Fiber to the World
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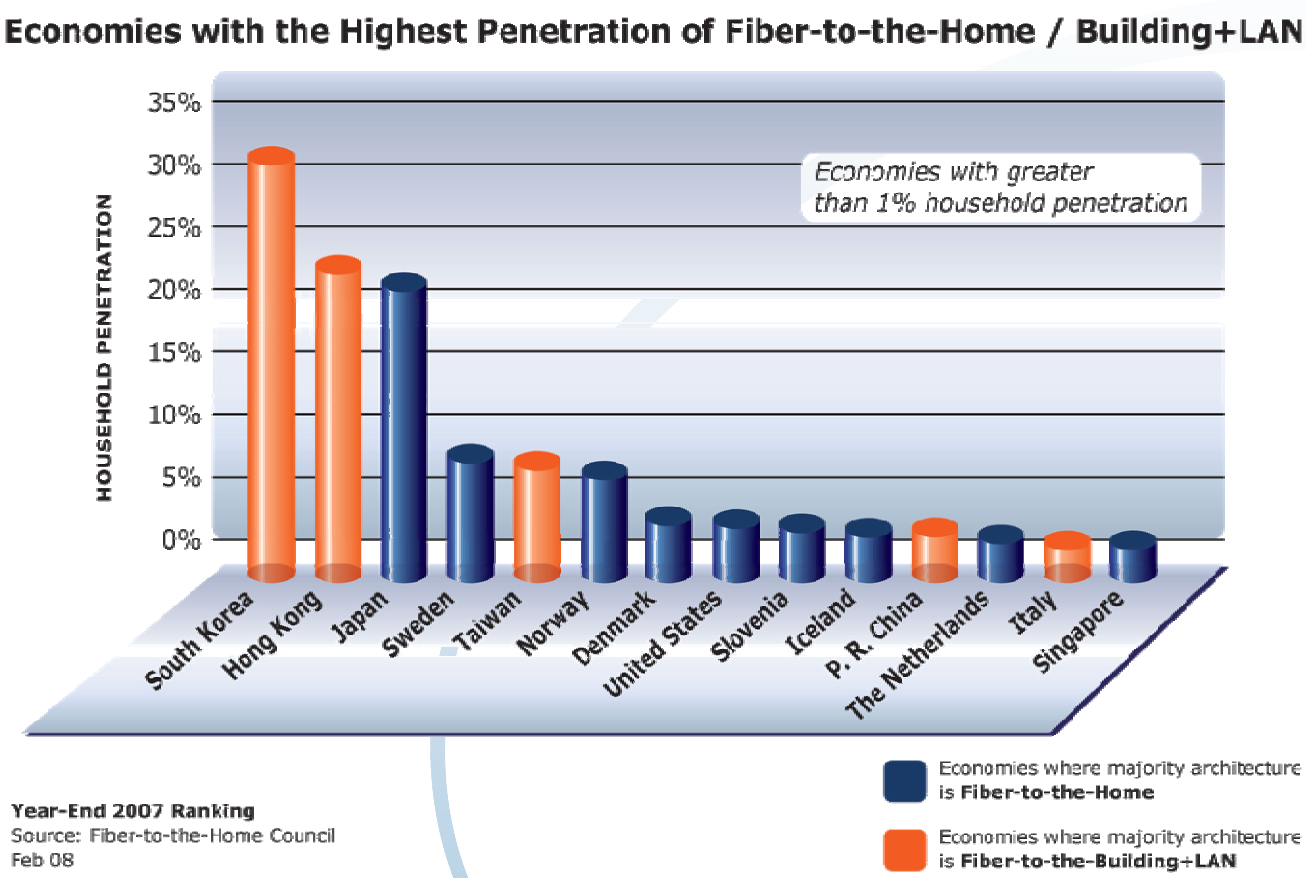
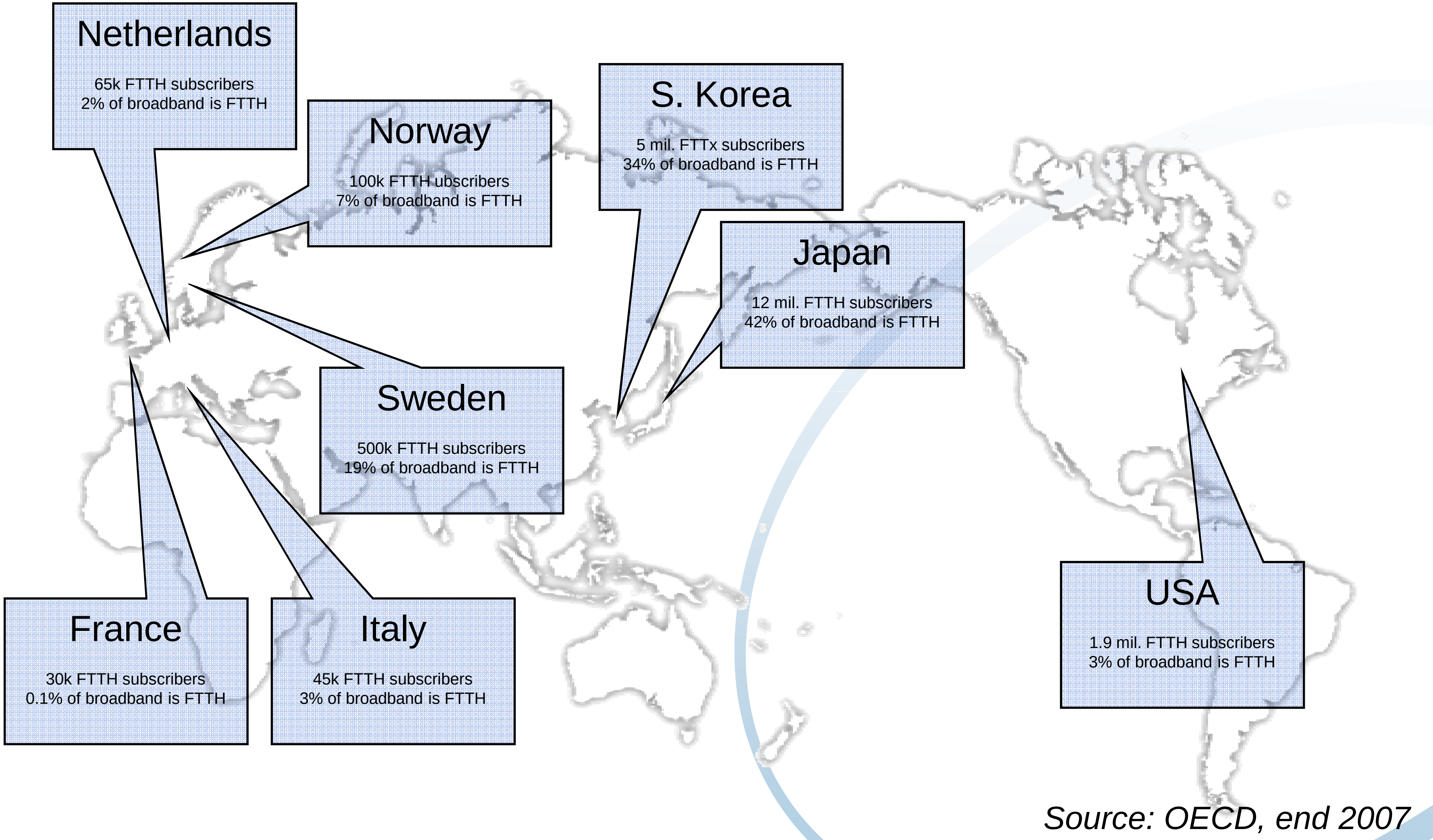
FTTx: the global view

- **Various organisations track FTTx growth, including the FTTH Council and the OECD.**
- **OECD countries represent around 20 million FTTH subscribers overall (Source: OECD)**
- **Year on year growth is very significant at +47%.**



A World of Fiber



Source: OECD, end 2007

What’s the takeup of deployed NGNs ?

- **Takeup is crucial to both the financial viability of NGN projects and the wider economic impact of next generation broadband.**
- **Takeup rates vary wildly, but existing projects already allow a number of key conclusions:**
  - Take-up rates are lower in areas where infrastructure based competition is existing (ex. Cable)
  - Take-up rates are higher on local projects
  - Take-up rates are higher in rural or underserved areas
  - Take-up rates are higher with Open Access on the service layer

Project	Country	Homes Passed	Takeup	Yrs since roll-out
Orange	FR	146 000	~5%	1
Pau BC	FR (Pau)	43 000	15%	2
Verizon FiOS	USA	10 000 000	23%	2
ViaEuropa	SE (Lünd)	10 000	25%	1
Lyse Tele	NO (Stavänger)	192 000	60%	4
MälarEnergi	SE (Västerås)	37 000	75%	8
NTT	JP	42 630 000	21%	6

So what service levels do they actually get?

- **Bandwidth offerings for internet access are largely independant of the technology and usually dictated more by competitive pressure (speed sells!)**
- **Bandwidth is rarely guaranteed although Asian service providers are starting to integrate QoS in their offers (NTT, HKBN)**
- **On-net bandwidth and off-net bandwidth are increasingly dissociated due to transit costs**
- **Low latency is often ignored but crucial benefit, especially for business customers and online gamers.**

			€
verizon	50Mb/s 30Mb/s 15Mb/s 10Mb/s 5Mb/s	15Mb/s 15Mb/s 15Mb/s 2Mb/s 2Mb/s	115/m 90/m 40/m 35/m 30/m
free	100Mb/s	50Mb/s	30/m
Lyse	50Mb/s 25Mb/s 10Mb/s	50Mb/s 25Mb/s 10Mb/s	150/m 75/m 50/m
TELE2 / MälarEnergi	10Mb/s	10Mb/s	12/m
香港寬頻	1Gb/s 200Mb/s 100Mb/s 50Mb/s 25Mb/s	1Gb/s 200Mb/s 100Mb/s 50Mb/s 25Mb/s	140/m 55/m 25/m 20/m 17/m
bredband2 / ViaEuropa	1Gb/s	100Mb/s	105/m
NTT	100Mb/s*	50Mb/s*	22-34/m

**includes only the access service. Internet access by NTT is an additional 6 EUR/m and modem rental is 3.5 EUR/m*

Demystifying NGANs

What are people using this bandwidth for?

What are the new services over FTTx?

What's the impact of FTTx on transit and peering?

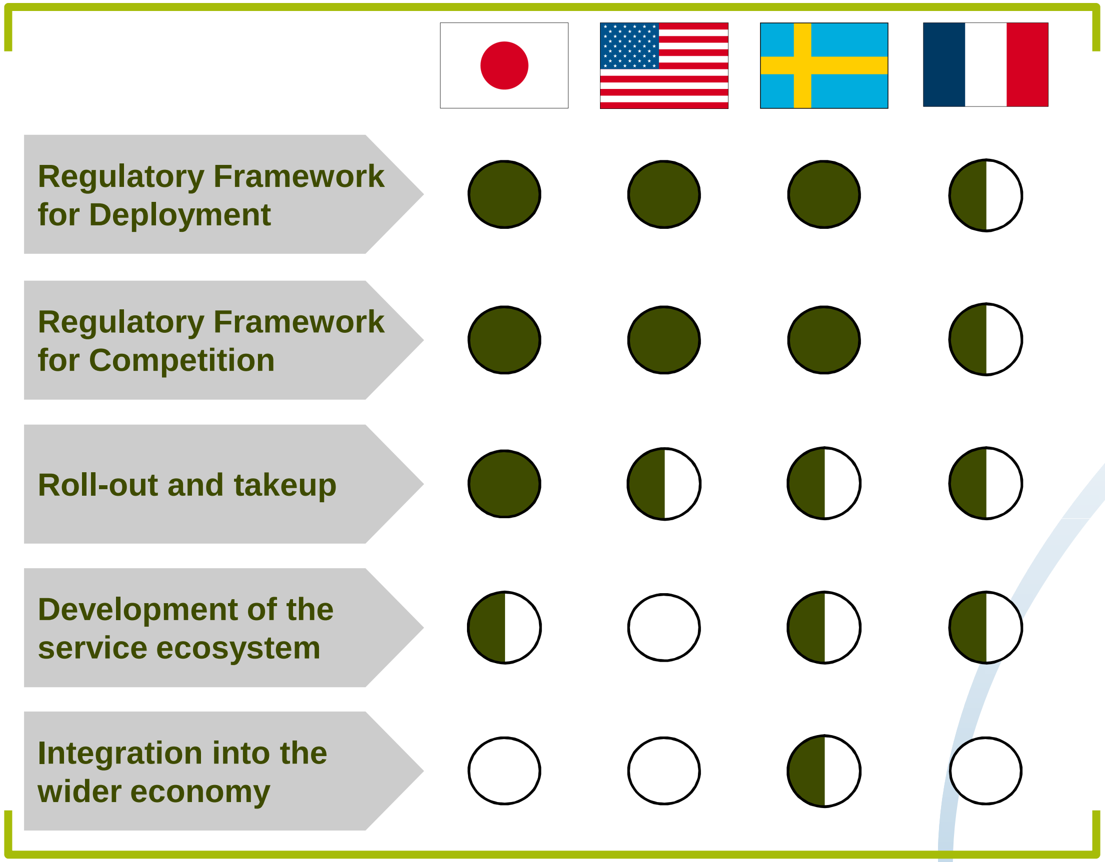
What are the wider economic benefits?

A framework to analyse NGAN advancement

- When assessing NGN advancement in various countries, it is often not enough to look at figures. Other aspects are equally as important.
- The following high-level framework offers a broader definition of advancement

Regulatory Framework for Deployment	Is regulation needed to facilitate roll-out? Are there regulatory issues about MTU in-building networks? Are there regulatory issues on digging, aerial cabling, duct access, etc.
Regulatory Framework for Competition	Is regulation needed to ensure competition? Which type of competition does regulation wish to favor? Is there a risk if de facto monopolies post NGN deployment?
Roll-out and takeup	Which private players are rolling-out and where? Is there public involvement (financial or otherwise) in roll-out? Are customers migrating to NGN services?
Development of the service ecosystem	Are we seeing services beyond triple-play emerging? From which providers does service innovation come from? Does service derived revenue benefit the infrastructure investors?
Integration into the wider economy	Are businesses and public services adapting their ways of working due to the existing NGAN? Are healthcare, education, elderly care, etc. relying on the NGAN?

Focus: Japan



- Japan is the most advanced in deployment by far, but take-up is only "exploding" now. As a consequence, Japan doesn't have such an advance when it comes to services and wider economic integration.
- The USA has a clear framework for deployment, controversial as it may be. With only one large-scale player deploying though, coverage growth will be slow and uneven for a long time.
- Sweden is very advanced in roll-out with a good take-up rate overall, and certainly the most advanced country when it comes to services.
- France is not as advanced as is often suggested, but with 4 competitive operators investing a lot of money in deployment, when the hurdles go, things will happen fast.

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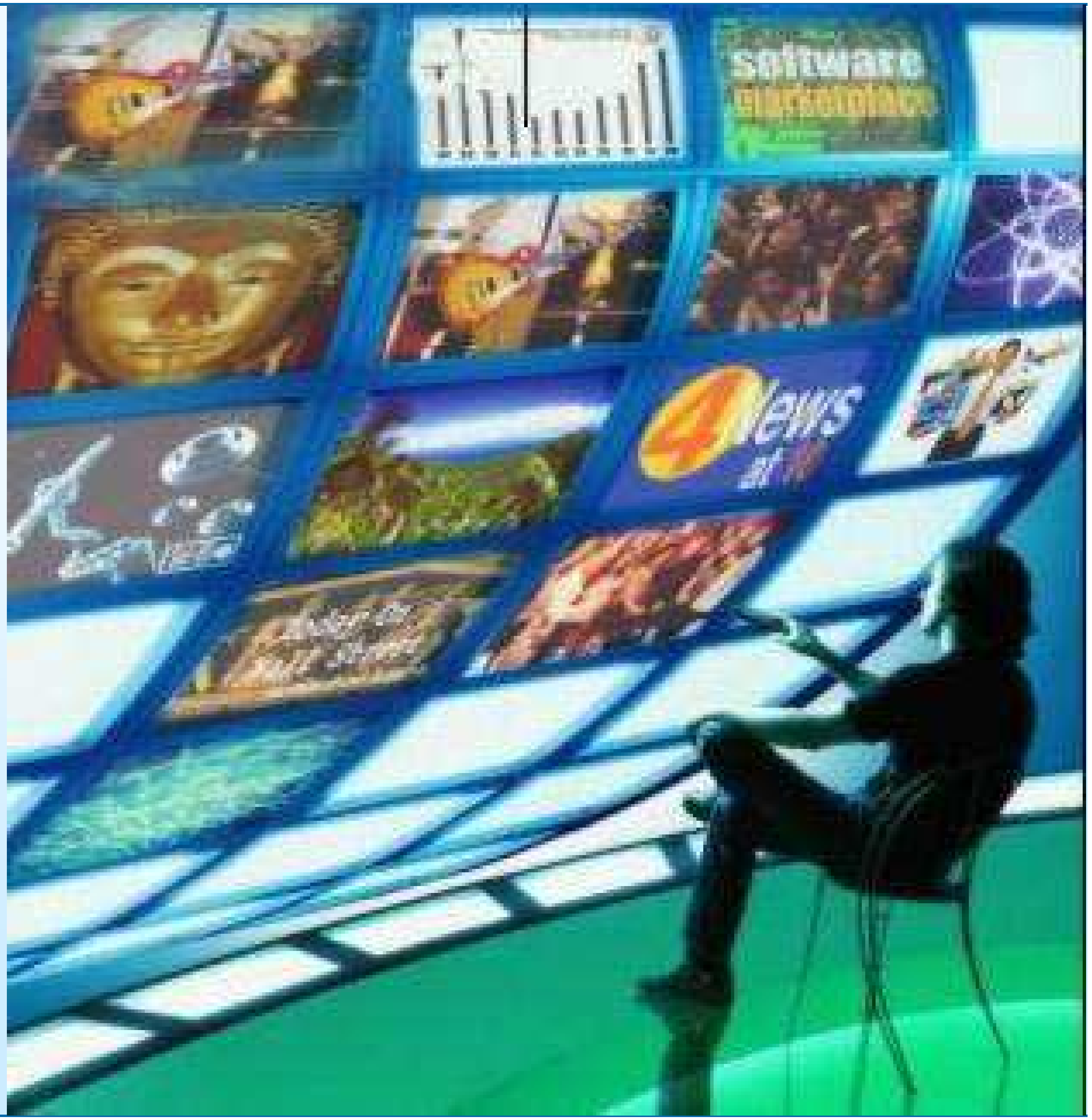

Thank you for your interest!

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