Good Standards Versus the Other Kind

It's long been our view that industry standards are a mixed bag: they can be good for expanding markets, but often at the expense of suppliers. Standardizing the product allows customers to play multiple suppliers against each other. This drives down prices, and suppliers' profits.

An industry veteran said at the MIT-AIM IPSR-I Fall 2019 meeting in Boston last month that there are good standards and not-so-good standards. The good kind are ones like the IEEE 802.3 networking protocol, commonly known as Ethernet. It enables inter-connectivity of diverse pieces of equipment, expanding the market from what it might be without a universally-adopted standard. This is particularly apt for networking, and the associated network effect is even quantified in Metcalfe’s Law: the value of a network such as the Ethernet increases by the square of the number of connected users. The standard creates an entire ecosystem of compatible products.

MSAs (multi-source agreements) are the not-so-good kind of standards, according to the veteran. MSAs assure the customers that there will be a sufficient set of suppliers for a particular mechanical design. They help suppliers by reducing the number of component variations in the market, which can be expensive to develop and support. The MSA is so closely associated with optical communications components that its Wikipedia entry mentions only optics MSAs.

Source: OIDA, in OSA Optics & Photonics News (July/August 2019).
But is there really a difference between the good kind of standards and the other kind? We may appreciate the Ethernet standard because we all use it, at home and at work. We also appreciate WiFi-protocols and USB form factor connectors in our daily lives and take them for granted. We are the end-users, the main beneficiaries. But optical component suppliers feel the pain with MSAs, because their customers have the greater bargaining power. And it may be that the problem is not the MSAs, but that there are too many of them: ineffective and competing standards are expensive too.

The industry move to co-packaging optics and switch electronics may provide a turnabout in this gamesmanship. Co-packaging is considered necessary to advance the networking performance (i.e., improved bandwidth and power dissipation) in the next generation of hyperscale data centers. The cost to component suppliers to develop the co-packaging solution has been placed at US$ 50 million per supplier, not including the investment in the switch electronics. With stakes that great, suppliers want to be sure that their designs will be useful across multiple customers, and likewise the customers want to be sure there are multiple, healthy suppliers available to provide them. Microsoft and Facebook have founded the Co-Packaged Optics Collaboration for that purpose. (Its home is, appropriately, at a Facebook page, [here](https://www.facebook.com/CPOCollaborationGroup)). But there is talk that the suppliers should lead a standard of their own.

![Example embodiment of a 51Tbps co-packaged optics assembly. Source: CPO Collaboration Group.](https://www.osa.org/)

What do you think? The manufacture of integrated photonics in co-packaged devices will be a topic at an upcoming OIDA workshop on Sunday, 8 March 2020, collocated with OFC 2020, in San Diego. Stay tuned for more information. See also the [July/August 2019 article](https://www.osa.org/) in OSA's *Optics & Photonics News*, which explored the game theory of multi-company arrangements.

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