POET Technologies Inc.

June 2017

Dr. Suresh Venkatesan - CEO

Mr. Thomas R. Mika - CFO

POET Technologies

Safe Harbor

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Investment Highlights

Market Opportunity	• Targeting large, high growth datacom and sensing markets
Differentiated Technology	• Creating and capturing value through photonic integration
Strong IP	• Poised to disrupt opto-electronic industry with proprietary and patented solutions
Management and Board	• Experienced management team and board with history of successful execution
Growth Strategy	• Focus resources on highest ROI opportunities in served markets

Company Overview

- Publicly Traded: TSX Venture (Canada) – PTK
  - OTC QX (US) – POETF (SEC Compliant)
  - Corporate HQ – Toronto, Canada
  - Admin, design and lab – Silicon Valley, California
  - Design, fabrication and testing – Changi Road, Singapore
- Integrated Photonics/Electronics Technology:
  - Gallium Arsenide (GaAs) Platform
  - Indium Phosphide (InP) Platform
    - DenseLight Semiconductor, Pte., acquired in May 2016
    - Lasers, SLEDs, ELEDs, modules for optical sensing
  - Dielectric Photonics
    - BB Photonics, acquired in June 2016
    - Dielectric Optical Bench
    - Wafer-level packaging applied to photonics






POET's mission: to lead the emerging photonics space with disruptive integration in device design, packaging and assembly

Photonics: Driving Technology of the Future

- Technology of generation / transmission / detection of photons through light and other forms of radiant energy
- Impacts our lives in diverse ways:

Photonics Sensing

- *Guidance & Navigation*
- *Test & Measurements*
- *LIDAR systems*
- *Medical & Healthcare*
- *Oil & Gas*

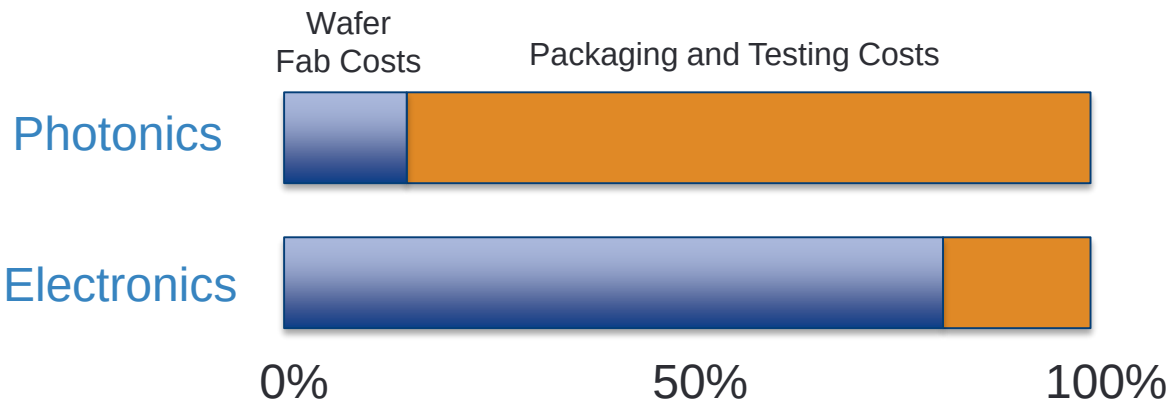
Data Communications

- *Telecommunications*
- *Optical communications*

The photon is the fundamental particle of visible light

Photons in photonic applications are employed in the same way electrons are in electronic applications

Photonic Solutions: Why Integration Matters

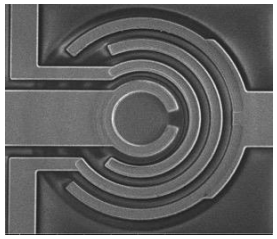


- Packaging and testing are 70-90% of BOM cost of conventional Photonics devices
  - Silicon-based micro electronics have successfully solved through integration
- Existing Photonic solutions have yet to effectively address
- Integration of devices onto a single chip (monolithic) or within a package (hybrid) is the only effective means to:
  - Improve size, power, cost, speed, reliability and scalability
  - Drive disruption in optical communications
  - Enable new functionalities (mobile 3D sensing)

POET is positioned to disrupt the photonics industry by pursuing the favorable economics of integration at every possible level

Two Platforms – One Goal: Integrated Optical Engine

GaAs (Gallium Arsenide) Platform



- **Detectors**
- **VCSELs**
- **HFETs**

  Internally developed since 2015

InP (Indium Phosphide) Platform

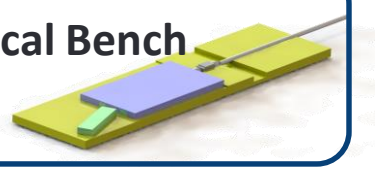
- **InP-based Lasers**

  Acquired from DenseLight

- **Dielectric Photonics**

  Acquired from BB Photonics

- **Dielectric Optical Bench**



Monolithic Integration

single-chip solution

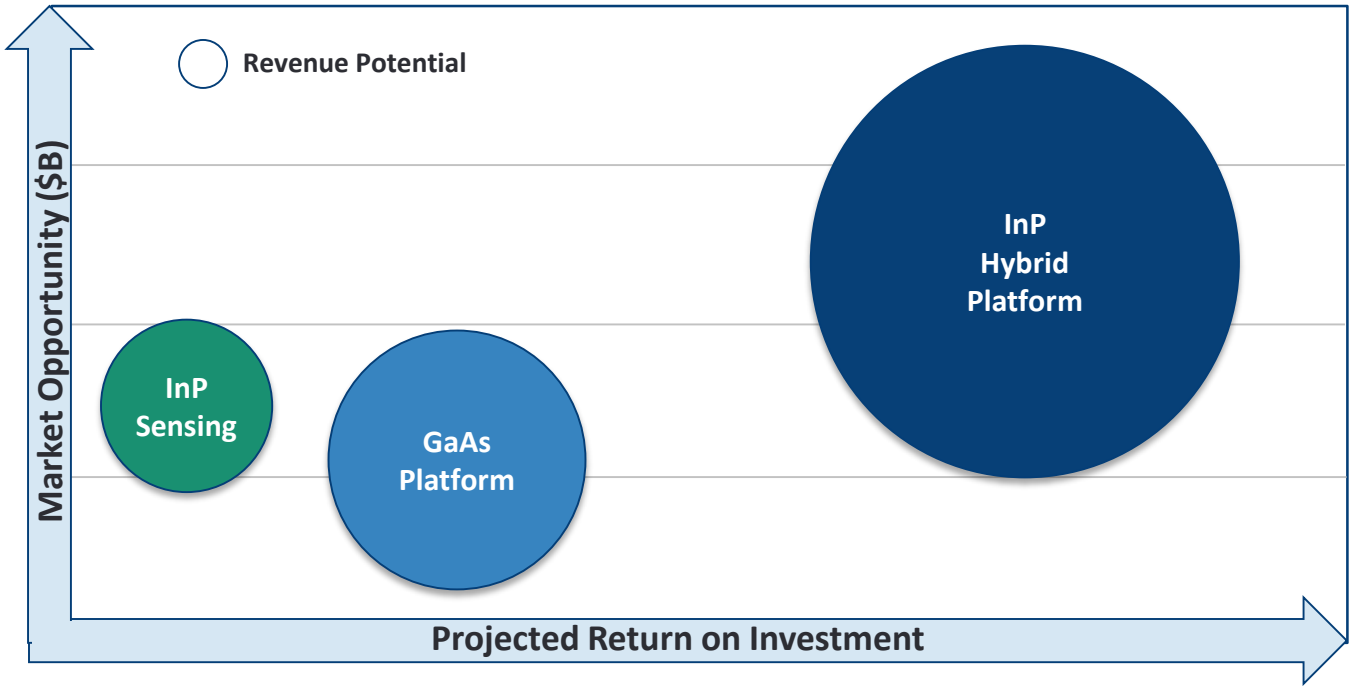
POET Optical Engine

Hybrid Integration

single package solution

POET Technologies

Growth Strategy Overview



	InP Sensing (DenseLight)	GaAs Monolithic Platform	InP Hybrid Integration Platform
Product / Market Requirements	Custom Low Volume	Standardized / Disruptive High Volume	Standardized / Differentiated High Volume
Time to Revenue	Current	Q4 2018	Q4 2017

POET is capitalizing on the market shift to InP-based interconnects with acquisition of DenseLight and BB Photonics – greatly expanding addressable markets

Optical Datacom Market Growth Drivers

Data Centers

Global data center IP traffic projected to triple over the next 5 years(1)

Smart Phones

Smart phones and tablets are expected to account for 2/3 of all Internet traffic by 2020(2)

Video

Global IP traffic expected to exceed 150 exabytes per month by 2020 (82% video)(2)

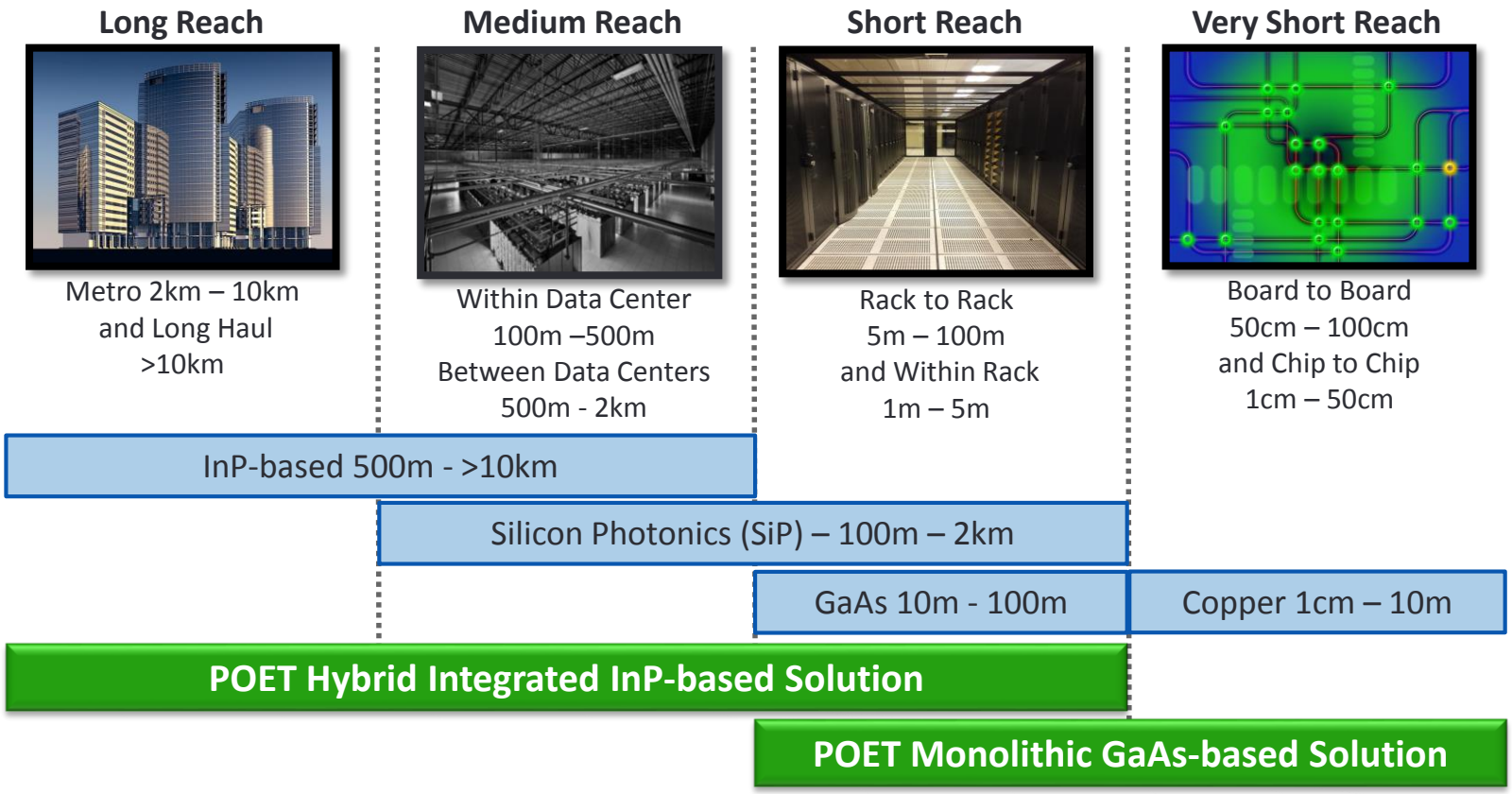
Internet of Things

The number of devices connected to IP networks projected to be 3X the global population by 2020(2)

(1) Cisco, "Global Cloud Index: Forecast and Methodology, 2014-219 White Paper", 2015.
(2) Cisco, "The Zettabyte Era-Trends and Analysis", July 2016

Global data communications, video and the Internet rely on photonics to enable communications at the speed of light

Datacom Market Segments by Technology and Reach

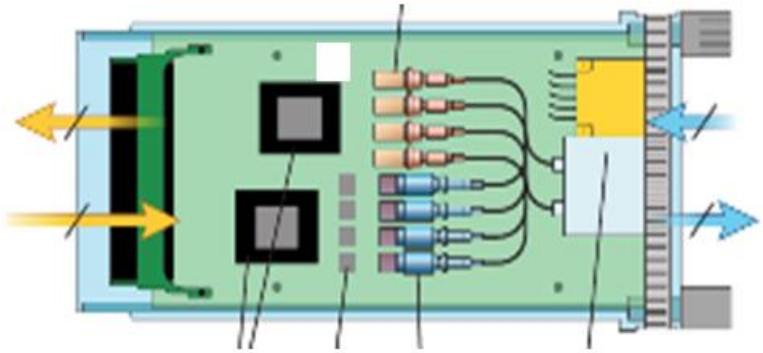


- *Mega*-datacenters *require 500m reach and greater, single-mode interconnects to "future-proof" infrastructure and lower costs*

POET's monolithic and hybrid solutions target several conventional market segments, including medium to long-reach and short to very-short reach

GaAs Platform: Monolithic Integration – Novel and Disruptive

Conventional Solution



Complex and Expensive

4 to 5 chips packaged together:

- Lasers or Laser Arrays
- Detectors or Detector Arrays
- Laser / Modulator Drivers
- Trans Impedance Amplifiers (TIA's)
- Multiplexers / De-Multiplexers

GaAs Monolithic Platform

Simple and Low-Cost

One chip solution:

- Monolithic Integration of Laser Driver, Lasers and Detectors
- Lower Cost
- Lower Power Requirement
- Higher Reliability
- Scalable

Server-to-server interconnects at the speed of light but at the cost of copper – achieving $ millions in savings annually for data center operators

GaAs Platform: Compelling Value Proposition

- Cost effectively replace traditional copper-based links with optical interconnects at increasingly shorter transmission distances
- Enables disruptive reductions: component cost, module cost, form factor
- Initial focus on 10G/40G solutions within Short Reach (< 100m)

System Interconnect Value Proposition - Active Optical Cables (AOCs)

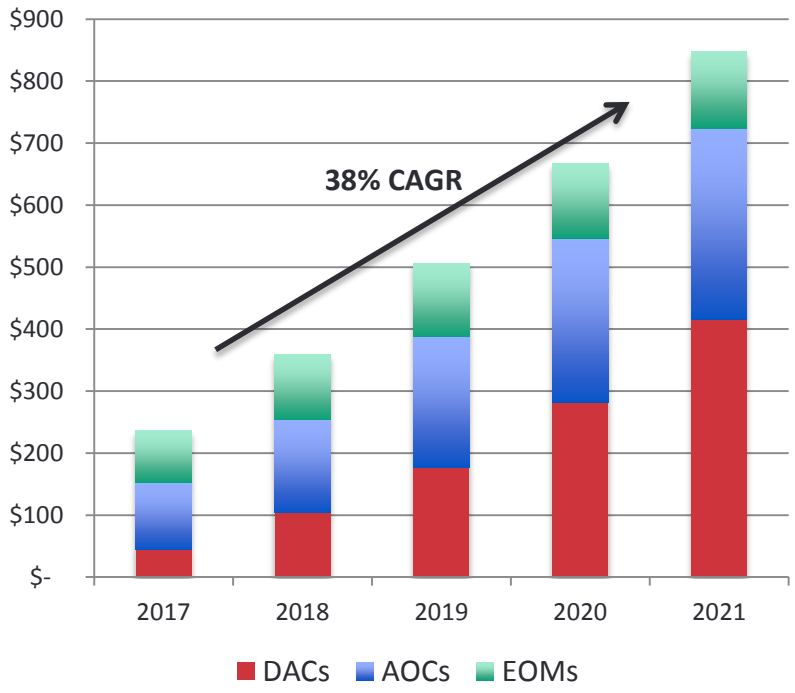
	Direct Attach Copper (DAC)	Conventional Optical Engine	POET Optical Engine
Power	3W	0.5W	<0.5W
Cost	X	3X	1.5X
Form Factor	-	~25mm^2	~5mm^2
Weight, Flexibility	No	Yes	Yes
Medium	Copper	MMF	MMF/SMF
Bill of Material	-	4 chips	Single Chip

- ✓ **Lower Power per link (vs. copper)**
- ✓ **Smaller Size**
- ✓ **Lower Cost**

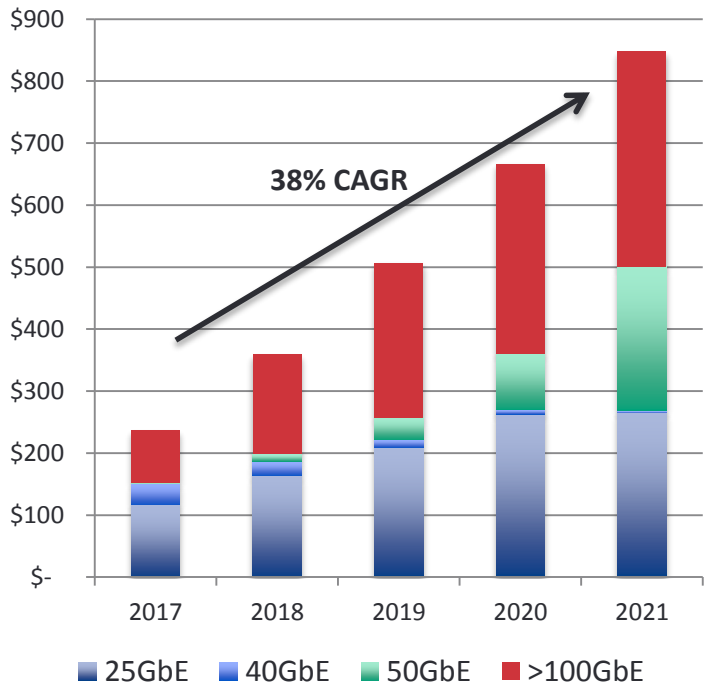
The Direct Attach Copper (DAC) market is the last application in the data center that has not been replaced by photonics

Target Market for GaAs Optical Engine

By Product Type



By Transmission Speed



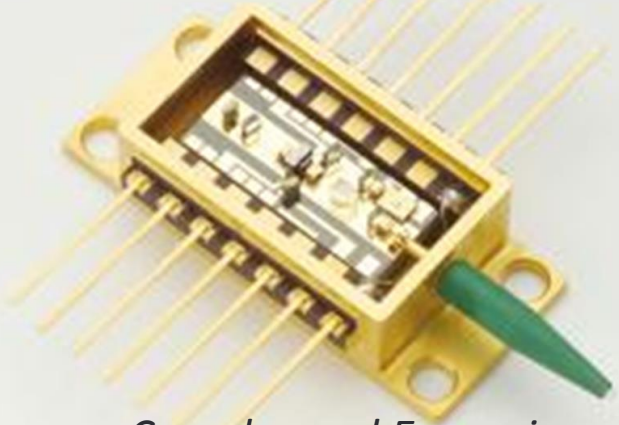
Market growth driven by data centers moving to optical interconnects to increase data communications speed and reduce power consumption

InP Hybrid Integration Drives Down Costs

Proprietary technology enables the integration of dielectric waveguides, filters, spot size converters directly into the InP stack…

- Eliminates costly components, including gold boxes, lenses and mirrors
- Simplifies packaging (40-60% of the BOM cost of a transceiver)

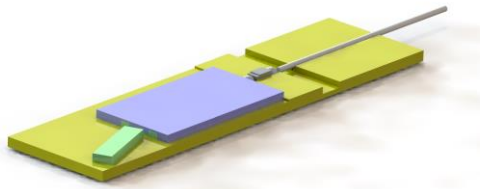
Conventional Solution



Complex and Expensive

Packaging cost: $$$$

Hybrid Integration of InP devices and dielectrics using Optical Bench



Simple and Low-Cost

Packaging cost: $

Hybrid integration and wafer-level packaging promise to dramatically lower cost of short and medium reach transceivers and devices for photonic sensing

Advantage of POET Integrated Dielectric Photonics

- ✓ Lower cost discrete components for the component market
- ✓ Embedded athermal waveguides and filters for integrated devices
- ✓ Eliminates need for expensive micro-optics assemblies
- ✓ Wafer scale production for reduced manufacturing cost
- ✓ Athermal uses in light sources enables lower power WDM optics

POET dielectric designs can replace other materials for devices and packaging, with resulting cost savings comparable to the Quad Filter:

Cost Comparisons for a Quad Filter	Silicon Photonics (Silica Waveguides)	InP Photonics (Thin Film Filters)	Conventional (Micro Optics)	POET (Dielectric Waveguide)
	$30-$50	$20	$50-$80	<$1

Transceivers built with POET Dielectric Photonics devices have BOM costs 40% - 50% lower than competitive products (even lower for optical engines alone)

Combining the Best Technologies for Superior Performance

Hybrid integration combines the best, market-ready solutions:

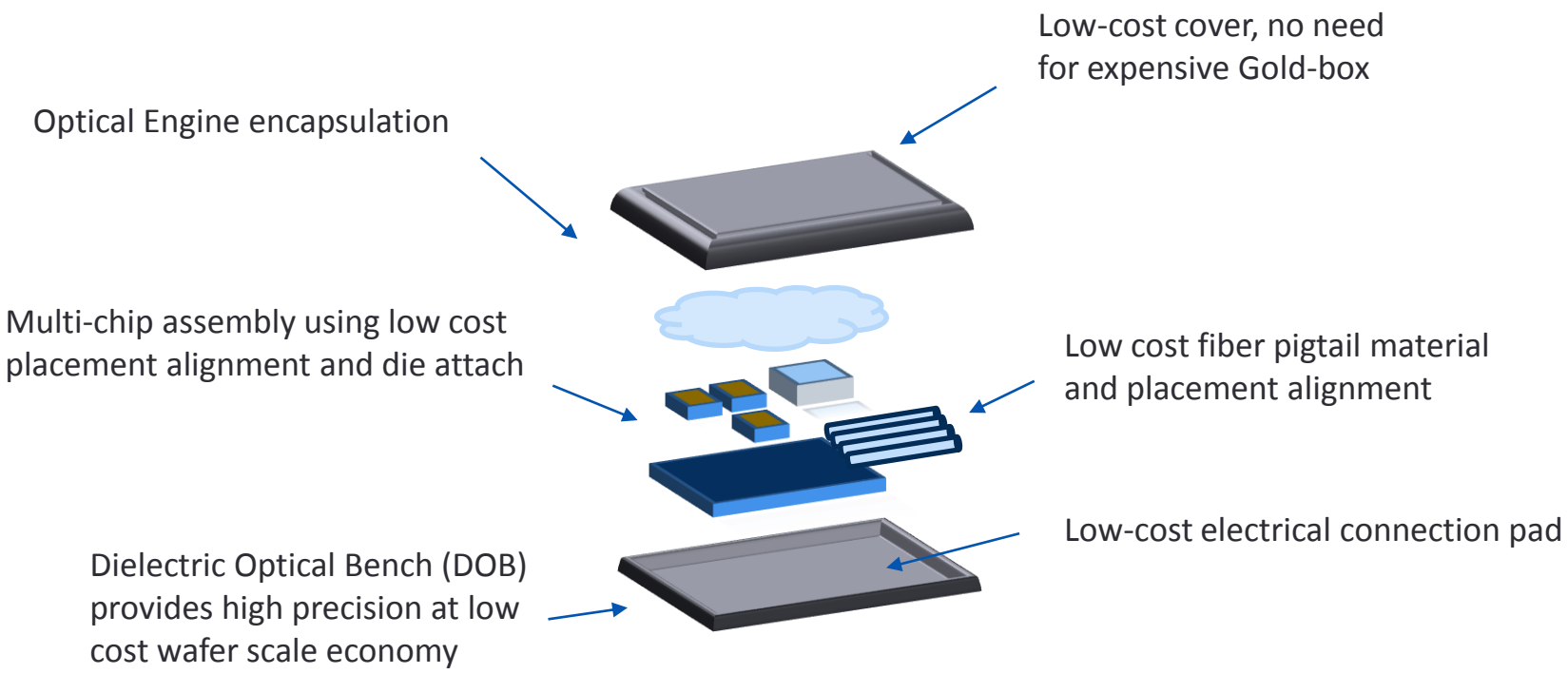
- ✓ InP for Active Devices (light generation, modulation and detection)
- ✓ DiP dielectric for Passive Devices (light splitting, filtering and interference)
- ✓ Si or dielectric for Bench and Packaging (optical alignment, thermal management, electrical, encapsulation)

	PERFORMANCE		
BUILDING BLOCK	**Indium Phos. (InP)**	**Silicon (Si)**	**Dielectrics (DiP)**
Passive Components	●	● ●	● ● ●
Lasers	● ● ●	●	■
Modulators	● ● ●	● ●	●
Switches	● ● ●	● ● ●	●
Optical Amplifiers	● ● ●	●	■
Detectors	● ● ●	● ● ●	■
Bench	● ●	● ● ●	● ● ●

PERFORMANCE KEY	
● ● ●	**Very Good**
● ●	**Good**
●	**Modest**
■	**Challenging**

Integration platform leverages the optimal technology for individual components to deliver the highest performing complete solution

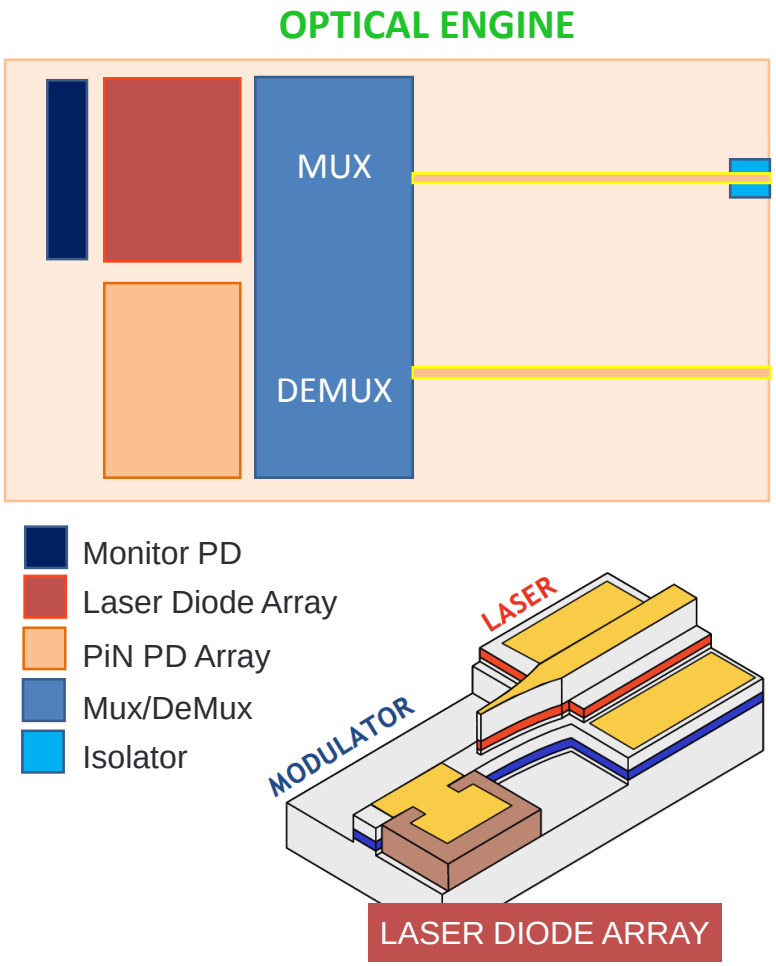
Applying Advanced Wafer Level Packaging Techniques to Photonics Completes the Integration Strategy



Even greater cost advantages are gained by combining POET's Integrated Dielectric Photonics with wafer-level packaging

100G LAN WDM4 Transceiver Optical Engine

- IEEE 802.3ba
- Four Wavelengths
  - 1295nm, 1300nm, 1305nm, 1310nm
- Quad Channel – 25G per channel
  - Single Chip Quad Channel Receiver and Laser
  - Single Chip Quad Channel Mux/DeMux
  - Quad Channel TIA / Driver
- Directly or Externally Modulated (DML or EML)
- 2 Single Mode Fibers (SMF)
- No free space optical path
- 10m - 10km Reach
- Hybrid Packaging Platform
- Scalable to 200G / 400G at wafer level

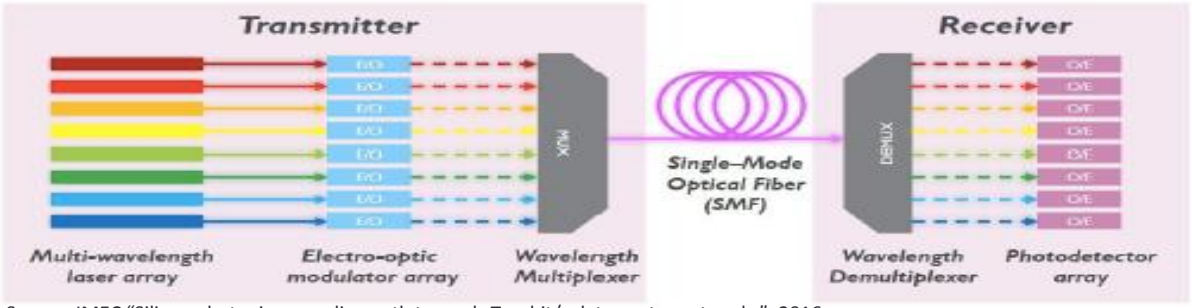


POET Optical Engine can maintain a sustainable cost advantage over Silicon Photonics (SiP) and can be extended to a 10km reach for both inside and outside the data center

Why Wavelength Division Multiplexing (WDM)

- As Datacenter operators transition from multi-mode fiber to single-mode fiber for increasing bandwidth, they are also moving from Parallel Single Mode to Wavelength Division Multiplexing to save on the high cost of fiber
- WDM allows datacom operators to expand capacity without laying new fiber

Multimode Fiber (MMF)	**Single Mode Fiber** (SMF)	**Parallel Single Mode** (PSM)	**WDM** (coarse and dense)
• Lower bandwidth	• Higher bandwidth	• 8 fibers	• 2 fibers
• Lower cost TxRx	• Higher cost TxRx	• 4 Tx	• 1 Tx
• LED light source	• Laser light source	• 4 Rx	• 1 Rx

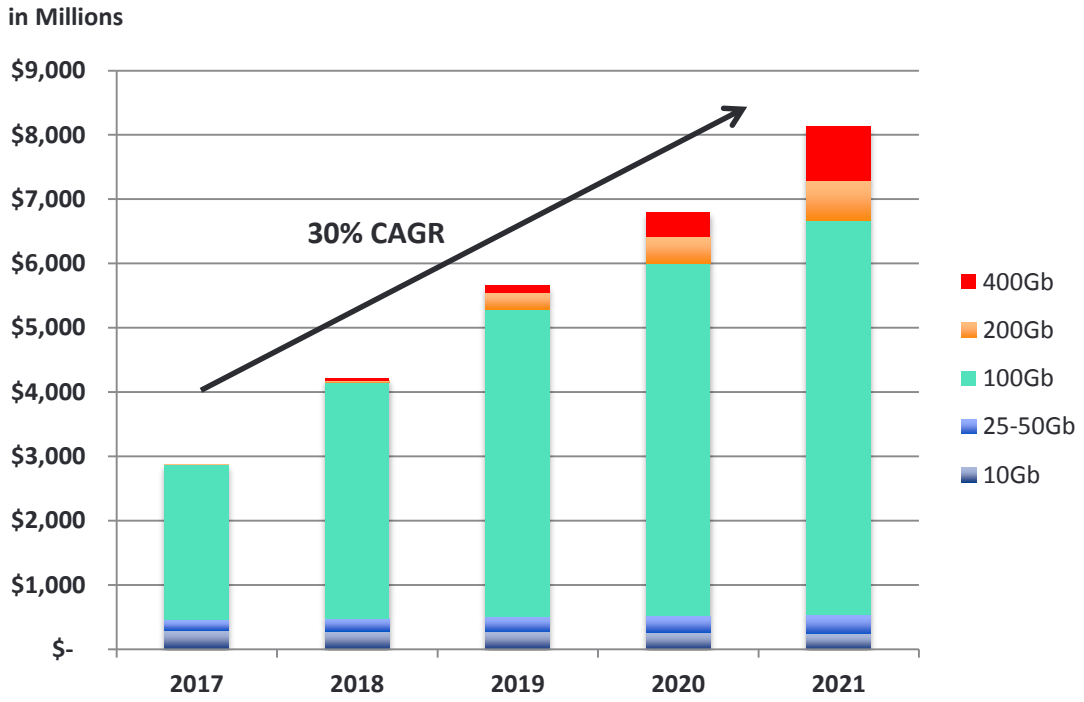


Source: IMEC "Silicon photonics: a scaling path towards Terabit/s data center networks", 2016

POET is targeting solutions that span longer reach and incorporate WDM technologies, which are in demand from data center operators

InP Hybrid Optical Engine Addressable Opportunity

- Ethernet Data Centers < 1km reach both within and between data centers
- Wide Area Networks (Metro – intermediate) served by 1km - 10km links



Linking two segments previously served by two different technologies offers tremendous cost advantages for data center operators

Driving Additional Sales and Faster Time to Revenue

- **Sales of Active and Passive Devices to the merchant market as early as Q4 2017:**
  - ROSA: Receiver + De-Mux alone
  - Modulators
  - LAN WDM Multi- Channel Mux/De-Mux Devices
  - Wavelength combiners for the sensing market
  - Bragg gratings for External Cavity Lasers
  - Single Chip LAN WDM Lasers
- **Major enhancements to the current DenseLight sensing product-line to accelerate and grow revenue in 2018:**
  - SLEDs : Eliminate Hermetic Package, Active Alignment and Lens/Metallized fibers
  - Broad Band SLEDs : Waveguide multiplexer to replace micro optic elements
  - Narrow Line width laser :
    - Waveguide filters
    - Heater elements for tuning

Dielectric photonics and wafer level packaging developments benefit sales and accelerate time to revenue while completing development of optical engine

Achievements, Milestones and Commercialization

InP Sensing (DenseLight)

Accomplishments:

- ✓ Current products in sensing market
- ✓ NLW lasers for LIDAR and acoustic sensing markets

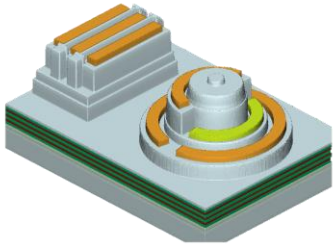
Milestones:

- ➢ Integration of active components with dielectrics
- ➢ New product qualification

GaAs Monolithic Platform

Accomplishments:

- ✓ Thyristor Detectors
- ✓ Thyristor VCSELs
- ✓ HFETs
- ✓ All on similar epi stack



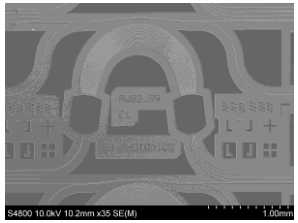
Milestones:

- ➢ Performance optimization of BICFET-based devices
- ➢ Prototype for AOCs
- ➢ Engage strategic partner(s)
- ➢ Beta prototype
- ➢ Target commercialization in late 2018

InP Hybrid Integration

Accomplishments:

- ✓ Prototype Mux/DeMux
- ✓ Prototype waveguides and spot size converters
- ✓ ROSA, EAM and PIN designs
- ✓ Alignment scheme for wafer-level packaging

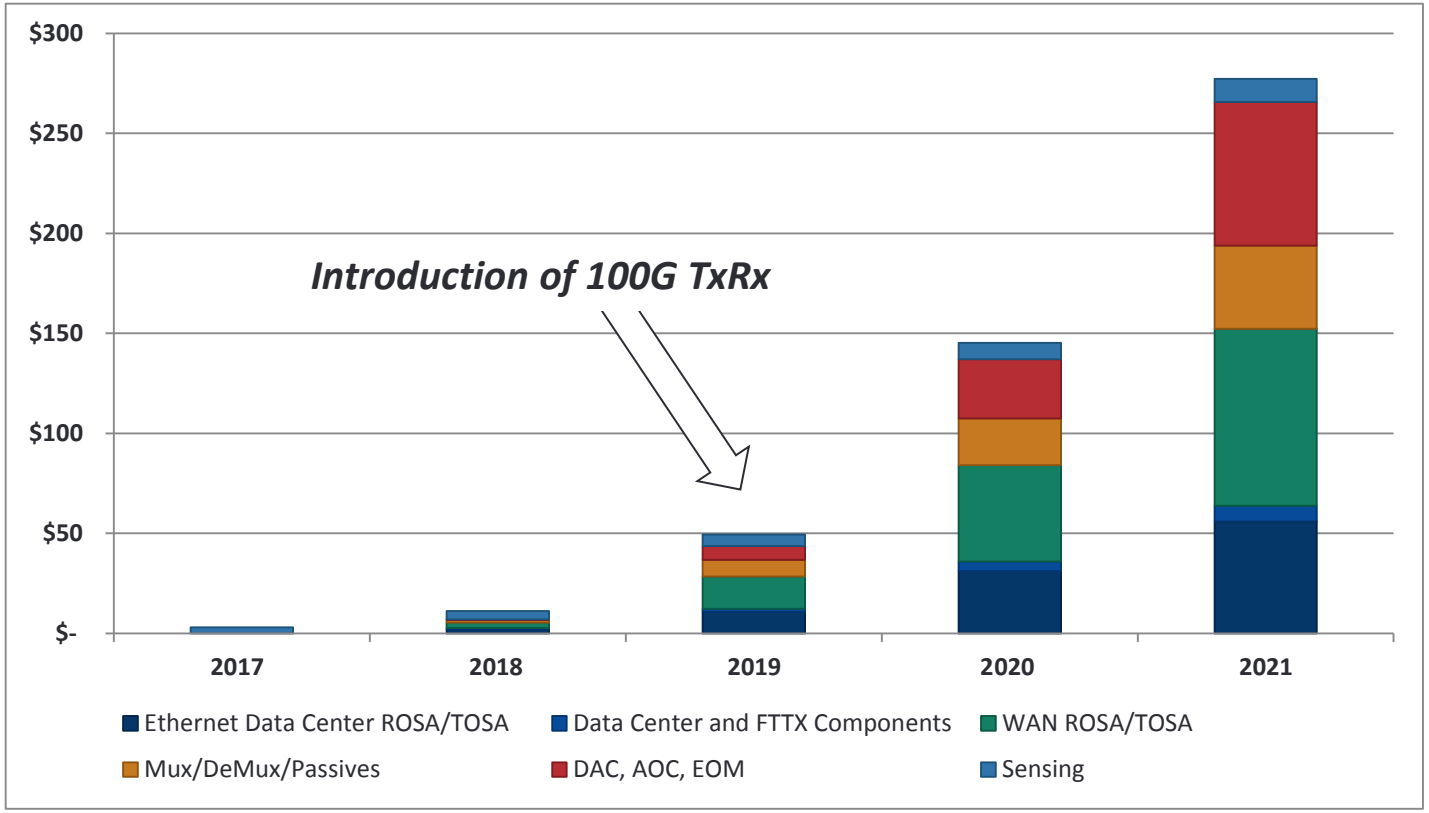


Milestones:

- ➢ Prototypes for passive components and wafer-level packaging
- ➢ New product qualification
- ➢ Target commercialization in late 2017

Revenue Potential

- InP Platform alone has the potential to generate annual revenue of over $175M by 2021, with a focus on low cost 100G/10km Optical Engines



Revenue potential based on conservative adoption rates of highly differentiated products in each market

Investment Highlights

Market Opportunity	• Addressable markets of ~$9B by 2021
Differentiated Technology	• Disruptive Monolithic and Hybrid Integration
Strong IP	• 58 patents granted and 12 pending
Management and Board	• New leadership and 4 new board members since 2015
Growth Strategy	• Accelerate time to revenue and maximize ROI

APPENDIX

Management Team

Dr. Suresh Venkatesan, CEO

- 25 years semiconductor industry experience Motorola, Freescale & GLOBALFOUNDRIES
- Technology Development & Commercialization

David E. Lazovsky, Executive Chairman

- Founder, CEO and Director of Intermolecular (NASDAQ: IMI)
- 20 years of semiconductor industry experience - IMI and Applied Materials

Thomas R. Mika, CFO

- 25 years semiconductor industry experience – Tegal Corporation (NASDAQ: TGAL)
- CEO and CFO leading IPO, several follow-on financings and restructurings

Dr. William "Bill" Ring, SVP

Product Development

- 20 years semiconductor industry experience: HP, Tyco, BB Photonics
- Optical technology, product and business development

Rajan Rajgopal, GM and President, DenseLight

- Over 28 years of industry experience
- Former VP at Global Foundries and Micron

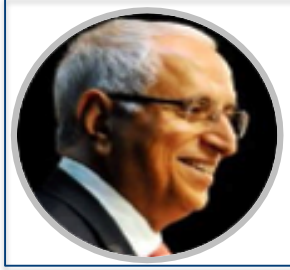
Dr. Yee-Loy Lam, CTO DenseLight

- Co-founder of DenseLight Semiconductors
- Professor Nanyang Technological University
- Specialist in optoelectronics, fiber-optics sensors and photonics systems applications.

Board of Directors

David E. Lazovsky, Executive Chairman

- Founder, CEO and Director of Intermolecular (NASDAQ: IMI)
- 20 years of semiconductor industry experience - IMI and Applied Materials



Ajit Manocha, Director

- CEO of SEMI and former CEO of GLOBALFOUNDRIES
- 35 years of semiconductor experience with deep knowledge of the technology and operations

John F. O'Donnell, Director

- Counsel to Stikeman Keeley Spiegel LLP
- Canadian attorney with 43 years of experience specializing in corporate and securities law

Todd A. DeBonis, Director

- CEO of Pixelworks (NASDAQ:PXLW)
- Semiconductor veteran with over 27 years of expertise in sales, marketing and corporate development

Chris Tsiofas, Director

- Partner at Toronto Chartered Professional Accountancy firm Myers Tsiofas Norheim LLP
- 25 years of experience on both financial and operational issues

Mohandas Warrior, Director

- President & CEO of Alfalight, 2004-2016
- 15 years at Motorola Semiconductors (Freescale) leading test and assembly operations