

Future Network Scaling And The Need For Massive Opto-Electronic Array Integration

A close look at the evolution of network traffic across multiple market segments and of associated data processing, storage, and communication technologies over the past 10+ years reveals some very clear long-term trends, independent of short-term application hypes. These consistent trends inform our projections of network traffic and of information and communication technologies into the coming 10+ years. Most importantly, increasingly pronounced scaling disparities between demand and supply in wide-area data communications leaves our industry no other option than introducing massively integrated parallelism to implement the 10+ Terabit/s transponders working over Petabit/s systems that will be required well within 10 years. This major next step in the evolution of optical communication systems is likely to ultimately yield opto-electronic processing engines that combine large arrays of client and line interfaces with sophisticated coherent digital signal processing in a common package (fiber-in/fiber-out), taking full advantage of new holistic co-designs.

Biography



Peter J. Winzer received his Ph.D. from the Vienna University of Technology, Austria, where he worked on space-borne lidar and laser communications for the European Space Agency. At Bell Labs since 2000, he has focused on many aspects of fiber-optic communications, including advanced optical modulation, multiplexing, and detection. He has contributed to several high-speed optical transmission records and field trials from 100 Gb/s to 1 Tb/s and has been globally promoting spatial multiplexing to overcome the optical networks capacity crunch. He has widely published and patented and is actively involved with the IEEE Photonics Society and the OSA, including service as Editor-in-Chief of the IEEE/OSA Journal of Lightwave Technology, Program Chair of ECOC 2009, and Program/General Chair of OFC 2015/17. Dr. Winzer is a Highly Cited Researcher, a Bell Labs Fellow, a Fellow of the IEEE and the OSA, and an elected member of the US National Academy of Engineering.