated P2P Fiber):
 - Business Unit (Entreprises),
 - Base Station for Mobile Backhaul,
 - WiFi Hot Spots.
- ✓ When GPON is used it can originate from the same OLT but it will be dedicated GPON card for Mobile Backhaul. Indeed the splitting ratios are not the same.
- ✓ “We believe that the percentage of mobile backhaul using GPON will increase as GPON is more cost effective than P2P Fiber links”: PT quote

- ▶ **Furthermore the evolution towards small cells architecture configuration will redefine the backhaul need for mobile networks (capillarity of small cells)**
- ✓ **In today LTE rollouts in Europe & APAC, study's interviews confirmed that most of the time telcos are using still the same Base Station sites for 2G, 3G and LTE. Then the benefit of cell site already equipped with fiber during 3G times is obvious.**
- ✓ **Arrival of small cells and pico cells, as this is more and more forecasted by many vendors, will change things. Indeed capillarity of those small cells will be huge (this can include Pico and Femto cell at Home) and sooner Fiber to their backhaul will be needed also.**
- ✓ **This assumption have been widely confirm by nearly all the telcos interviewed during the study but the roadmap of adopting massively small cells architecture is not clear at all. Many mobile operators are examining the possibility launching RFI's but vast deployments are not here yet.**
- ✓ **Nevertheless this study confirmed that Small Cells can be a good candidate to absorb mobile traffic and fiber will be the ideal candidate for their backhaul need.**

Thank you!

Research

Watch Services



World FTTx Market

5th
edition

Ref. M12902
January-December

Understanding the FTTx challenges & opportunities

- **Database**
 - 70 countries & 5 zones covered
 - Rollouts by 150+ FTTx market players
 - Operator market share by technology
 - Vendor market share by technology
- **Monthly Market Insights**
 - Industry news and related analyses
 - Focus on highly topical issues
- **Analyst Access**



www.idate.org



Roland MONTAGNE
 Director Telecoms Business Unit
r.montagne@idate.org
 +33 6 80 85 04 80

World FTTx Market - Watch Service Calendar

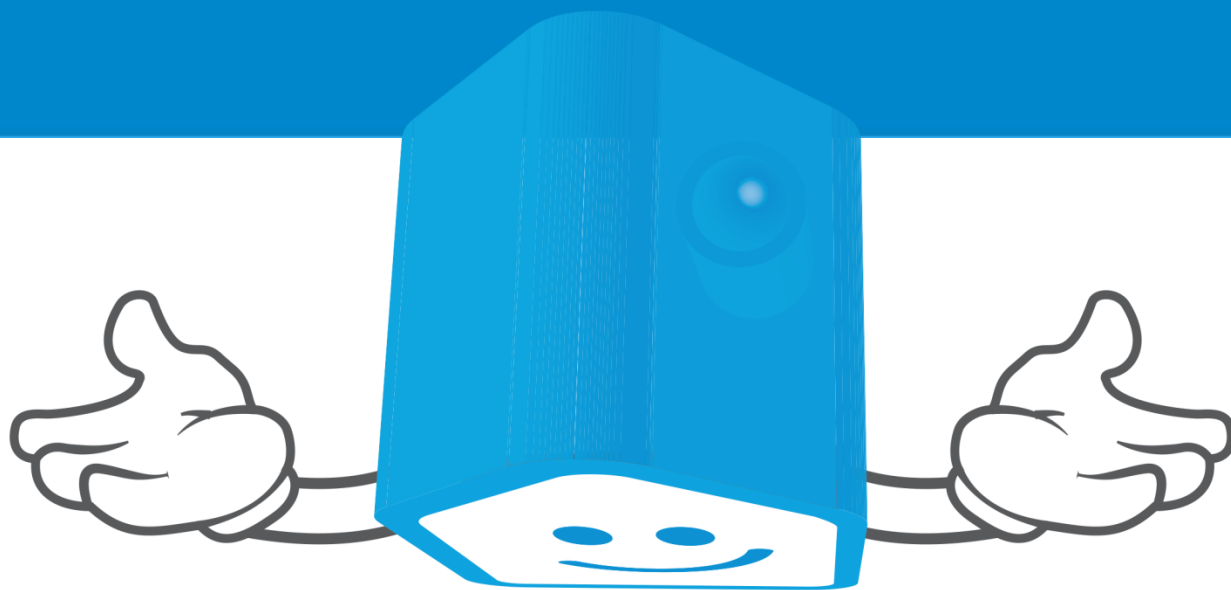
		January	February	March	April	May	June	July	August	September	October	November	December
Database	Markets, Operators & Vendors market shares, FTTx projects, forecasts up to 2016					DB-1						DB-2	
Insights	Monthly		I-1	I-2	I-3	I-4	I-5	I-6		I-7	I-8	I-9	I-10
Consulting Hours		5 hours - on demand											
Analyst Brief		30 min. Conference Call - on demand											
On-Site Presentation		Optional presentation											

FTTH Conference 2014

Join us Next Year in Stockholm!

18-20 February 2014





www.ftthcouncil.eu

