

DSM Desotech

**FTTH “Designed for the Future” Executive Roundtable Summary
13 September 2010, Las Vegas, NV**

Fiber-All-The-Way: What Will it Take?

This year’s North American Fiber-to-the-Home Conference and Expo, “All Fiber, All the Way,” was held in Las Vegas from September 12-17th, bringing together leading experts and executives from the optical fiber industry. With the world paying more and more attention to the issue of universal broadband and expanding both the size and the speed of the high-speed networks, the issues discussed were more relevant than ever before.

During this year’s conference, DSM and the FTTH Council were pleased to sponsor a *Designed for the Future* roundtable event entitled, “Fiber-All-The-Way: What Will it Take?” Participants included senior executives from Baller Herbst Law Group (US Broadband Coalition), broadbandtrends and SmartGridTrends, Cisco Systems, CPqD, CRU Group, Corning, Current Analysis, Draka, Ericsson, GTD Group, i3 Group, KPG Telecommunications, New Zealand Telecommunications Industry Group, RVA Research, Telcordia, Telefonica Brazil, Tyco Systems, Underwriters Laboratories Inc (UL), Verizon Enhanced Communities, Yankee Group, and Zhone Technologies.

The event topics were focused on the major issues facing the fiber community in the US and on a global basis. Much of the discussion was spent on the progress to date of President Obama’s National Broadband Plan and its prospects for spurring further private sector investment. While other topics also provoked interesting comment and opinion, such as how to stimulate deployments overseas, the case for universal fiber optic cable access, how the growth in mobile internet is impacting the current and future capacity of the worldwide internet network, and prospects for future markets.

The discussion centered around six main topics:

- America’s National Broadband Plan and how to turn the United States into a “100 Megabit Nation”
- Surging demand in mobile phone services, 4G, and applications
- Prospects for growth in the developing and developed world
- Growing demand for video content and its impact on fiber capacity and needs
- Consumer experience and applications for FTTx

The National Broadband Plan: the Challenge of Creating a 100-Megabit Nation

In March, the Obama Administration proposed a National Broadband Plan for the US, outlining the goal for internet providers to offer minimum home connection speeds of 100 megabits per second (Mbps) to 100 million homes by 2020. The group agreed that deploying universal fiber-optic technology is not without challenges. In urban areas, access through duct channels and sewers is a major challenge. This is the preferred method where infrastructure has been established as it does not involve digging up roadways and is the least intrusive. Outside the city, distance and natural barriers can be prohibitive. Business’ efforts to encourage communities to build fiber optic networks in the US have met with only limited success, mainly

due to the logistical difficulty and cost – currently at around \$1,800-2,200 per household – of deployment.

The consensus of the group was that there are enormous opportunities in the United States, but community support is needed. One successful example was a fiber optic network that was installed by the i3 Group in Quincy, Illinois—an average-sized city of a few hundred thousand people, with a high density and a successful economy. The Quincy project was successful because of strong community backing and local government support. But any national broadband roll-out must go beyond the perceived needs of the current-day population and plan for the future, providing excess capacity beyond perceived needs. Also, a coherent national strategy is needed to go along with the plan. Right now the plan is very vague and does not state how we are going to get there, national and local support is needed in order to be effective.

Another key to the program's success is education of the consumer. Consumers really need to understand what FTTx would mean to them. Right now terms utilized in the broadband plan and campaigns are very specific to the consumer familiar with the technology. This technology could deliver much to people, but they have to understand the possibilities. It was noted further that national advertisements may be beneficial in communicating this point.

Multiple participants agreed that the 100 Mbps goal was not aggressive enough and easily achievable with coaxial cable and today's technology, since there is no requirement for symmetry (upload versus download) and that 100 Mbps represents a peak value, not a minimum level. The plan does not promote the fiber-to-the-home initiative. This is further demonstrated by the lack of stimulus funding—only 7%—that was given to all fiber systems. Overall, this plan is not sustainable for future growth and bandwidth needs.

The National Broadband Plan is based mainly on the US, but how is the rest of the world addressing FTTx? Many said, "It should be a global plan." Europe is addressing this point also through a stimulus program, and the EU has specified targets for each member state in terms of service and speed. Also, there is a need to incorporate and address needs for cellular service in this global plan.

Perhaps the most important point to come out of this discussion was that investors need to be patient because the long-term benefits of universal high-speed internet are enormous. Investment may not bring positive returns in two to three years, but universal broadband will revolutionize society in the same way as electricity did a century earlier, and the argument for broadband roll-out needs to point this out if it is to capture mainstream investors' attention.

A Surging Demand in Mobile Phone Services, 4G and Applications

Participants all agreed that wireless internet represents a powerful opportunity for improving and extending fiber optic networks and that the growth in mobile internet, 4G and online applications via mobile phones is helping create an ever-increasing demand for bandwidth—most of which, operators are keen to remove from the cellular network and onto fiber networks as soon as possible.

The ultimate goal of a connected society is for service to reach the same level of quality on mobile phones, TV and computers. Guests agreed that mobile phone service has a role to play in bringing coverage and competitive benefits to the marketplace. It was also noted that, in younger generations, quality outweighs cost as the major driver when it comes to selecting providers, something that creates enormous opportunities for fiber providers to grow both their own business and the broadband network.

Fifty percent of the traffic on a network is from cell phone use. To support cellular service, we will need more fiber and networks need to be ready to handle even more traffic. This should

cause us to carefully consider how we build our networks. Wavelength will be important as we will need to expand out to higher wavelengths. Macrobending and microbending performance of optical fiber will become more critical as these properties are much more sensitive in this higher wavelength region.

Hot Spots—The New Geography of Broadband

The astonishing speed at which China has been expanding its fiber network has been the major driver behind industry growth for the past few years. However with this massive market maturing, attention is increasingly turning to other countries that are starting to ramp up investments, providing new challenges and opportunities for fiber-to-the-home stakeholders. Delegates agreed that Africa, Russia, Australia, and India all hold great potential for growth. Guests also identified Latin America as a strong prospect for growth in the years to come, especially Brazil.

Active programs exist in Chile with plans to extend fiber networks to 1,060 rural communities in the coming years and New Zealand's pilot program in Bisbee is also worthy of noting. The industry also needs to consider whether growth in areas like India will be mainly cellular based and what will this mean for fiber infrastructure? Another major program to track is Australia's prospective National Broadband Network that could also change the broadband paradigm across the whole country.

Fiber stakeholders in the US acknowledged a growing competitive threat of low cost competition from manufacturers based mainly in China. The view of many delegates was that labor cost was the only differentiator between low cost producers and those in the US or other developed countries while it was also suggested that, through investment in technology, Western producers could overcome this price competition through productivity gains. Many remarked that the presence of low cost competitors brought with it a risk of sub-standard networks and equipment that could harm investors, who often invest knowing that the payback period can run into ten years or more.

Video: Can Fiber's Killer Applications Keep on Growing?

With Cisco predicting that 90% of all consumer traffic in 2012 will be video and ABI Research saying that 10% of the worldwide pay-TV in 2015 will be IPTV, there is no doubt that video is a major driver of demand for ultra-fast bandwidth. Consumers are looking for extensive on-demand choices. Of course, this brings challenges as well as opportunities. Some participants pointed to the fact that the lack of sufficient volume of quality content and applications was holding back demand. On the demand side, discussion turned to Google and its streaming video project, details of which currently remain sketchy, as well as Apple, which was identified as an excellent example of how marketing and good design can be employed to build a real buzz around a new device or application.

Consumer Experience: Finding the Applications of the Future

While the thirst for video and the younger generation's reliance on uploading and downloading of content make future demand for fiber obvious, attention also turned to other innovations, and many good ideas came forward for future drivers of bandwidth demand. Participants were enthusiastic about 3D TV as a development in the entertainment space that could potentially drive bandwidth demand in the future. Aside from the entertainment sector, the need for networked communications between machines in everyday life also was generally agreed on as a potential driver. Innovative applications on the horizon for parking sensors in cars,

traffic control centers, cameras and highway systems would, it was agreed, all need to draw on fiber in the years to come.

Also discussed was how applications such as Skype are being used to connect people across the world, creating a telepresence of all members being in the same room. This is not limited to the younger generations—older generations are also keeping in touch with family and friends utilizing this technology. Telemedicine, remote learning, and telecommuting are also increasing the demand for consistent and fast internet services. This is especially important for emerging economic areas and was further emphasized by Latin American attendees.

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About DSM Desotech

DSM Desotech is the world's leading developer of UV-curable optical Fibre coatings, a critical component of high-speed optical Fibre networks. With more than 40 years experience in Fibre coatings development, the company holds more than 120 U.S. patents in UV-curable technology, with other patents in Europe, Asia-Pacific, Australia and Canada. DSM Desotech operates globally, with research and manufacturing facilities located in the U.S., Europe, China and Japan. It is headquartered in Elgin, Ill., USA. DSM Desotech is a business unit of DSM Resins, based in the Netherlands, and is part of the global DSM family – a world leader in life sciences and material sciences. More information can be found at: www.supercoatings.com.

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