

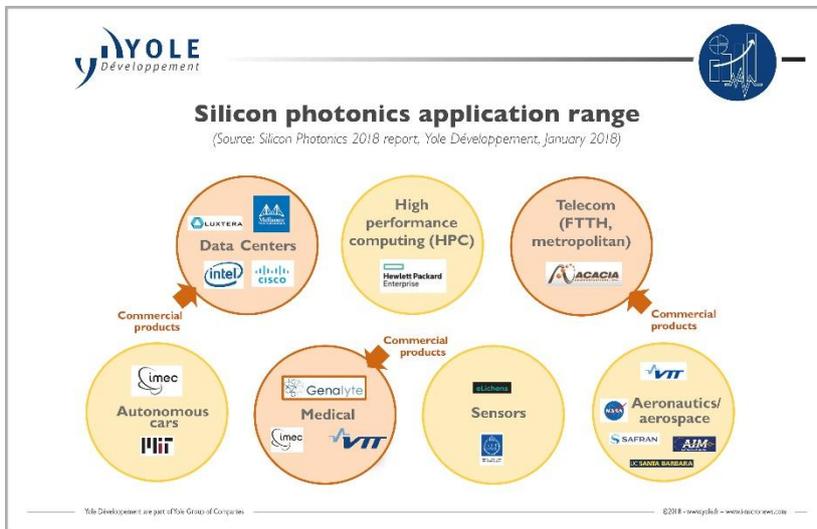


FOR IMMEDIATE RELEASE:

Silicon photonics has reached its tipping point!

Extracted from: Silicon Photonics report, Yole Développement – January 2018

LYON, France – January 18, 2018: Silicon photonics is still a small market today, with sales at die level estimated to be US\$30 million in 2016. However, it has big promise, with a 2025 market value of US\$560 million at chip level and almost US\$4 billion at transceiver level.



According to [Yole Développement \(Yole\)](#), silicon photonics technology will grow from a few percent of total optical transceiver market value in 2016 to 35% of the market in 2025, mostly for intra-data center communication. The market research & strategy consulting company explains: the strongest demand is for 400G. In parallel, 200G could be only an intermediate step between

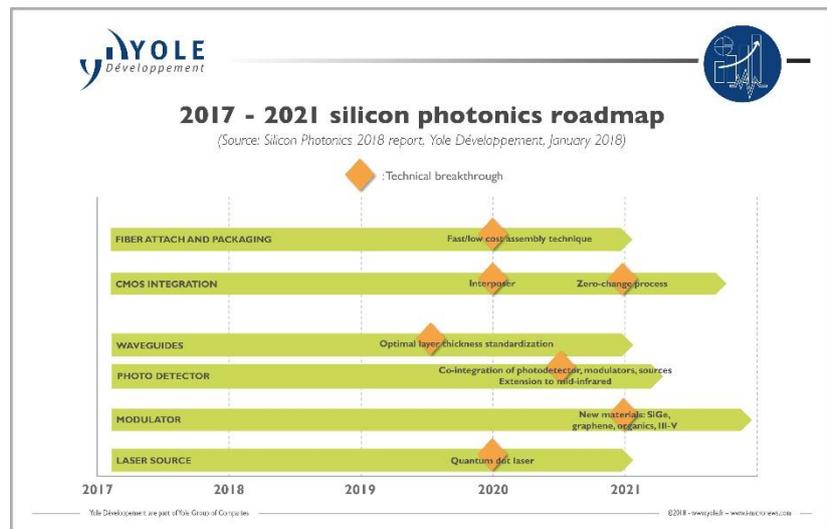
100G and 400G. “The next evolution is to develop a 400G optical port over a single fiber across 500m at less than \$1 per gigabit and with power <5mW/Gb”, explains **Dr. Eric Mounier, Senior Technology & Market Analyst at Yole**. One terabit per second rates should follow. Although the wafer area this accounts for will be a minute part of the worldwide SOI¹ market, it will represent significant value because of the SOI wafer high price.

Yole releases this month, the technology & market report titled “[Silicon Photonics](#)”. Dr Eric Mounier from Yole and **Jean-Louis Malinge, former CEO of Kotura, now at ARCH Venture Partners** combined their expertise to perform a comprehensive analysis of the silicon photonics industry. Both experts propose today the status of the market: it is a comprehensive overview of the Silicon photonics industry including technology roadmap, market trends and related figures, competitive landscape and more. The 2018 report gives a detailed description of the supply chain, with player status. It also provides updated market share numbers for the players. In this new

¹ SOI: Silicon-On-Insulator

study, Yole's analysts reveal the current status and future challenges for data centers. They also explain why silicon photonics is the answer to future DC² needs and other possible applications...

Silicon photonics technology has clearly reached its tipping point, with transceivers shipping in volume, announces the consulting company. Market evolution, competitive landscape, technology innovation, business opportunities: discover today what has been changed within the latest two years.



“We believe we are only at the very beginning as there is massive ongoing development worldwide for further integration”, asserts Dr. Mounier. And he adds: “The recent involvement of large integrated circuit foundries, such as TSMC’s relationship with Luxtera, and GlobalFoundries with Ayar Labs, are very encouraging signs showing the big promise for silicon photonics.”

The “Zero-Change” processes currently in development, manufacturing optical components without making any changes to a CMOS³ process, are targeting future inter-chip optical interconnects that could represent huge market volumes. Silicon photonics is at the maturity level of the electronics industry in the 1980s and there are still challenges to overcome. For all these challenges, technical breakthroughs will be necessary and are detailed in Yole’s silicon photonics roadmap:

- Laser source integration: lasers are still in competition with VCSELs for low distance and developments of Si-based lasers are no longer progressing. Quantum dot lasers could be a solution in long term as they are less temperature sensitive.
- Modulators: smaller size modulators are required and silicon photonics offers modulator integration advantage.

² DC : Datacenters

³ CMOS : Complementary Metal Oxide Semiconductor

- Assembly and testing: more advancements in lower cost packaging and wafer level testing are needed.
- Design and software: specific software are required for photonics with pre-defined models.
- Supply chain maturation similar to the semiconductor supply chain.
- New manufacturing solutions: for example, a new trend is to have a zero-change approach on CMOS lines.
- Higher distance transmission.

A detailed description of Silicon Photonics report from Yole is available on i-micronews.com, [photonics reports section](#).

ABOUT THE REPORT:**SILICON PHOTONICS**

Yes, we've reached Si photonics' tipping point!. - Produced by Yole Développement.

Companies cited in the report:

A*Star, Amazon, Amicra, Amkor, AMS Technologies, Aurion, Axalume, Ayar Labs, Broadcom, BSAC, Cadence, Caliopa, Ciena, Cypress, Dell, Facebook, FhG IZM, Ficontec, Georgia Tech University, GlobalFoundries, Google, HP, Huawei, IBM, IMEC, IMT, Infinera, Inphi, Intel, Juniper Networks, Leti, Luxtera, MACOM, Mentor Graphics, Microsoft, MIT, Molex, Multiphoton Optics, Novati, NTT, Oclaro, Optocap, Petra, PhoxTrot, Ranovus, Rockley Photonics, Seagate and many more.... [Full list](#)

Authors:

- With almost 20 years of experience in MEMS, Sensors and Photonics applications, markets, and technology analyses, **Dr. Eric Mounier** provides deep industry insight into current and future trends. As a Senior Technology & Market Analyst, he is a daily contributor to the development of MEMS and Photonics activities at Yole Développement (Yole), with a large collection of market and technology reports as well as multiple custom consulting projects: business strategy, identification of investments or acquisition targets, due diligences (buy/sell side), market and technology analysis, cost modelling, technology scouting, etc.
Previously, Dr. Mounier held R&D and Marketing positions at CEA Leti (France). He has spoken in numerous international conferences and has authored or co-authored more than 100 papers.
Eric has a Semiconductor Engineering Degree and a Ph.-D in Optoelectronics from the National Polytechnic Institute of Grenoble (France).
- **Jean-Louis Malinge** collaborates with Yole Développement (Yole) to investigate the silicon photonics technologies and market evolution. Jean-Louis is strongly involved in this industry for many years and as an expert, he is an accomplished business management executive with extensive experience as a General Manager and CEO in France and the United States. He serves on numerous Boards of Directors. Amongst his experiences, he has formulated successful strategies to position or reposition lot of businesses, led numerous acquisition projects, and managed the creation of a successful joint-venture in Asia. Jean-Louis' academic credentials include an Executive M.B.A. from MIT Sloan School in Boston, Massachusetts. He also holds an engineering degree from the Institut National des Sciences Appliquées (INSA Rennes, France).

**ABOUT YOLE DEVELOPPEMENT**

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services and well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide covering MEMS and image sensors, Compound Semiconductors, RF Electronics, Solid-state lighting, Displays, software, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics and Batteries & Energy Management.

The "More than Moore" market research, technology and strategy consulting company Yole Développement, along with its partners System Plus Consulting, PISEO and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business. . For more information, visit www.yole.fr and follow Yole on [LinkedIn](#) and [Twitter](#).

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