

# POET Technologies Inc.

NASDAQ:POET | TSXV:PTK

Disruptive Photonics Platform for a new generation of **Artificial Intelligence Computing** and **Data Centers**

November 6, 2023



# Safe Harbor

## Forward-Looking Statements

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# POET Technologies: An Integral Player in the AI Ecosphere

Ticker:	POET
Exchange:	NasdaqCM
Stock Price <sup>(1)</sup> :	\$2.70
Shares Outstanding <sup>(1)</sup> :	40.7M
Diluted Shares Outstanding <sup>(2)</sup> :	46.6M
Diluted Market Capitalization <sup>(2)</sup> :	\$125.8M
6M 2023 / FY 22 Revenue:	\$358.2K / \$552.7K

(1) As of the close on October 31, 2023

(2) Based on a \$2.70 stock price for POET, which reflects the closing price October 31, 2023.



Pure play AI hardware company delivering AI solutions



Well-known markets with significant potential  
\$19 billion Total Addressable Market (TAM) by 2029<sup>1</sup>



Invented the POET Optical Interposer™  
delivering Compelling Value in Scalability, Size & Power



Disruptive Platform Technology enables  
“Semiconductorization of Photonics”



Commercialization underway with multiple customers



\$19B<sup>1</sup>

Datacom / Telecom  
and AI Processor Markets

1

JV with Sanan IC - Super  
Photonics Xiamen

4+

Years of Technology and  
Product Development

28+20

Patents and Patents Pending

7 / 12

7 Current Customers and 12 Projects



# Experienced Executives with Deep Silicon Valley Hardware Expertise



**Dr. Suresh Venkatesan, CEO & Chairman**

- Inventor of the POET Optical Interposer
- Principal Inventor for 28 issued patents and 20 patent applications for POET
- Former SVP Technology at GlobalFoundries
- Former senior roles at Motorola & Freescale Semiconductors
- PhD in Electrical Engineering - Purdue University



**Vivek Rajgarhia, President & General Manager**

- Overall responsibility for Company Operations, Market Entry, Products & Customers
- Oversight of Super Photonics Xiamen, POET's manufacturing partner in China
- Former CEO & Co-Founder of Optomai (MACOM)
- Former senior roles at Lucent ME (Nokia), OpNext (Lumentum), GigOptix (Renesas)
- BEng (Electrical) - Stevens Institute of Technology



**Thomas Mika, Executive Vice President & CFO**

- Overall responsibility for Finance & Administration
- Raised \$45M in equity capital and \$40M in non-equity capital for POET
- Listed POET on NASDAQ in 2022
- Former Chairman, CEO & CFO of Tegal Corp (Nasdaq) - semi capital equipment
- BSc Microbiology - University of Illinois; MBA - Harvard University



**Dr. Mo Jinyu, SVP & GM, Asia**

- Former Sr. Director and Chief Scientist, MACOM's Lightwave Business Unit - Asia
- Founder and former CTO, Nexwave Photonics
- Former senior roles at Huawei, Oclaro, I2R



**Raju Kankipati, SVP & GM, USA**

- Former Sr. Director, Product Management at MACOM
- Former senior roles at Arista, Cisco, OpNext (Lumentum)



**Dan Meerovich, VP, Product Engineering**

- Former Director, Product Engineering at MACOM's Lightwave Business Unit
- Former senior roles at Apogee (Broadcom), Multiplex



**James Lee, VP & GM, Singapore**

- Former VP Logic Technology, IMEC
- Former roles at GlobalFoundries and Chartered Semiconductor



**Kevin Barnes, VP, Finance and Administration**

- Former Controller, EC English
- Former roles at Duguay and Ringler Corporate Services

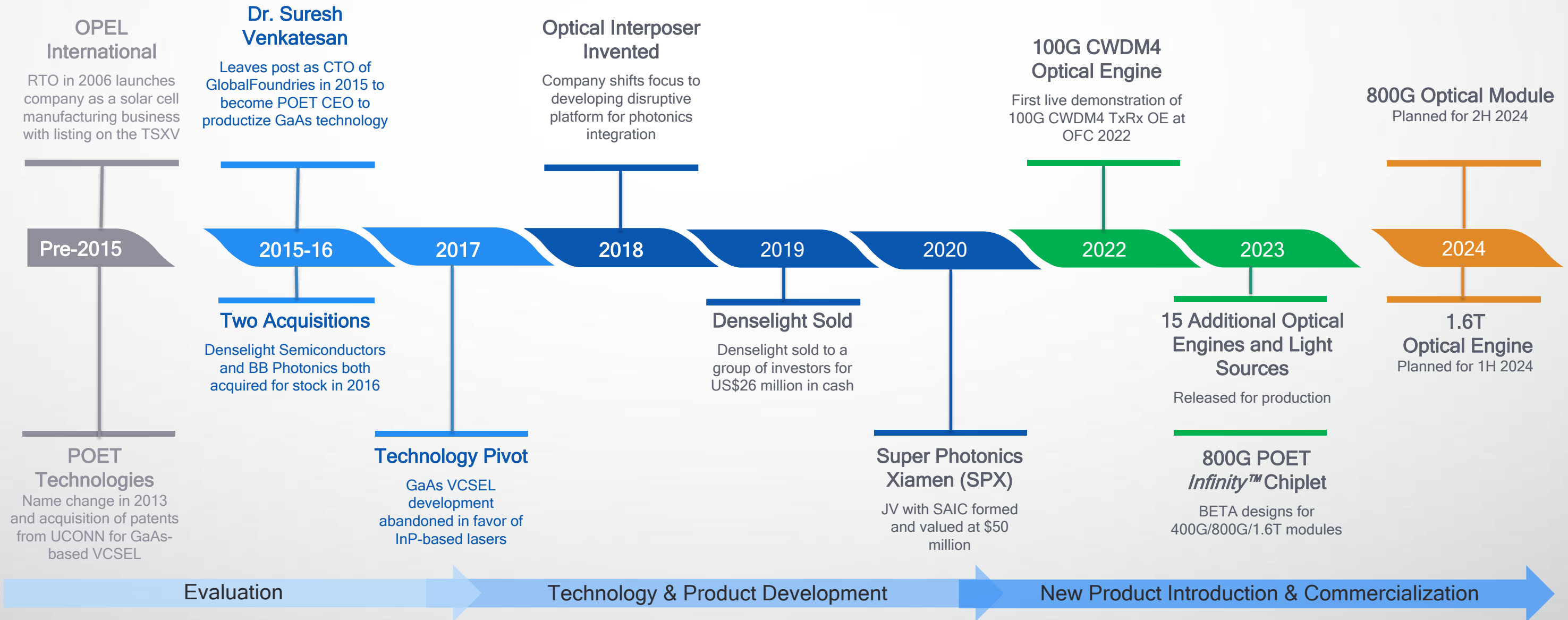


**Dr. Robert Ditizio, VP, Intellectual Property**

- Former CTO, Tegal Corporation
- Patent and process consultant for POET since 2017

# Pure Play AI Hardware Company Delivering AI Solutions

Commercialization underway with multiple customers

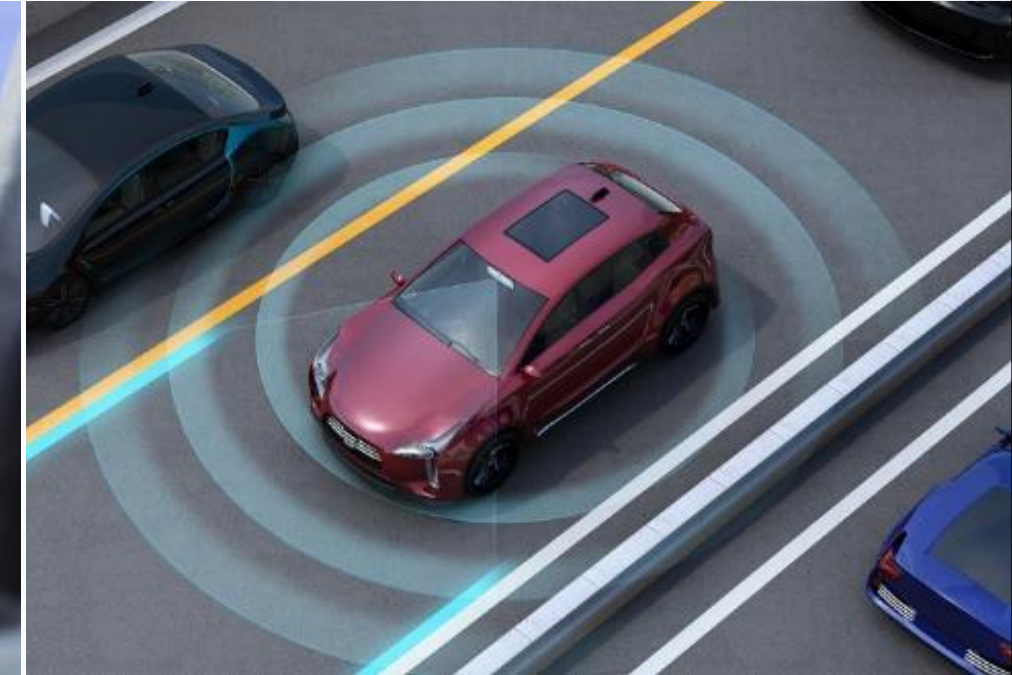


# What is Photonics? A critical AI component

Photonics uses **Light** for **Data Communications** and **Sensing**

Why use Light instead of Electrons?

- Light carries 10X **more data**
- Light needs 10X **less power**
- Light produces 10X **less heat**
- *Higher speeds with less latency at lower cost!*



# Mega Trends Support Huge Growth of Photonics

## Photonics 1.0

1980-2000 : Birth of the Internet

**INTRODUCTION OF**  
Trans-oceanic Telecommunications  
on Fiber Optic Cables



## Photonics 2.0

2005-2025 : Web2.0 / Social Media / 3D Sensing

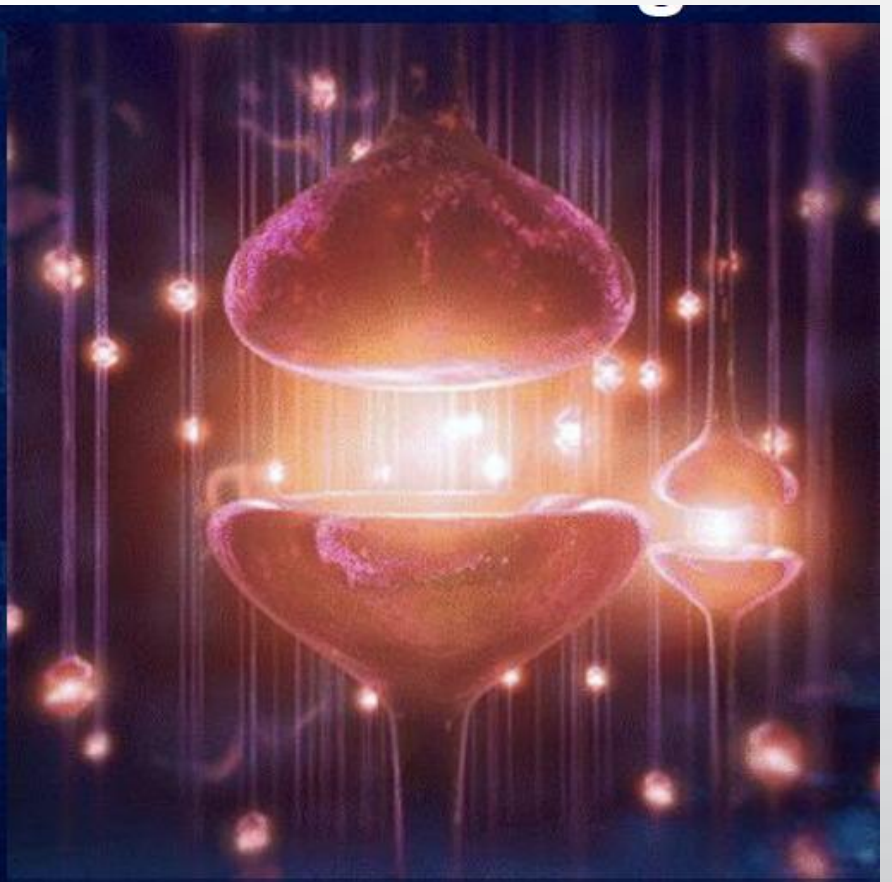
**PROFILERATION OF**  
Cloud Computing and  
Growth of Internet



## Photonics 3.0

2025+ : Entering the Future

**GROWTH OF**  
Artificial Intelligence  
and Edge Computing



# POET's Technology can **SCALE** When Others **CANNOT**

Incumbent technologies are not scalable for applications needing 100's of millions and billions of units per year

Millions/Year

VECTOR

INCUMBENT TECHNOLOGIES\*

POET

Unit Volume

X

✓

Size

X

✓

Cost

X

✓

Power Consumption

X

✓

100s of Millions/Year

Billions/Year



# “Semiconductorizing” Photonics

POET’s technology allows photonics to scale the way semiconductors did

Semiconductor  
Electronics

## Discrete Components



## Integrated Circuit



## Integrated Circuit

- Smaller, Faster, Cheaper, in High Volume (Moore’s Law)
- Transformed the semiconductor industry - and all other industries
- Trillion \$ industry - grown over three decades of investment<sup>1</sup>

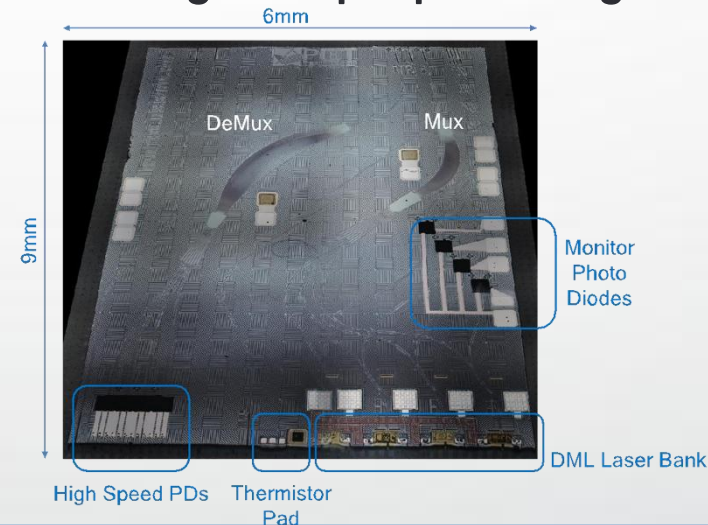
Photonics

## Discrete Transceiver Assembly



- ~50 individual components and sub-systems
- High labor and equipment cost - cannot scale

## POET Single Chip Optical Engine



## POET Optical Interposer Platform

- Automated integration of components on a single chip
- Economies of scale comparable to semiconductors
- Transformational technology for Photonics

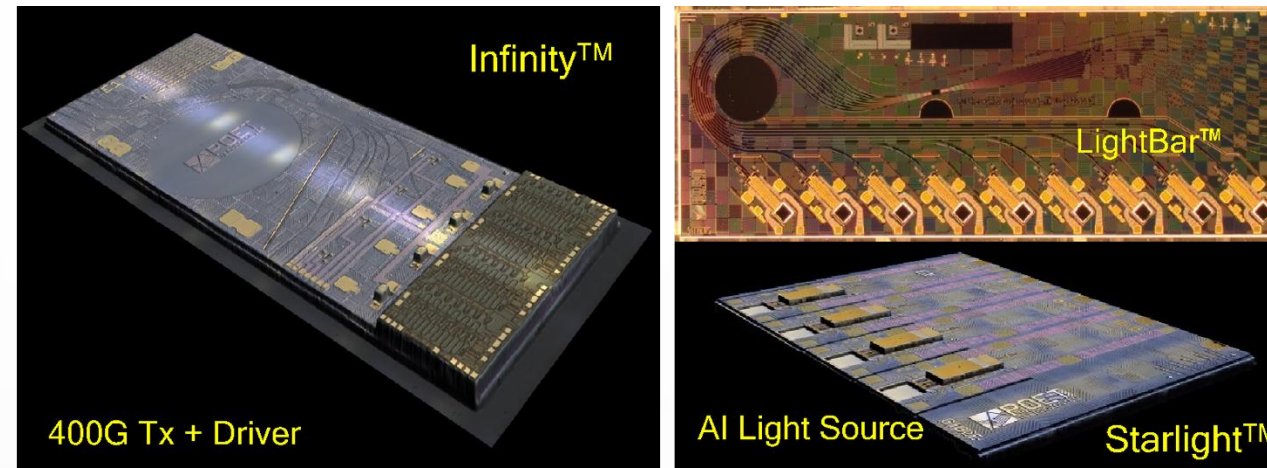
# POET's Optical Interposer™ enables light-based AI processing

AI will drive exponential growth for Photonics and for POET

## Challenges for conventional electronic AI Processors:

- Not enough bandwidth between all GPU's for efficient utilization
- Gap between memory demand and supply
- High power consumption and heat generation

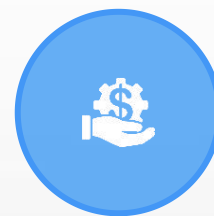
POET's Optical Interposer-based Optical Engines and Light Sources



- POET's technology is well-suited for assembling high-performance light sources for AI processors.
- POET believes its products are up to 75% lower cost than conventional, laser-array based solutions, offer more built-in features and operate at lower power.



Scalable



Inexpensive



Low-power



Simple

***LightCounting: AI will add \$17B in optical transceiver sales over the next 5 years<sup>1</sup>***

***Dell 'Oro: AI infrastructure spending to bring data center capex to >\$500B by 2027<sup>2</sup>***

# POET Powers *Advanced Solutions* for Large Technology Companies

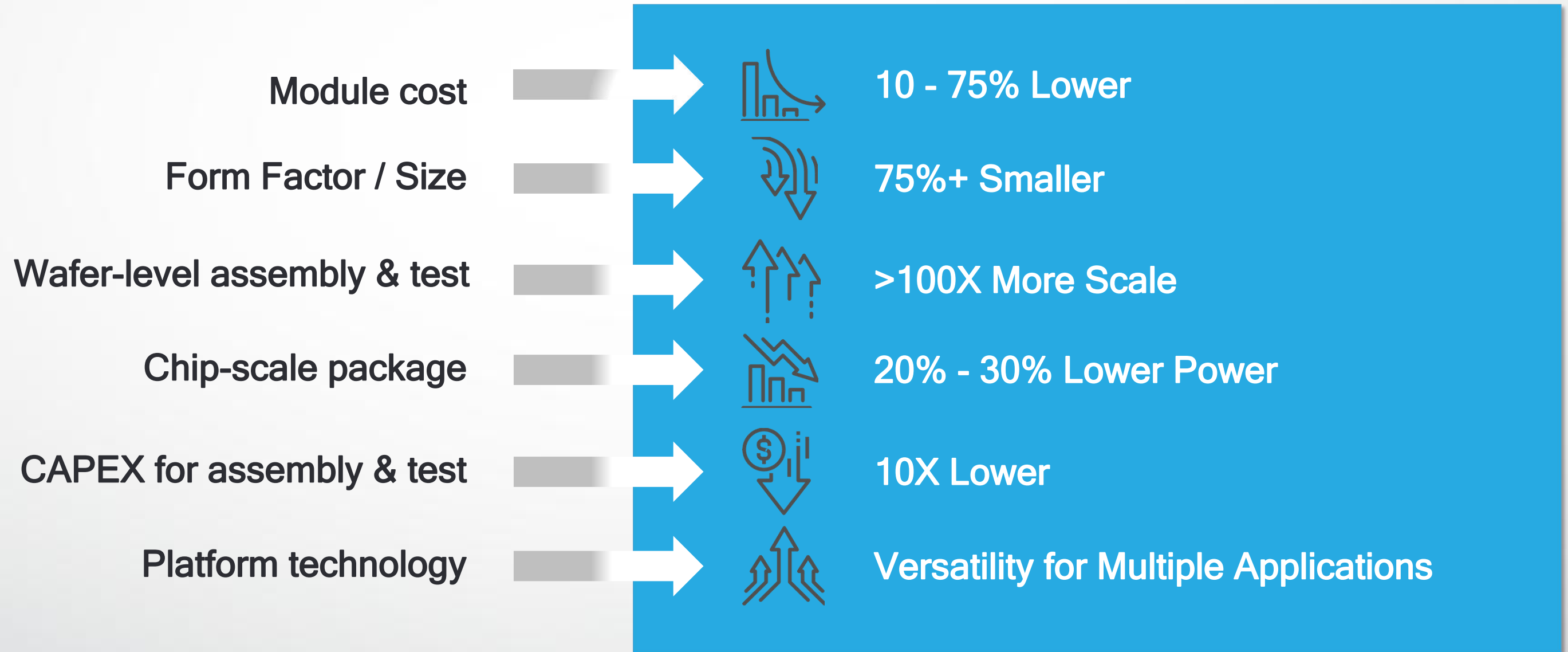
POET customers for the module designs expected to be introduced to the market in 2024 and go into production in 2024/25\*

POET PRODUCT	POET CUSTOMER MODULE MAKER	END USER**	END APPLICATION
400G QUAD LR4	ADVA		DATA COMM
800G 2xFR4	LUXSHARE		ARTIFICIAL INTELLIGENCE
POET <i>Starlight</i> <sup>TM</sup> Light Source	CELESTIAL AI		ARTIFICIAL INTELLIGENCE
POET <i>One</i> <sup>TM</sup> 100G Combined TxRx	BFYY		TELECOM
100G CWDM	ZKTEL, FIBERTOP		DATA COMM
100G LR4	TIER 1 MODULE		DATA COMM



\*Internal estimates based on order projections provided by customers.  
 \*\*End User information is based on POET's analysis of customer's likely targets.


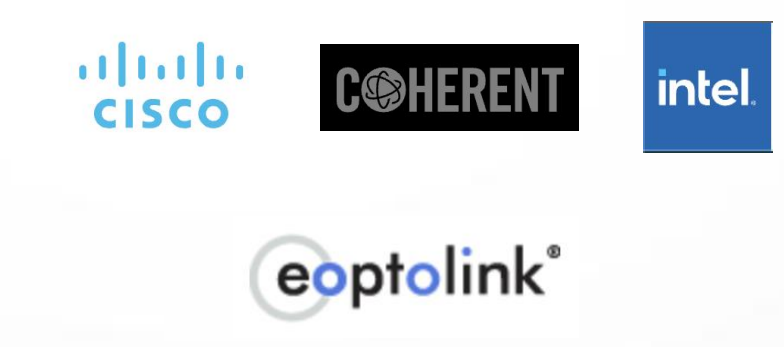

# Why POET Wins | Benefits to Customers\*



\*Based on Internal Estimates and Projections. Comparisons are made to current implementations of conventional Chip-on-Board and Silicon Photonics-based transceivers and laser-array-based light sources.

# Only POET has “semiconductorized” transceivers

## POET has no industry peers for wafer scale hybrid integration technologies

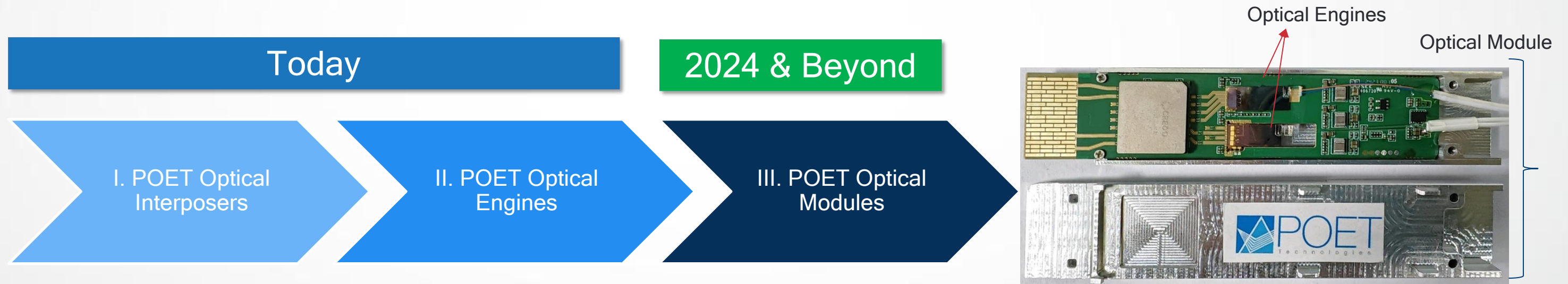
	Chip on Board (EML)	Chip on Board (Silicon Photonics)	Semiconductorized Hybrid Integration
Top 10 Module Makers in 2022*			
Current market solutions employ conventional tech	<ul style="list-style-type: none"> <li>• Lots of components,</li> <li>• Assembly and alignment - High Labor and Capital Costs</li> <li>• Limited volume scalability</li> <li>• Limited cost scalability</li> </ul>		<ul style="list-style-type: none"> <li>• Simplified integration</li> <li>• Wafer scale manufacturing</li> <li>• High capex efficiency</li> <li>• More, Faster, Cheaper</li> </ul>

Players change during market and technology shifts

Only Finisar (now Coherent) and Source Photonics were on the list of Top 10 Suppliers in 2010

# Module sales unlock larger TAM

Provides direct access to blue chip Data Centers and AI Customers



Leverage highly integrated optical engines to create complete modules:

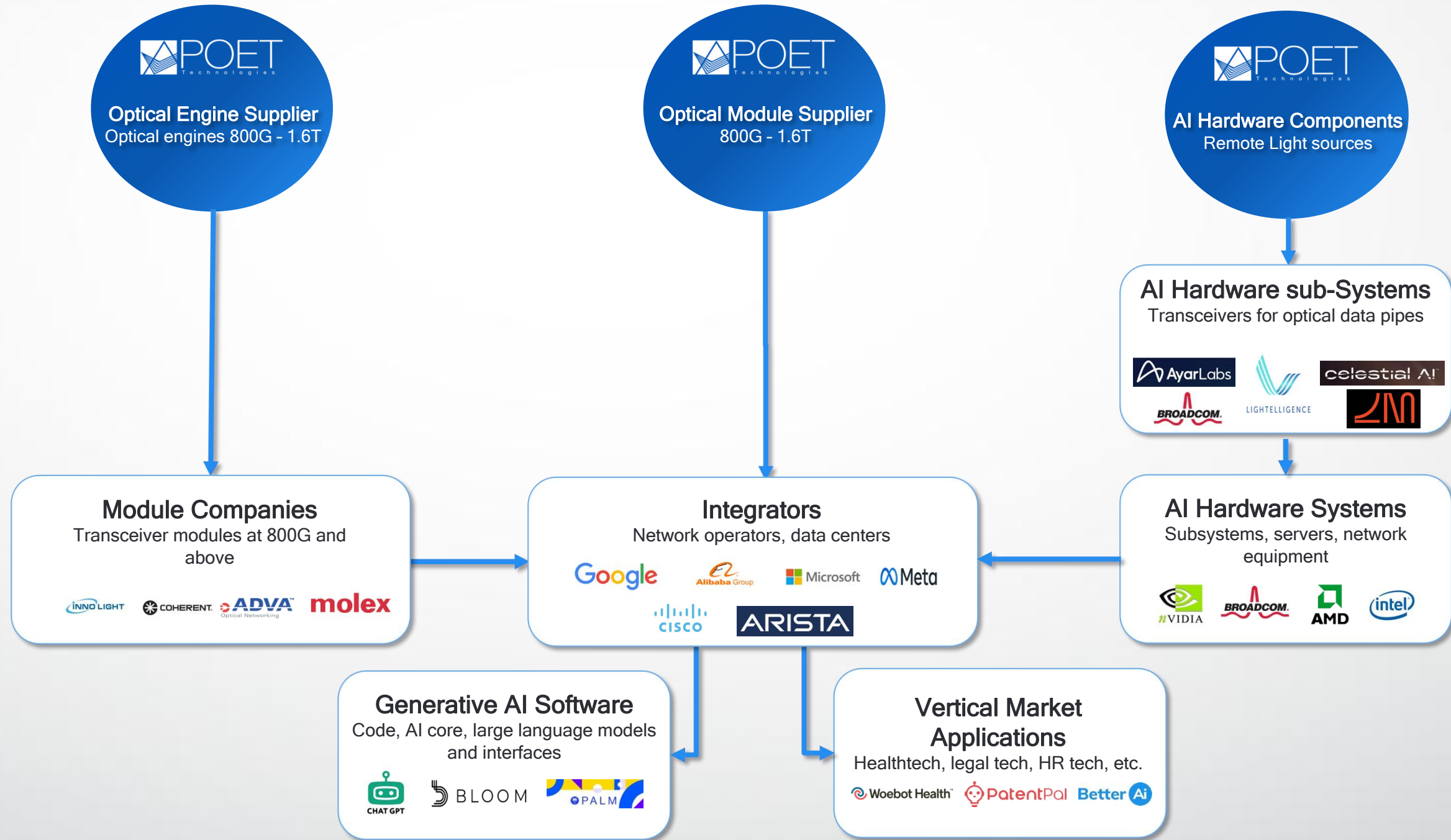
- Optical Engines have been continuously enhanced with more components
- Improved time to market - bypassing design-in and qualification by module companies
- Hyperscale data center customers purchase modules, not optical engines
- Quickly penetrate end-users based on established performance of Optical Engines

# AI Hardware Enables the AI Software Market



AI Value Chain

End User



Note: Named companies are known participants in each segment. Their appearance on this slide does not suggest an existing or potential business relationship with POET.

# Target Markets with \$19B TAM

## Optical Modules & Packaged Light Sources

CAGR for POET TAM in 3 segments  
more than 230% annually over 5 years

Billions of US\$



Source: Derived from LightCounting and Internal Company Estimates

## POET Planned Revenue Drivers and Timing\*

### 2023-24

- Beta samples of light sources and 800G optical engines ship to POET customers
- Initial production shipments for SPX customers to begin in Q1'24
- Planned Introduction of 800G module at CIOE 2024

### 2025-26

- Volume production of all pluggable modules to 800G expected in 2025
- Planned introduction of 1.6T pluggable modules in 2025
- Planned introduction of 3.2T pluggable and CPO products in 2026
- Volume production of light sources in for AI processors expected in 2025/26

### 2026-27 and beyond

- Linear drive and CPO expected to be adopted in data centers
- Anticipate growth as transceiver and light source markets expand and POET increases market penetration
- Plan to evaluate and enter additional future market opportunities

## Additional Future Market Opportunities

BioSensing  
Watches and  
Mobile Devices

LIDAR

AR / VR



# Manufacturing infrastructure in place and ready to scale

95 Total Employees Across 5 Countries  
57 (POET) + 38 (Super Photonics Xiamen)



Joint Venture



## Super Photonics Xiamen (SPX)

- Joint Venture between POET and Sanan IC
- Assembles, tests, packages and sells Optical Engines based on POET's Optical Interposer technology

## Value Creation

- Formed in 2021 as a Chinese company
- Enables POET "fab-lite" manufacturing model with no cash investment by POET
- 38 employees as of June 2023
- Expect to ship product for revenue in Q4'23

## Value Capture

- POET currently owns 80% equity stake
- Strong interest from China-based PE firms in owning a piece of SPX

# Key Metrics

## Balance Sheet Snapshot

US\$ in Millions

Total Cash (as of Jun 30, 2023)	\$8.5
Total Debt (as of Jun 30, 2023)	\$0.0

US\$ in Millions

Sales (six months ended Jun 30, 2023)	\$0.36
Quarterly Cash Burn	~\$4.0

## Capitalization Snapshot (as of Oct. 31, 2023)

Weighted Ave.  
Exercise Price

Common Shares Outstanding	40,679,295	
Warrants Outstanding	563,318	\$3.67
Management Options Outstanding	7,315,639	
	Tranche 1	2,109,343 \$2.51
	Tranche 2	5,206,296 \$4.76
Fully Diluted Shares	48,558,252	
	Treasury Method	46,593,729

1. Using the Treasury Stock Method of accounting for fully diluted share amounts, which assumes that the company uses cash from exercised "in the money" options and warrants to repurchase shares. In this case an average of \$2.70 used as the stock price for POET, which reflects the closing price on October 31, 2023.

# Investment Highlights





POET  
Technologies