

# New Services for European Fiber Networks

**"T**he subscriber is creating demand for services and content," said Roland Kohler, moderator of a FTTH Europe panel on Revenue-Driving Services. But over the last few years, when Kohler, chair of the Council's Network & Service Revenues Committee, questioned European incumbent providers about what their customers expected and wanted, he has found a dearth of information. "Do telcos just have to compete with tubes and fibers?" he wondered. "Shouldn't they be competing with content, too?"

So the Council commissioned industry consultant Ventura Team to study broadband bandwidth usage in Europe and find out how customers were using broadband and how fast broadband traffic was growing. Stefan Stanislawski of Ventura Team presented the study's findings.

## HIGHER BANDWIDTH LEADS TO MORE USAGE

Ventura Team talked to 20 fiber network operators around Europe, and took an in-depth look at Sweden, which has the highest percentage in Europe of FTTH relative to all broadband. Researchers found enormous variations in the bandwidth available in different countries. Sweden was far ahead of other European countries, with providers getting ready to offer access speeds of 1 Gbps this year or next. The UK is about 10 years behind Sweden, with top speeds of 10 Mbps. France is somewhere in between. Other countries like Poland started out more slowly with broadband but are now catching up due to "speed wars" between providers.

Ventura then forecast bandwidth growth using Nielsen's Law. A decade ago, Jakob Nielsen, a leading Web usability expert, found that bandwidth for high-end users was growing by 50 percent a year, and the same rate of growth still holds today. Mass-market bandwidth tends to follow leading-edge

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services by two to three years. So, for example, the top speed available in the UK is now 10 Mbps; following Nielsen's Law, it should be 100 Mbps in 2015 and 1 Gbps in 2020.

Assuming that Nielsen's Law continues to hold, Stanislawski forecasts that ADSL sales in Europe should begin to decline around 2013, meaning that investments made in ADSL today have a very short period in which to pay back investors. "The time of ADSL is coming to an end," he said. "We will need to move to fiber."

Looking at European broadband traffic patterns, Ventura Team found that overall traffic has also grown at 50 percent per year over the last six years. Some of this growth was driven by the transition from dial-up to broadband, but even broadband homes were increasing traffic by 20 percent per year.

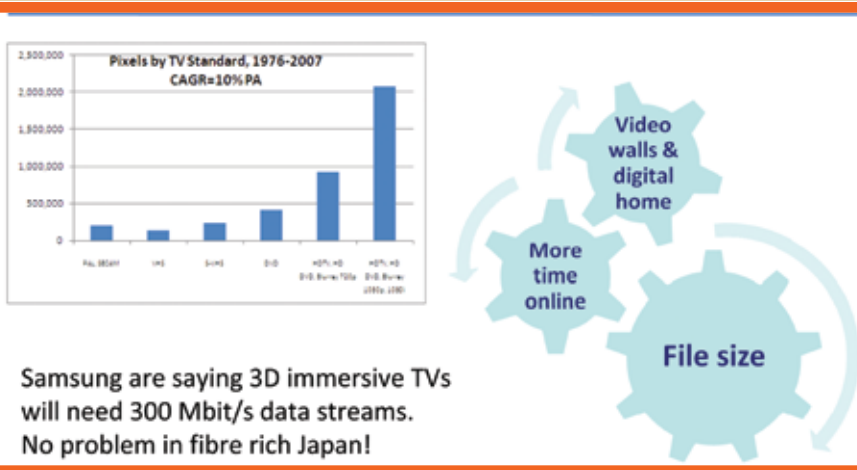
In other words, as bandwidth expands, people find ways to use it. In fact, FTTH users were generating 3.2 times the bandwidth traffic of ADSL users downstream and 3.4 times the traffic of

## Nielsen's Law

- **Jakob Nielsen's Focus:**
  - Usability of the web
  - Led to development of law
  - BW expands 7.5x after 5 years or 57x after 10 Years
- **Nielsen understands:**
  - Moore's law cannot be applied to bandwidth
  - Mass market bandwidth usage lags high-end [users] by 2-3 years

		CAGR	Compound over 10 Years
Nielsen	Bandwidth	50%	57x
Moore	Computing	60%	100X

**Motorola's Floyd Wagoner explains Nielsen's Law; bandwidth in the UK, Wagoner says, expands almost 60-fold every decade, and mass-market bandwidth lags high-end by only two or three years. Current bandwidth offerings in the UK are about in line with the long-term trend, but in the US, Verizon FiOS and many smaller LECs are aiming higher – 100 Mbps by 2012 rather than 2015.**



**Nielsen’s Law: Stefan Stanislawski of Ventura says bandwidth demand will continue to climb at historical rates, if for no other reason than 3D HDTV.**

ADSL users upstream last year – even though they use the same applications that ADSL users use. “As fiber speed becomes more common, there will be more applications designed to use it, and we’ll see much more traffic,” Stanislawski commented.

FTTH users are taking advantage of their faster connections to use applications like peer-to-peer file sharing – which accounts for more than 80 percent of their traffic. High-definition TV

is another bandwidth-hogging application, and 3DTV is on the way. Even with compression, 3DTV will require speeds of 100 Mbps. “Media companies have some serious reinvention to do over the next five to seven years,” Stanislawski concluded.

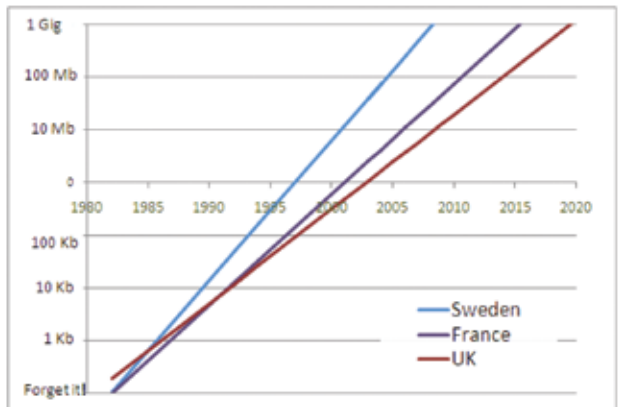
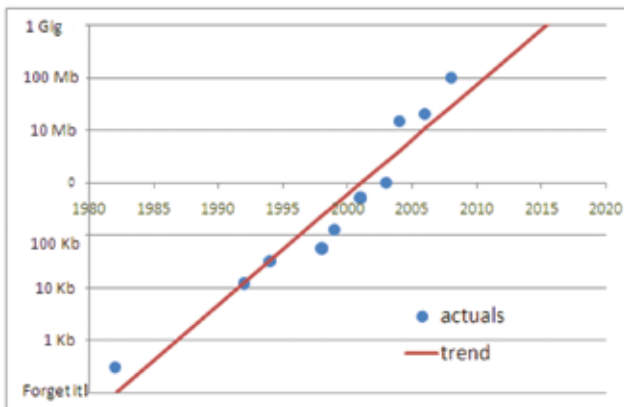
**COST-EFFECTIVE HEALTH CARE WITH FTTH**

In fiber-connected communities, new services are taking off. Preben Larsen

and Peter Larson (no relation) presented the “Nurse Gudrun Care Channel” health care application that they had helped start in Karlskrona, Sweden (see the March 2007 issue of Broadband Properties for more on this application). Sweden has a high proportion of elderly residents, and its health care costs are rising rapidly. When Nurse Gudrun – a retired public health nurse in Karlskrona – mentioned to Larsen and Larson that between 20 and 30 percent of health care visits were unnecessary, they decided to design a videoconferencing application that could be used for triaging patients. They even convinced Gudrun to come out of retirement and help launch the service.

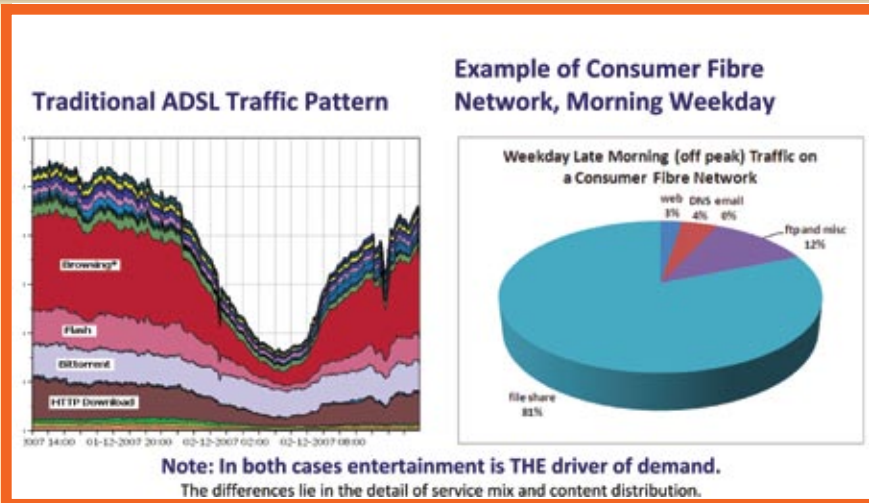
Karlskrona has an open access FTTH network, into which service providers can freely introduce new applications. Even the set-top boxes are part of the open access network, so that introducing a new video application is not expensive. As a result, video consultations could be provided for about 10 euros each – compared with about 160 euros for a hospital visit.

Patients use the “Nurse Gudrun” service to make appointments online, re-

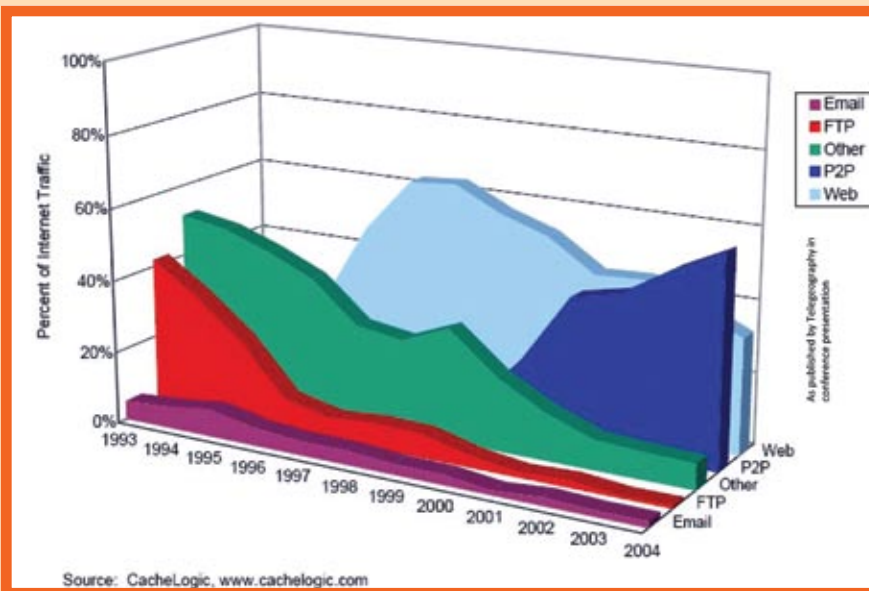


- Steady progress - beat the Law by a modest margin.
- We assumed 2008 is the year of 100 Mbit/s services
- Still beating Law if slips to 2009

**Nielsen’s Law: The UK is exactly on target, but behind competitors. France beats the UK and stays ahead of Nielsen’s Law, if 100 Mbps service is widely deployed by 2009. Sweden, which had 100 Mbps as early as 2004, is 10 years ahead of the UK. The trend line implies Sweden will get 1 Gbps by next year, however, with the UK waiting until 2020.**



**Nielsen’s Law: File sharing, especially for video, drives network traffic, says Stefan Stanislawski of Ventura.**



**Filesharing apparently has pushed up average traffic per household.**

new prescriptions and get medical information. Either the patient or the health center initiates the online consultation; the patient sees the doctor or nurse on the television (a more familiar interface for the elderly than the computer), and communicates using a webcam and microphone.

Larsen said the pilot project has been so successful it won an award for “best idea in Sweden.” He is working on developing it into a large-scale community service and adding pediatricians so that parents could find out whether they need to bring sick children to the doctor’s of-

fice. “If we could reduce in-person visits by 10 percent, we could save billions,” he noted.

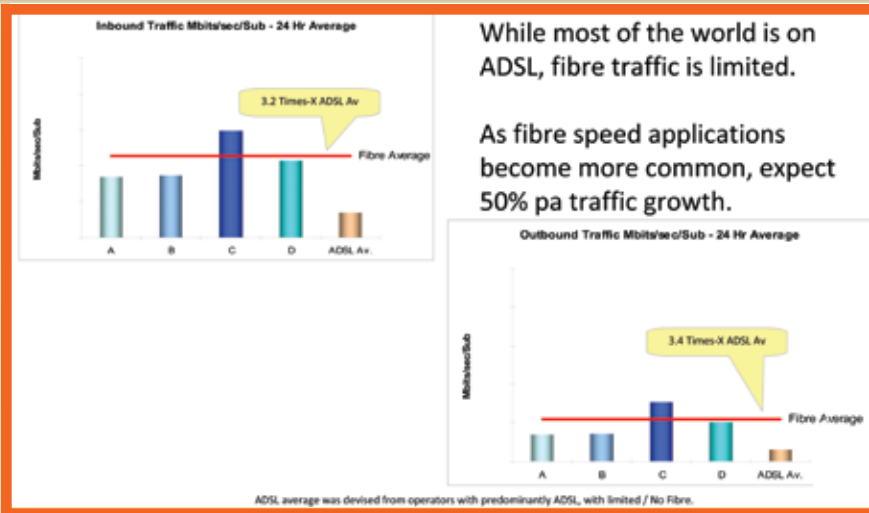
**GAMES FOR EDUCATION**

Juriaan van Rijswijk, the cofounder of two online gaming companies in Europe, spoke about his work developing educational games for children. Games are a natural tool for education, he said: “Fun is about our brains feeling good and releasing endorphins; at the moment of triumph, when we learn something, we feel happy.” The brain naturally looks for patterns, and a game can reward the player for finding the patterns.

Van Rijswijk collaborated with UNESCO to develop an alternate reality game called Climate Quest, which uses geographic information from Microsoft’s Live Maps. (Costs for developing the game were underwritten by UNESCO and MSN.) This year, 12 million schoolchildren and their teachers will use the game to gain awareness of climate change and find out what they can do to help.

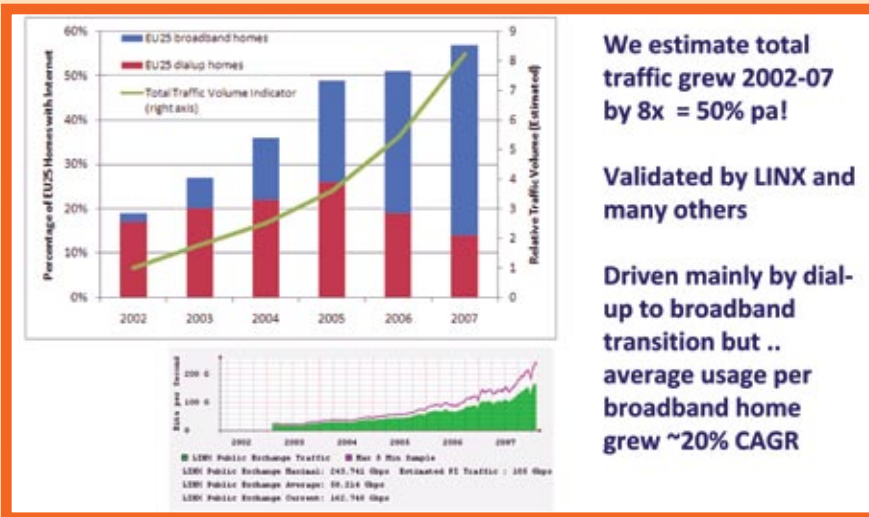
Games are becoming pervasive in many other aspects of life, van Rijswijk said. Massively multiplayer online role-playing games, which consume large amounts of bandwidth, have become a hugely popular and profitable entertainment medium, garnering revenues from subscriptions, advertising and in-game purchases. In addition, players treat these games as public gathering spaces – for example, impromptu memorial services have been held on game sites following tragedies. Players have met on game sites and married in real life. Mar-

*Players treat roleplaying games as public gathering spaces – impromptu memorial services have been held on game sites following tragedies. Players have met on game sites and married in real life. Market researchers have moved into games to test out new products.*



While most of the world is on ADSL, fibre traffic is limited.

As fibre speed applications become more common, expect 50% pa traffic growth.



Homes with fiber already generate three times the traffic of ADSL homes in Europe, says Stefan Stanislawski of Ventura, even though applications being used are about the same.

ket researchers have moved into games to test out new products. Companies are holding business meetings in game spaces – “you can see your colleagues dressed as Oriental warriors,” van Rijswijk noted – and they are developing games for corporate training.

**ONE NETWORK, 110 SERVICES**

Adam Brännström, CEO of Mälaren-ergi Stadsnät in Sweden, spoke about his company’s open access fiber network, which is owned by the city of Västerås.

Yves Parfait of Orange shows neatly how FTTH is enabling new usage patterns right now.

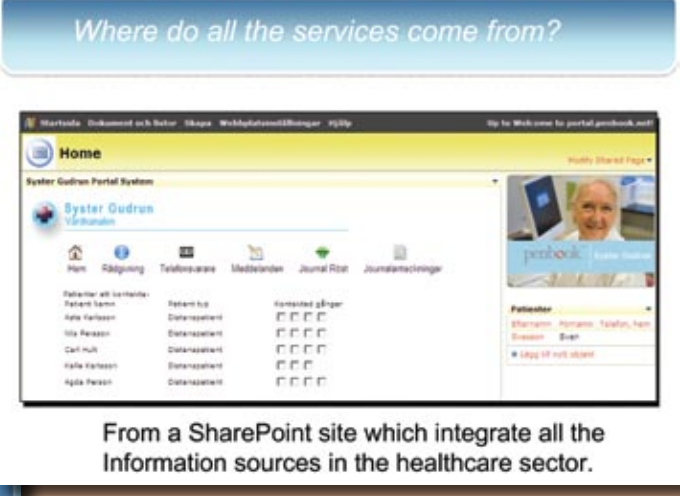
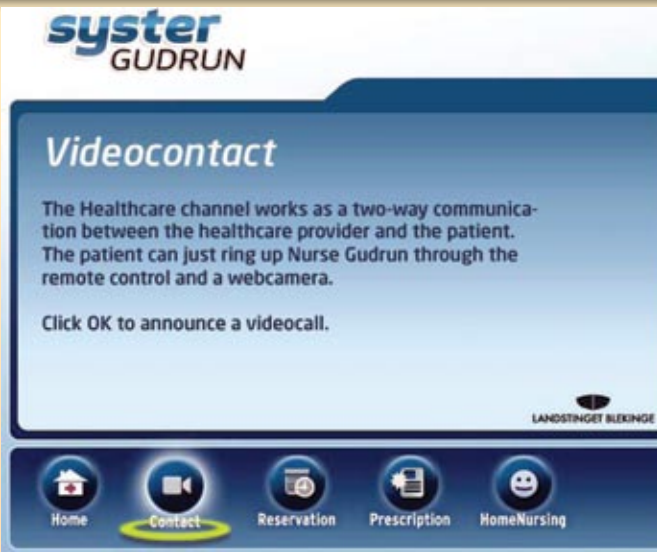
(This network won a Cornerstone Award at the 2005 Broadband Summit.) “We need to make money *and* to make people happy,” Brännström said by way of describing his mission.

It appears that the network is succeeding at both goals. Fifty-three percent of households and 51 percent of businesses are subscribers, and public buildings are also connected. Mälaren-ergi Stadsnät is now consulting with nearby municipalities to help them set up similar networks.

The open access network offers more than 110 services from more than 30 providers. Attracting service providers to the network is the “most important and difficult part” of the business, Brännström said. Service providers know they have to provide good service at competitive fees in order to keep customers, because it is so simple for customers to change providers – they can change services online, instantly.

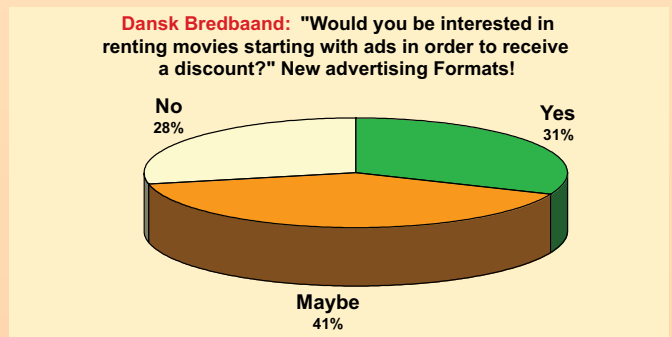
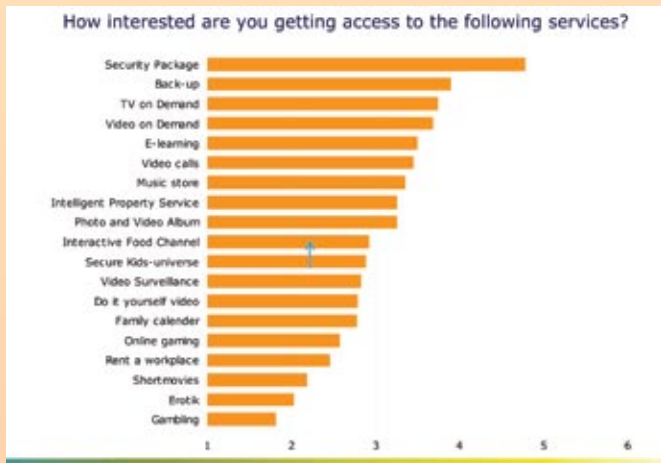
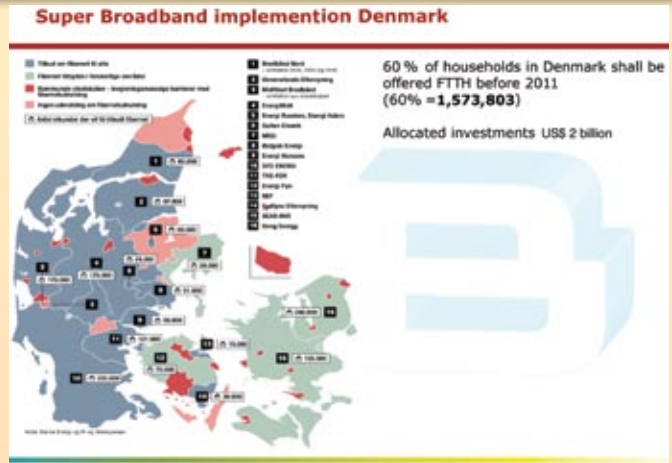
But there are advantages for the service provider, too: no capital investment, short time to market, and no competition from the network owner (Brännström says such competition would be unfair). In addition, the network has already signed up the customer and collected a connection fee, so customer acquisition costs are low – as Brännström commented, “If you paid for the connection, you’ll probably want service.” **BBP**

		fiber access		ADSL access	
		download and upload at 100mbps	download at 8mbps	upload at 1mbps	
full HD quality movie	30 Gb	40min	>8h	>66h	
DVD quality movie	4.8 Gb	6min 30s	1h 20min	>10h	
amateur quality video	800 Mb	1min	13 min	1h 40min	
20 photos with uncompressed 8M pixels	480 Mb	40s	8 min	> 1h	
10 MP3 music tracks	40Mb	3s	40 sec	5 min	



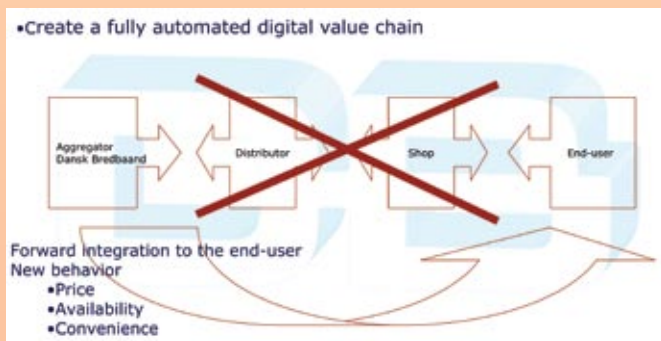
We've covered the Syster Gudrun telemedicine web site in the past; here's a translation into English of what a user sees on-screen from home to arrange and confirm an appointment. The system is tied into a communitywide comprehensive medical database as well.

**Growth plans for Dansk Bredbaand; 60 percent of Danish homes to be passed by FTTH by 2011, for an investment of about \$2 billion.**



Dansk Bredbaand customer survey data suggests that customers would be willing to view ads with their movies, for a cut in price, and would be open to new products and services enabled by broadband.

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**Dansk Bredbaand sees opportunities in user-generated video content, and in aggregating services.**

