POET Technologies Inc.

Cormark Securities' Inflection 2021 Conference

Power Technology Segment

Dr. Suresh Venkatesan, CEO Presenting

April 13, 2021 2:30pm EDT

Presentation Outline

- Corporate Overview and Organization
- Photonics, Integration and Wafer-Scale Manufacturing
- Interposer Platform & Features
- Product Roadmap
- Market Opportunities

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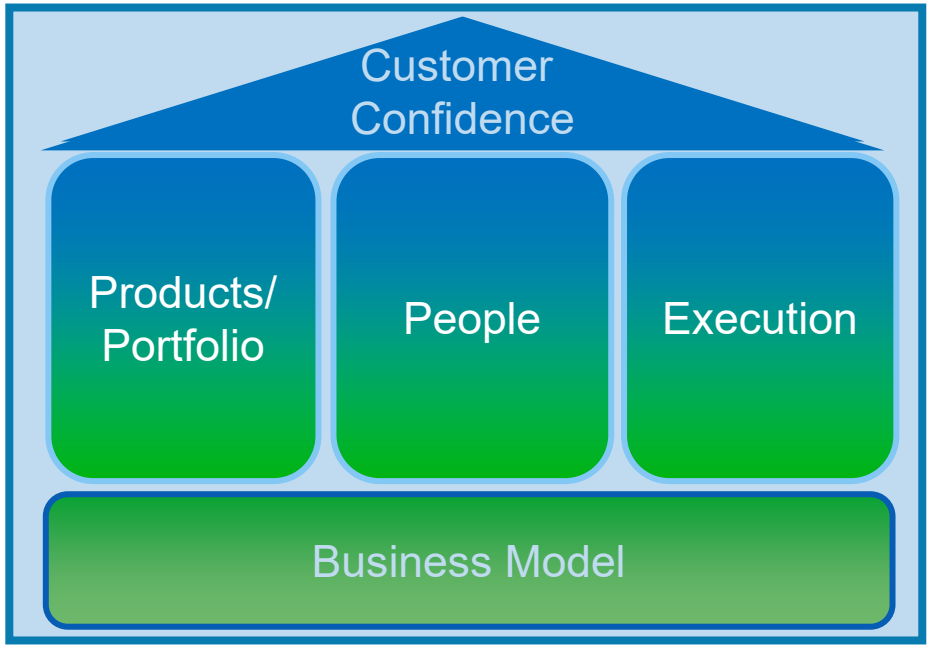
POET's Vision and Mission Statements

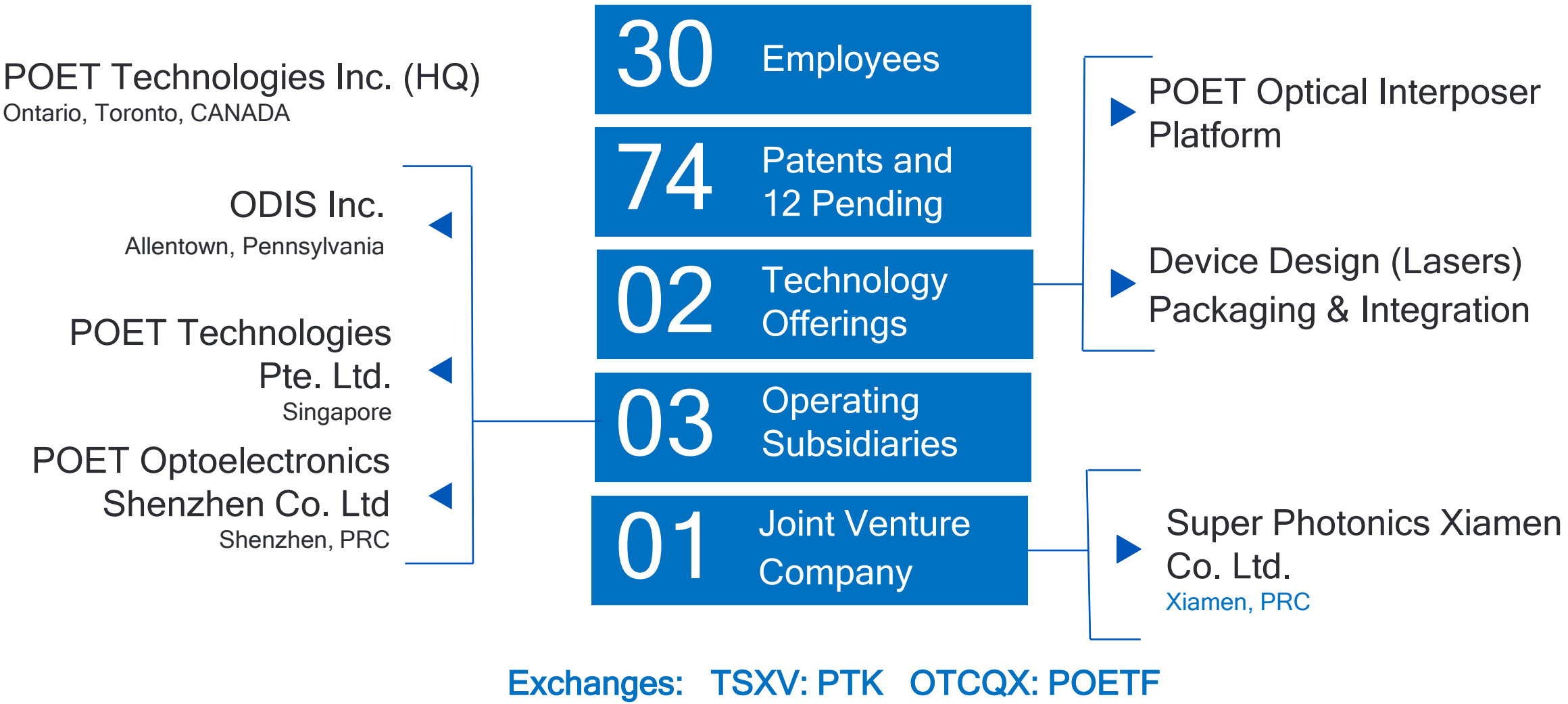
Vision: To become the global leader in chip-scale integrated photonics solutions by deploying our Optical Interposer technology, enabling seamless integration of electronics and photonics for a broad range of vertical market applications

Mission: Establish an industry leadership position in chip-scale integrated photonics with validated disruptive, IP protected, Optical Interposer platform components for Datacenter, 5G and Co-packaged Optics

Building Blocks for Sustainable Growth

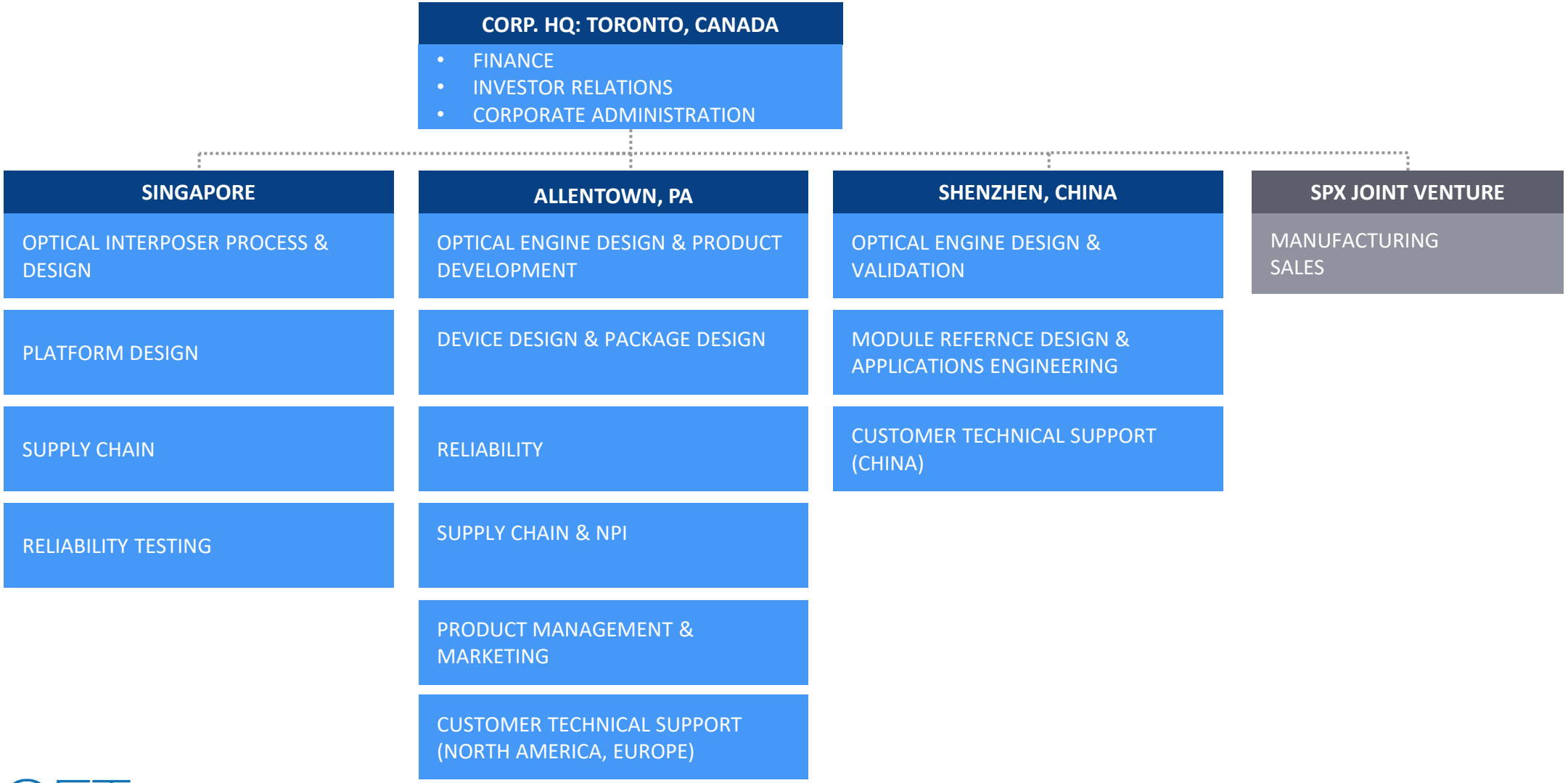


POET Technologies – Photonics Design & Development



Exchanges: TSXV: PTK OTCQX: POETF

POET Technologies Organization



Joint Venture for World Class Manufacturing and Scalability

- Super Photonics Xiamen – POET and Sanan IC Joint Venture (JV)
  - Vertically integrated manufacturing for Optical Engines
  - Ability to rapidly scale production

Sanan IC | Xiamen Sanan Integrated Circuit Co., Ltd.
- Xiamen Torch High-Tech Industrial Development Zone
- US$500 million investment on180,000 square meters
- Compound semiconductor manufacturing platform
- Process technologies for microwave radio frequency, high power electronics & lasers

Sanan Optoelectronics Co. Ltd. (Parent)
- LED, filters, power electronics, microwave integrated circuits and optical comms.
- Produces 25 million 6” wafers per year with 4 locations and over 8,500 acres
- US$1 billion Revenue; US$14 billion market cap
- Shanghai Stock Exchange (600703)

Strategic Supply Chain

- POET controls the supply chain to ensure performance, cost and delivery to customers

Optical Interposer	Photonic Devices	Electronics	Assembly & Test
POET Owned and Designed	Strategic Sourcing Co-Designed POET Specified	Off-the-Shelf or Customer Specified	Strategic Sourcing Co-Designed POET Specified
SILTERRA	Almæ Technologies; DenseLight; 厦门市三安集成电路有限公司 Xiamen Sanan Integrated Circuit Co., Ltd		SP

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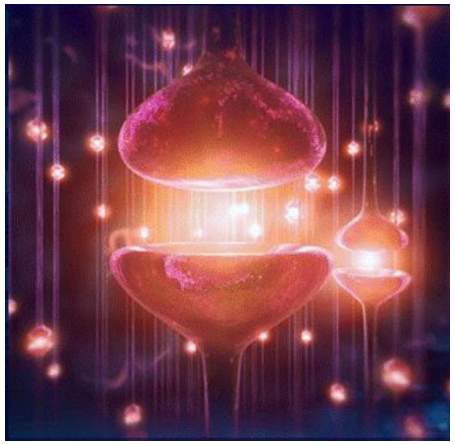
What is Photonics and Why is Photonics Important?

- Photonics devices create, detect and manipulate light. Laser generated light is fundamental to sensing, computing, data and telecommunications – the biggest trends in computing today

Proliferation of Cloud Computing

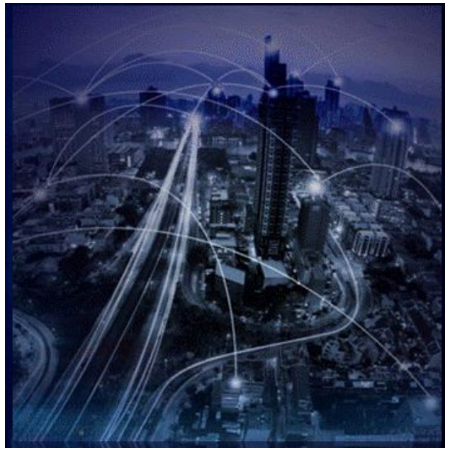
Data Centers
Network Switching

Growth of Artificial Intelligence



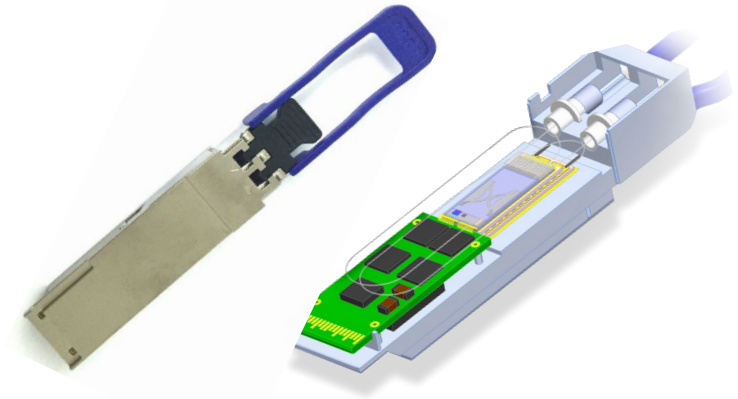
Neuromorphic
Optical Computing

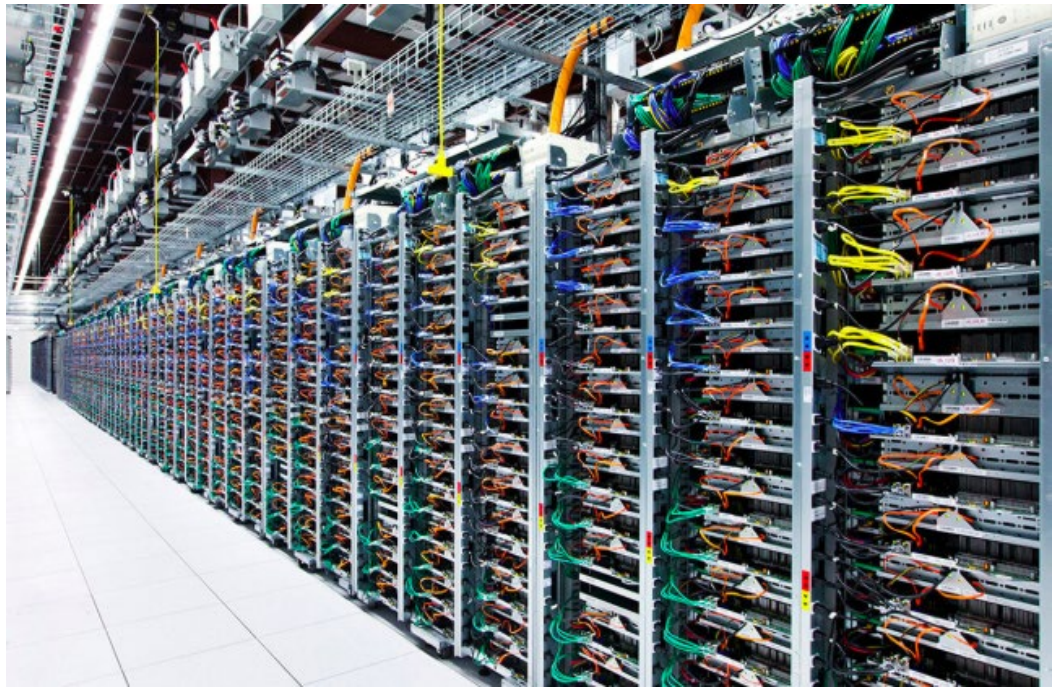
Adoption of 5G and Edge



Communications
Internet of Things

Photonic Transceivers Convert Digital Electric Signals Into Light Signals and Back Again





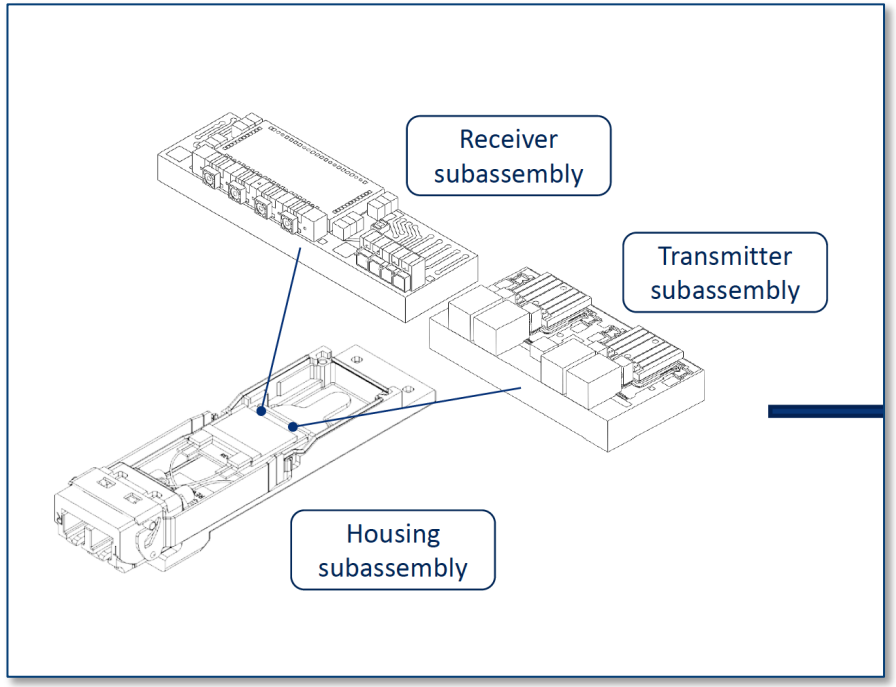
Photons and light waves compared to copper:

- 100X more data per second
- 10X lower power consumption
- 10X less heat produced

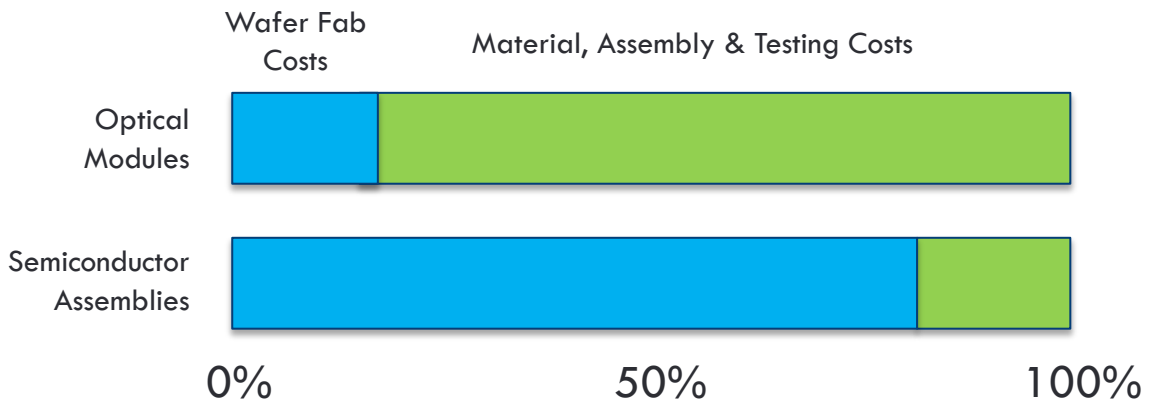
Conventional Approaches are Expensive and Slow

- Making reliable photonics devices are expensive in both capital and labor
  - Cost declines have not kept up with Moore's Law- most photonics modules are built individually
- Multiple different components must be able to interconnect seamlessly
- Integration of components at wafer-scale has not been fully implemented even by the largest companies working for the past 20 years

Photonics	Electronics	Optics
Lasers	Controllers	Mirrors
Detectors	Amplifiers	Lenses
Modulators	ASIC's	Prisms
Multiplexers	Monitors	Collimators
De-multiplexers	Micro-processors	Polarizers
Size Converters	Memory	Beam Splitters



Why Integration Matters



- Materials, Assembly & Testing = 80% of total cost of an optical module, with the optical components and packaging representing => 70% of the total
- The opposite is true for semiconductors
- The only way to reduce optical module cost is to address the cost of optical components, materials, assembly and test.
- By applying proven wafer-scale semiconductor manufacturing techniques to achieve Integration, POET:
  - Dramatically reduces component cost
  - Improves size, power, cost, speed, reliability and scalability
  - Enables new functionalities

Breakdown of Optical Module Costs

Indirect Costs: **20%**

Materials, Assembly & Test **80%**

Total Cost **100%**

Breakdown of Materials, Assembly & Test Costs

Electrical Components: **10%**

Optical Components: **40%**

Packaging: **50%**

90% of Material, Assembly & Test Costs => **70% of Total Cost**

POET's Approach

- POET took on the dual challenge of INTEGRATION and PLATFORM to develop a unique, disruptive and differentiating new entry into photonics markets

Integration is the practice of combining different parts or functions so that they work together seamlessly

A **platform** is a group of technologies that are used as a base upon which other applications, processes or technologies are developed

A popular example of the combination of Integration and Platform Technology

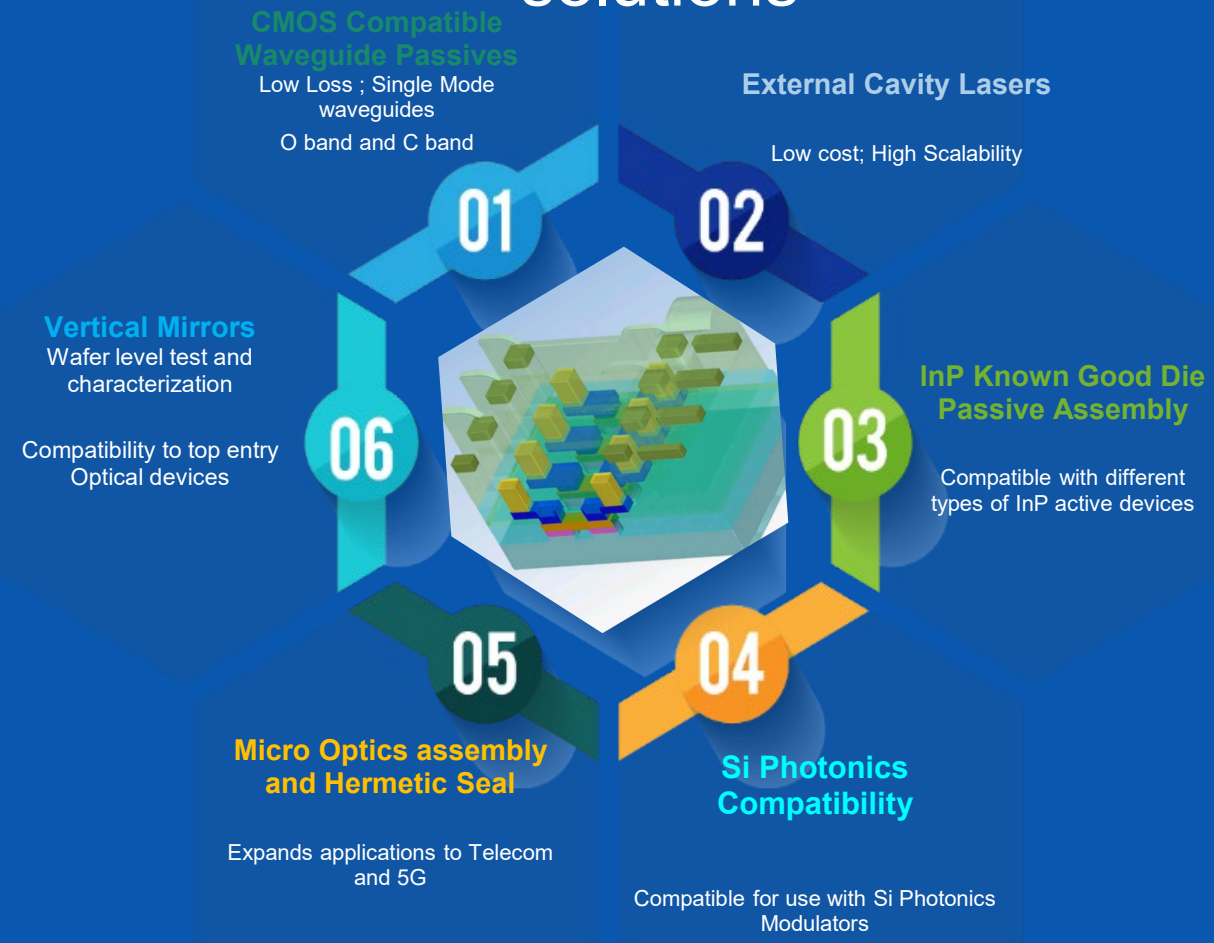
From Platform to Products

"A product platform is not a product. It is a collection of **common elements**, especially the underlying core technology, implemented across **a range of products**."

Product Platform Strategy :

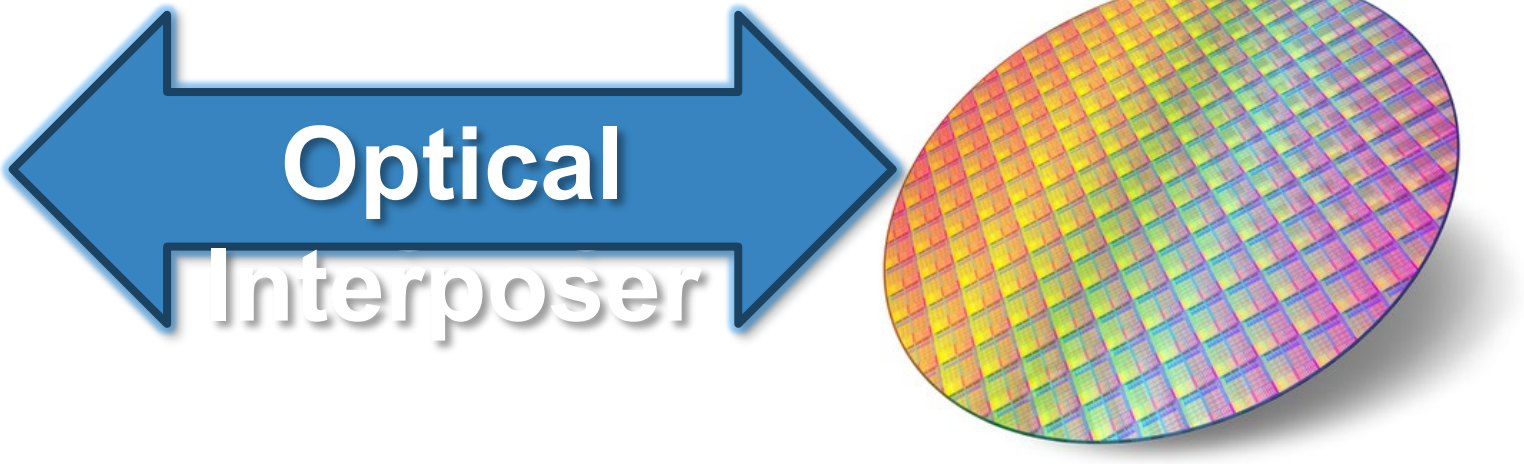
- defining product generations
- supporting extensions
- creating derivatives
- enhancing capability

Expanding capabilities of the platform to enable next gen solutions



POET is doing for Photonics what Semiconductors did for Electronics – Achieving Lower Cost and Higher Performance through Device Integration and Wafer-Level Fabrication

- The POET Optical Interposer™ is an **integration platform** that combines photonic, electronic and optical devices in the same **chip-scale package** – fabricated, assembled and tested all at **wafer scale**



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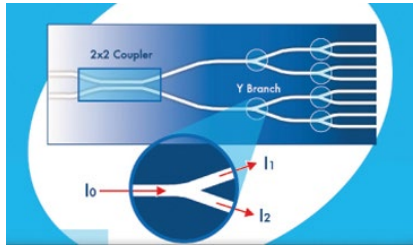
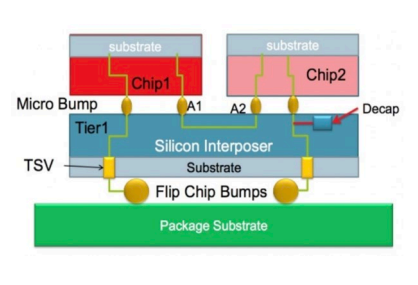
POET's Optical Interposer™ Platform

- A unifying hybrid optoelectronics WAFER SCALE integration platform

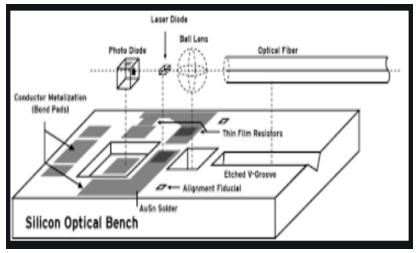
POET Optical Interposer



Passive Optical Device Integration



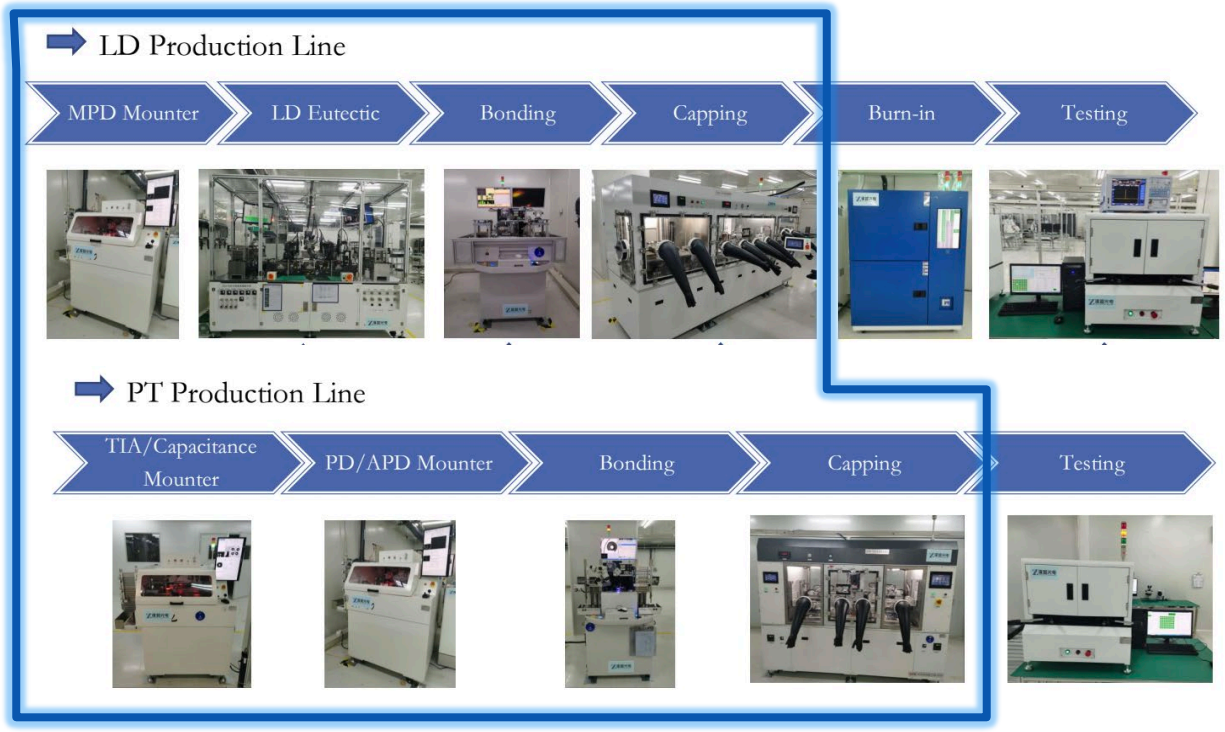
Interposer Functionality



Micro Optic Assembly

Photonics ; Optics ; Electronics

Rethinking Conventional Photonics Assembly

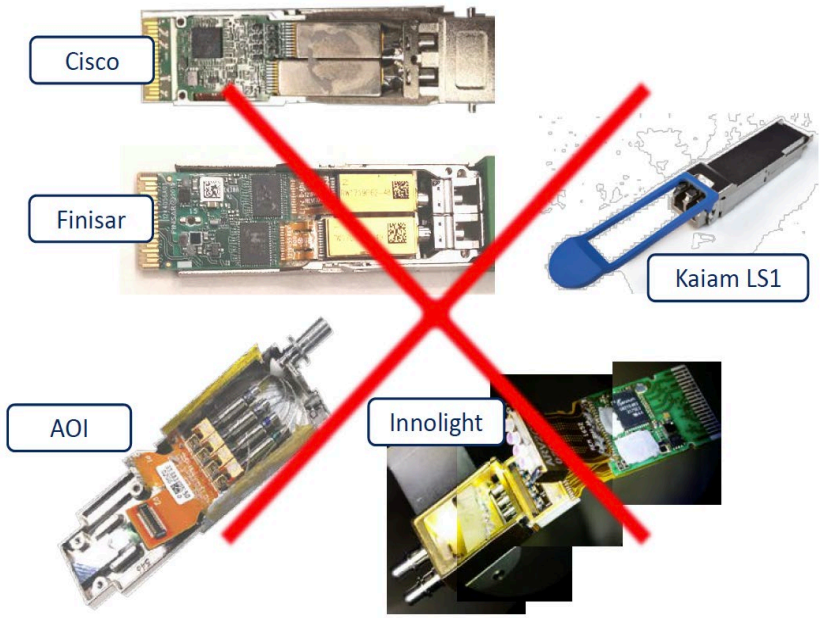


Reducing Components ; Reducing Capital ; Reducing Time

Rethinking the Optical Transceiver

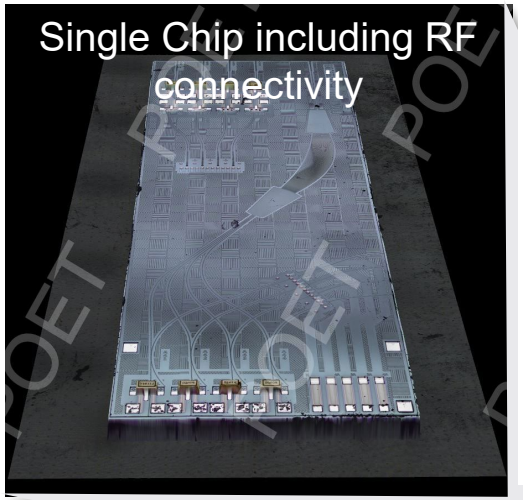
- Combining All Photonics / Optics Components into One Chip
- And building them hundreds at a time instead of one at a time, at wafer scale

Competing Technologies

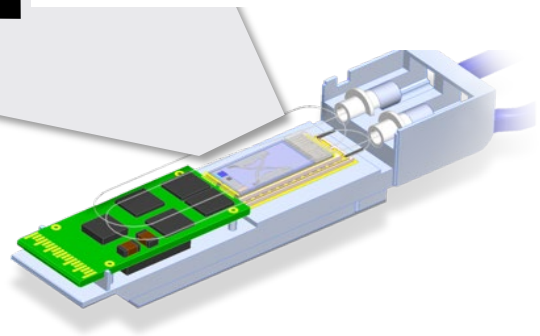


- Discrete micro-optics or TOSA/ROSA approach
- Lots of components, assembly and alignment
- Limited scalability: no space for high channel count products
- Limited cost scalability

POET

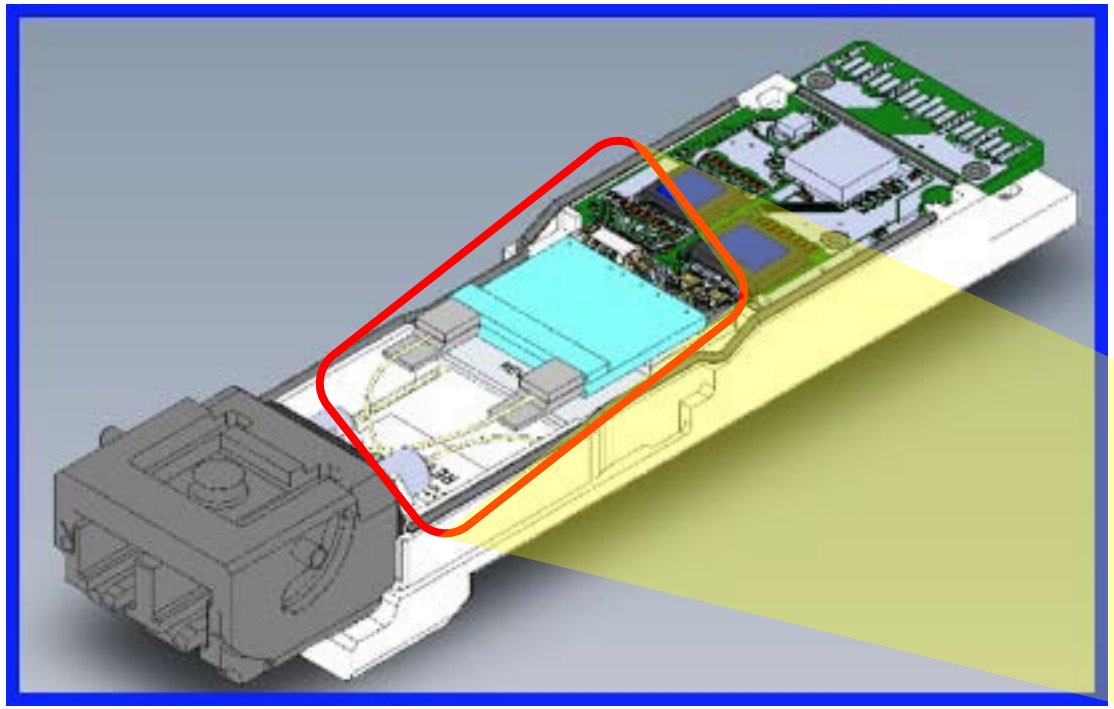


- Simpler BOM and reduced number of build/test steps
- Standard assembly technologies
- Scalable for future higher density products

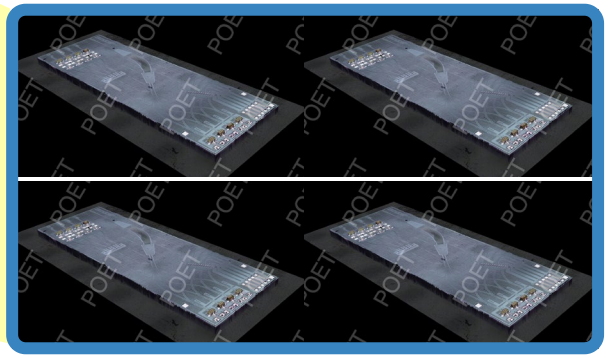


The World's Smallest and Lowest Cost 100G Optical Engine

- 4 x 25G DML Lasers, 4 High Speed Photodiodes, 4 Monitor Photodiodes, Mulitplexers, DeMultiplexers, Power Taps and Fiber Attach
  - all on a 9mm x 6mm POET Optical Interposer platform



FOUR POET Optical Engines can fit in a space occupied by one !!



How POET Wins :

- Simplified Packaging
- Lower Bill of Materials (BOM) Cost
- Highly Automated Wafer Scale Manufacturing
- Dense, Smallest Form Factor
- Excellent Electrical and Optical Performance

POET's Optical Interposer – Low Cost AND High Performance

- The benefits POET's Optical Interposer add up to a truly disruptive entry into large-scale photonics markets

✓ Dramatically lower module cost	*25% - 40% less*
✓ Lower CAPEX investment for module assembly & test	*1/10th of others (discrete or SiPh PIC based)*
✓ Chip-scale package	*Reduces power consumption*
✓ Wafer-level assembly and test	*Built 100's at a time, not 1 at a time*
✓ Planar architecture	*Ease of production and flexibility in design*
✓ Platform technology	*Adaptable to multiple applications (e.g., 5G, AI, IOT)*

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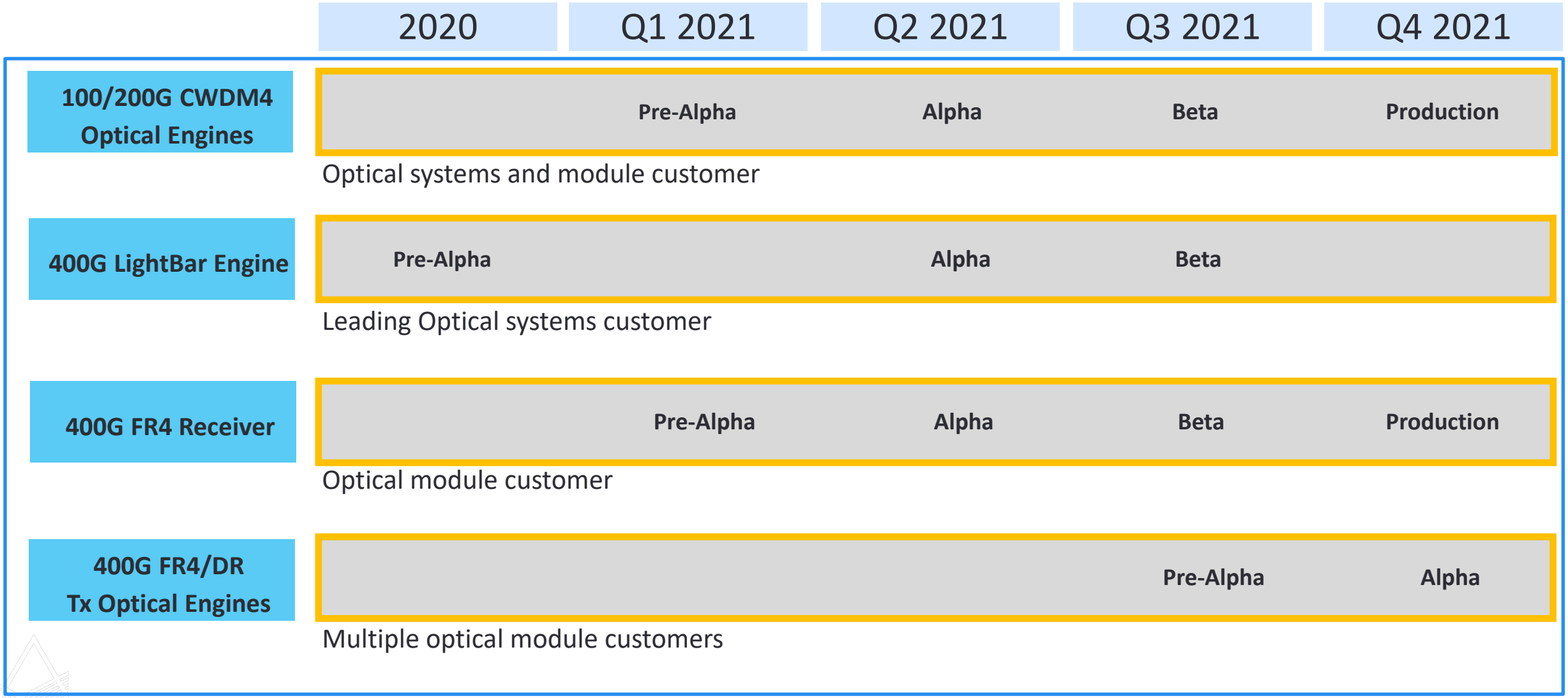
Product Roadmap driven by Customer Engagement



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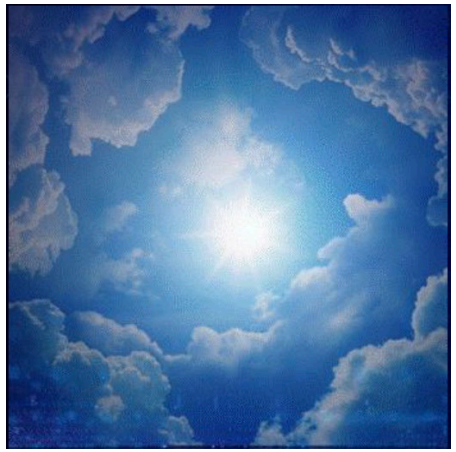
Market Application for POET's Optical Interposer

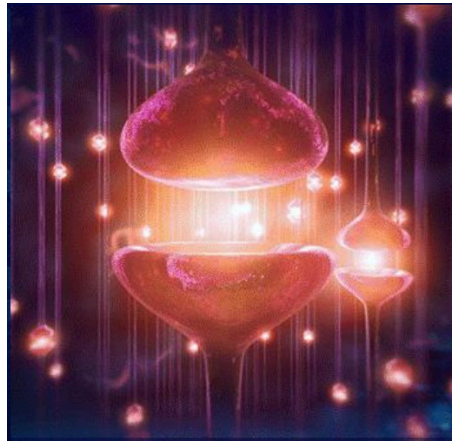
- POET's Optical Interposer can lower the cost and improve the performance of any photonics device targeted at the highest growth areas of computing today and in the future

Proliferation of Cloud Computing & HPC



Data Centers
Network Switching

Growth of Artificial Intelligence



Neuromorphic
Optical Computing

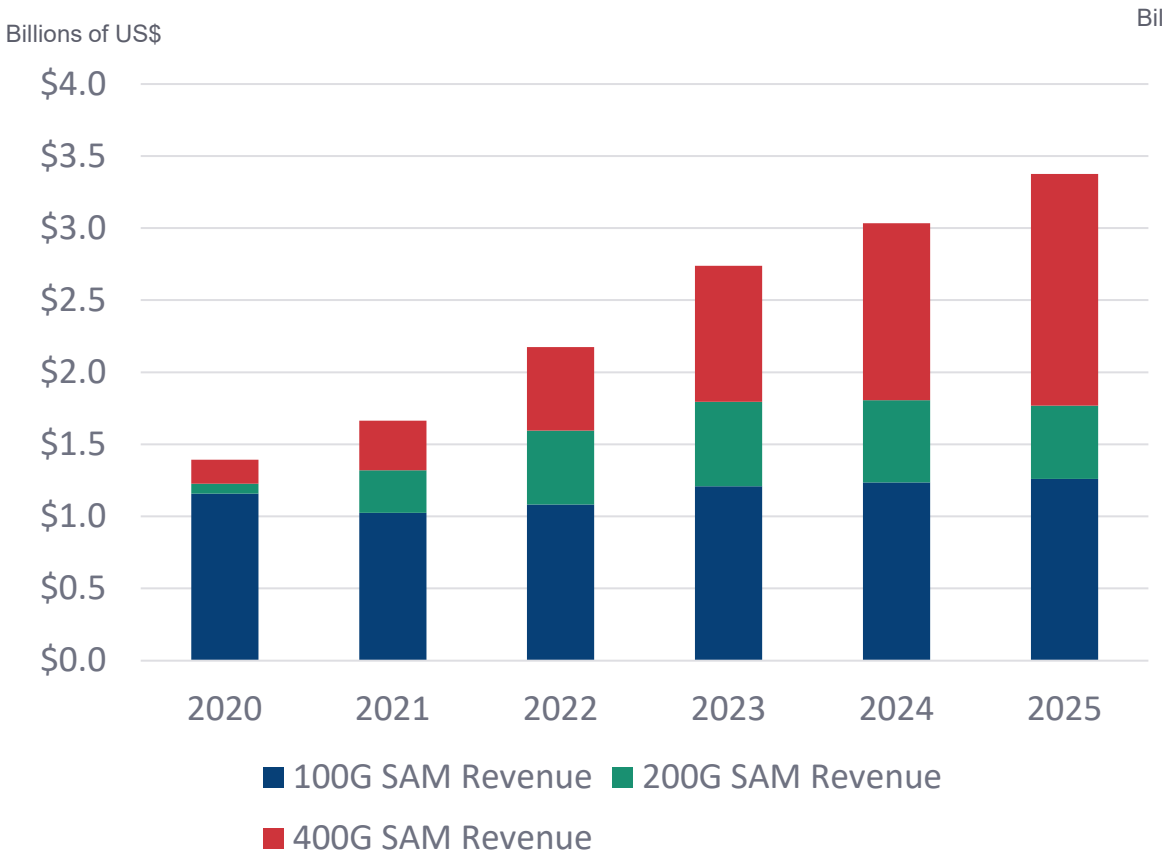
Adoption of 5G and Edge

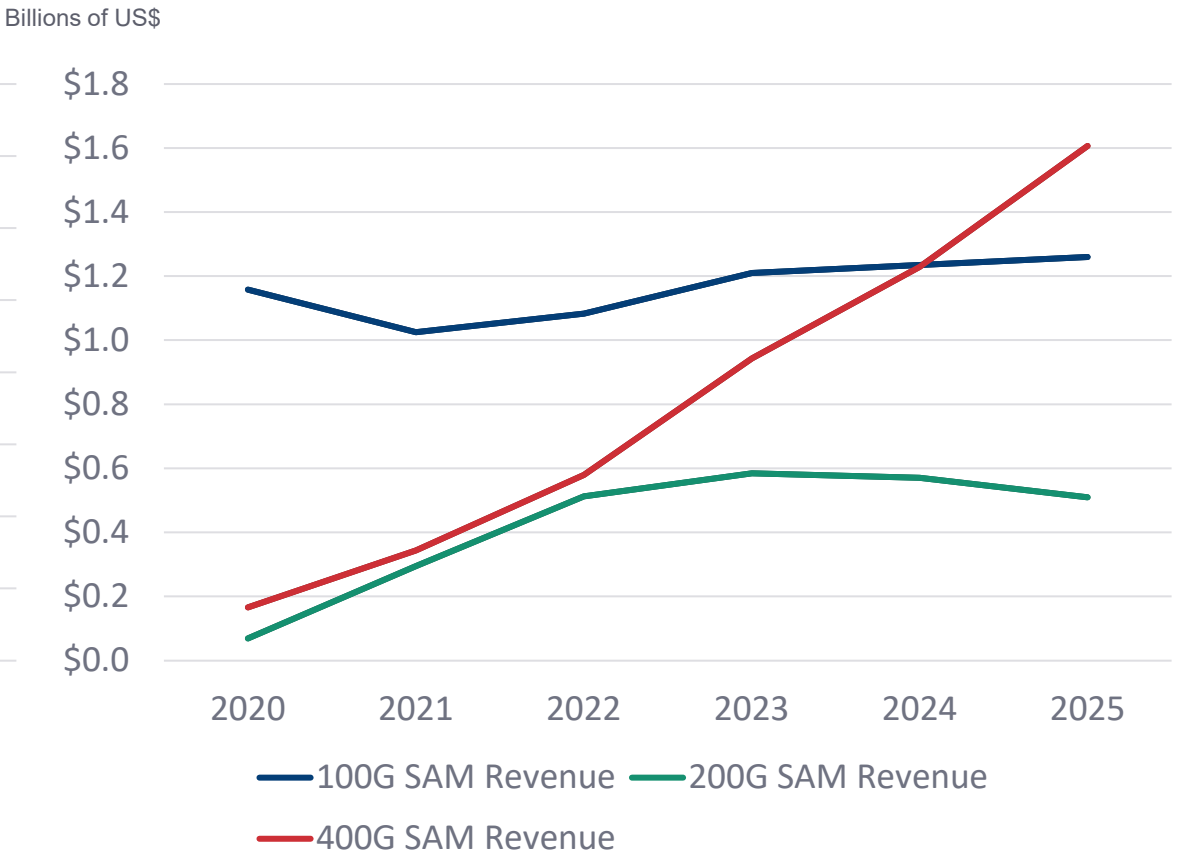
Communications
Internet of Things

Initial Target Markets in Optical Transceivers

- Serviceable Available Market (SAM) for 100G, 200G and 400G Optical Transceivers*

  *does not include recently increased TAM estimates for 200GLR4





POET Potential Customers

- Partial List of Potential Customers for Optical Engines for Optical Transceivers and for Co-Packaged Optics

Transceiver Module		Optical System	Cloud Data Center
ADVA	Accelink	Cisco	AWS
Delta	Cloudlight	Huawei	Google
Molex	GigaL	Juniper	Facebook
Eoptolink	HG	Acacia	AliBaba
Hisilicon	Huali	Arista	
Source	Xgiga	Nokia	
Hisense	Hengtong		

POET Opportunity

	Transceivers for Datacom	5G Networks	Co-Packaged Optics	Optical Computing and Edge Applications
Market Size SAM (peak 2021-28) :	$2-3.5B annually	$3-5B annually	$2-3B annually	$3-5B annually
Development Partners:	Tier 1 NA European	Several in play	Several in play	US-based Start-up
JV / Assembly & Test Partner(s):	Sanan IC JV SuperPhotonics	Sanan IC JV SuperPhotonics	TBD	TBD
Potential Customers:	Multiple module makers	Multiple module makers	Cisco Arista Juniper	Nvidia HPE
Revenue Potential:	$250M+ annually	$250M+ annually	$250M+ annually	$250M+ annually

Summary

- POET successfully transitioned from technology development to product development in the second half of 2020
- Data from prototype devices assembled at wafer-scale showing performance that exceeds internal expectations
- Super Photonics Xiamen provides ability to meet customer demand and to scale rapidly
- POET has an opportunity to build a $1 Billion annual revenue business in just the 4 application areas that we are working in today


POET
Technologies