

Integrated Photonics: Grand Challenges and Key Needs for 2018

The drive to continue the performance scaling of commercial electronic systems at the current pace of 1000x/10yr has created a strong demand for converged electronic-photonics systems. Massive buildouts of Data Centers, 5G Communications and Augmented Reality will lead this technology transition in the near term. Electronic circuits and systems represent a very efficient and reliable incumbent technology that is increasingly difficult to replace by simple retrofit. Active Optical Cables are an example of such retrofit technology. The Convergence Transition consists of four Grand Challenges: **integration, standardization, cross-market platforms and supply chain coordination**. Though each is a prerequisite for the other and, therefore, sequential in introduction, all four have Key Needs to be fulfilled in 2018.

For silicon IC chips, **integration** has delivered cost and functionality benefits. No similar benefit path has been satisfactorily defined for integrated photonics: a technology for increasing integration level at constant chip size is a critical need. **Standardization** on the silicon wafer platform is generally accepted: adoption of a common capital equipment, package, test and design infrastructure is a critical need. Two **cross-market platforms** will lead in 2018, transceivers and RF signal processing: development of functional design blocks that can be ported to specialized applications is a critical need. **Supply chain coordination** will determine the real path for commercial products: 3-25yr technology roadmaps for each supply chain node, from materials to end users, will critically determine design and build options, and final cost.

Webinar information below:

Topic: Grand Challenges and Key Needs, from the IPSR International Roadmap

Host: Dave Godlewski

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