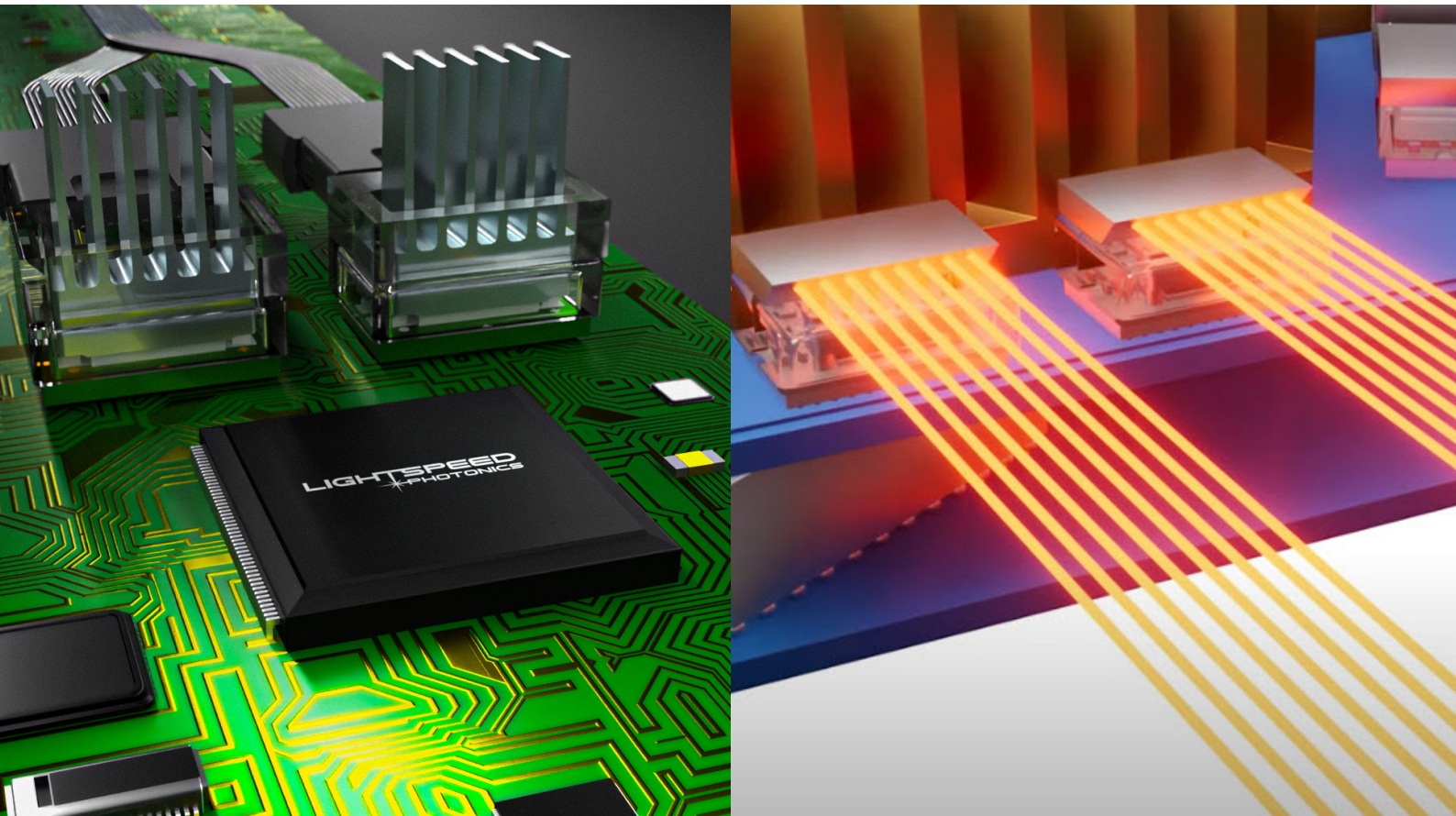


## LIGHTSPEED PHOTONICS PVT. LTD.

INNOVATING LASER-DRIVEN PHOTONICS DATA TRANSFER TECHNOLOGIES WITH SOLIDWORKS AND 3DEXPERIENCE WORKS SOLUTIONS

### Case Study



LightSpeed Photonics began development of its innovative optical interconnects, which send data along fiber or laser-driven wireless photonics, using SOLIDWORKS. It was able to cut design cycles by 25 percent by adding design, modeling, simulation, data management, collaboration, project planning, and communication solutions from the 3DEXPERIENCE Works portfolio to its existing SOLIDWORKS installation.

### Challenge:

Quickly, collaboratively, and cost-effectively develop innovative, laser-driven photonics data transfer technologies that have a much smaller data center footprint, use half the electricity of existing technologies, and provide data bandwidth up to 10 times faster to support the emerging faster data transfer requirements related to increased cloud data storage and artificial intelligence (AI) technologies.

### Solution:

Implement SOLIDWORKS design software and add 3DEXPERIENCE Works modeling, design, project planning, simulation, data management, collaboration, and communication solutions to take advantage of product development in the cloud on the 3DEXPERIENCE platform and connect offices in India and Singapore.

### Results:

- Cut development cycles by 25 percent
- Made collaboration more efficient
- Reduced prototyping using simulation
- Decreased rework costs through improved accuracy

LightSpeed Photonics is a Singapore-based, fabless, semiconductor component and system development company that is focused on building optical interconnects to increase data bandwidth, to accelerate real-time computing and efficient networking with solderable onboard/near-packaged optical interconnects, and to develop modular, compute+interconnect, heterogeneous integration System-in-Package (SiP) with co-packaged optics. The company's core technology results in scalable and distributed computing architectures that reduce data latency, footprint, and power consumption, while increasing data bandwidth and performance per watt.

Founded in 2020 to develop products that address the data transfer challenges and potential bottlenecks arising from the growth of cloud computing and artificial intelligence (AI) technologies, LightSpeed Photonics technology converts high-speed electrical signals (electrons) into optical signals (photons) closer to computing chips, which send the data along fiber or laser-



"We decided to move to the 3DEXPERIENCE platform because of the multidisciplinary nature of our development process, which involves electronic, mechanical, and optical design, and the need to collaborate across multidisciplinary teams based in different countries. As our development progresses, we will need access to additional solutions, such as using 3DEXPERIENCE SIMULIA solutions for EMI/EMC [electromagnetic interference/electromagnetic compatibility] analysis, and the 3DEXPERIENCE platform will enable us to scale our organization and solutions automatically because we can add any required solutions when we need them and begin using them immediately on the platform."

– Rohin Y, CEO

driven wireless photonics — through the air for distances up to 150 mm or up to 100 mm over fiber — before being translated back into an electrical signal on the receiving end.

The company's LightKonnnect™ laser transmitter/receiver chip and LightKonnnect Fiber™ optical connector are both commercially available for application evaluation. LightKonnnect has a footprint that is 20 times smaller than existing electronic/optical wired data connects and transfer systems and supports three times the data bandwidth while using half the power.

When LightSpeed Photonics was established, it began development using SOLIDWORKS® 3D design software to develop the incredibly small assemblies required for the technology, as well as to develop jigs, fixtures, and tooling for the firm's test equipment, according to CEO Rohin Y. However, with development teams based in both India and Singapore, LightSpeed needed a solution to support more efficient collaboration between its two development teams.

LightSpeed Photonics chose to move to the cloud-based **3DEXPERIENCE®** platform to support inter-office collaboration by adding design, modeling, simulation, data management, collaboration, project planning, and communication solutions from the **3DEXPERIENCE** Works portfolio to its existing SOLIDWORKS installation. The product innovation portfolio leverages the cloud-based **3DEXPERIENCE** platform to give customers access to the power of industry-leading tools for design, simulation, manufacturing, data management, and marketing from Dassault Systèmes.

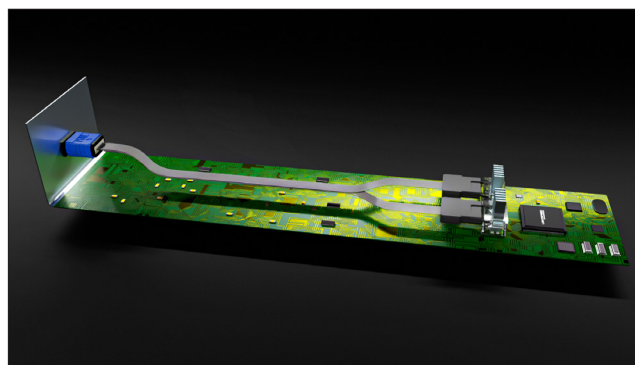
"Although I had used other design packages, such as Unigraphics® and Pro/E®, I found SOLIDWORKS to be very user-friendly with a good user interface," explains Product Manager Raghuveer M. "SOLIDWORKS is also an industry standard in India, which made it easier to assemble our team."

"We decided to move to the **3DEXPERIENCE** platform because of the multidisciplinary nature of our development process, which involves electronic, mechanical, and optical design, and the need to collaborate across multidisciplinary teams based in different countries," Rohin adds. "As our development progresses, we will need access to additional solutions, such as using **3DEXPERIENCE** SIMULIA® solutions for EMI/EMC analysis, and the **3DEXPERIENCE** platform will enable us to scale our organization and solutions automatically because we can add any required solutions when we need them and begin using them immediately on the platform."

### DESIGNING REALLY SMALL ASSEMBLIES ACCURATELY

LightSpeed Photonics initially chose SOLIDWORKS solutions because its product is incredibly small and difficult to visualize, and requires extremely tight tolerances of within a few microns of accuracy. "We're designing very small electromechanical components that are combined in the final product assembly," Raghuveer notes. "Electronics packaging and heterogeneous integration designs are probably not a common application for SOLIDWORKS, but the software has proven to be more than adequate.

"It's not easy to understand these assemblies without visualizing them in SOLIDWORKS in 3D," Raghuveer continues, explaining the need to efficiently communicate these



Using the combination of SOLIDWORKS and **3DEXPERIENCE** Works solutions, LightSpeed Photonics engineers based in India and Singapore were able to collaborate more effectively in the cloud across 2,000 miles of ocean in developing the company's incredibly small and difficult-to-visualize product, which requires extremely tight tolerances of within a few microns of accuracy.

designs with assembly partners and other stakeholders. "Managing the data produced by our multidisciplinary teams, including nonlinear analysis results, is another reason that we added **3DEXPERIENCE** Works solutions."

### COLLABORATING ACROSS 2,000 MILES OF OCEAN

The more efficient collaboration that LightSpeed Photonics has realized by moving to the cloud-based **3DEXPERIENCE** platform has enabled the company to cut its design cycles because colleagues from different disciplines can work collaboratively across 2,000 miles of ocean as if they were in the same office. Moreover, the addition of **3DEXPERIENCE** Works solutions provides transparent data management capabilities in the cloud, securing and safeguarding data while maintaining tight revision controls.

"We've cut our design cycles by 25 percent because our cross-functional teams in both locations are always working on the latest revision," Raghuveer says. "No matter who is working on the design

