



The "Smart" Opto Electronic Solution

Dr. Suresh Venkatesan CEO, POET Technologies

Safe Harbor

POET Technologies

During today's presentation, management will provide "forward-looking information" (within the meaning of applicable Canadian securities laws) and "forward -looking statements" (within the meaning of the U.S. Private Securities Litigation Reform Act of 1995) and the Company is relying on the protections of the safe-harbor created thereby.

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POET Technologies Corporate Overview

- POET Technologies has created a revolutionary integrated optoelectronic III-V semiconductor technology
- Defensible and comprehensive patent portfolio, inclusive of process and device IP
- مَعْ Publicly listed:
 - TSX Venture Exchange (Canada) PTK
 - OTC QX (US) POETF
 - Fully SEC Compliant Form 20F registration

offices:

- Lab facilities and operations Silicon Valley, California
- Administrative office Toronto, Canada

POET Technologies Management Team

Dr. Suresh Venkatesan CEO	 25 year semiconductor industry experience – Motorola, Freescale and GLOBALFOUNDRIES Technology Development and Commercialization
Dr. Subhash Deshmukh	 25 years semiconductor industry experience – Applied Materials, Varian, Lam Research, AMI Semiconductors General Management and Business Development
Dr. Geoffrey Taylor Chief Scientist	 Technology and IP generation pioneer and world renowned expert in GaAs and inventor of the POET platform POET technology development for over 20 years
Peter Copetti Exec. Co-Chairman	 Chief architect and strategist of POET transformation Leading POET's resurgence and monetization activities Capital markets expertise
Ajit Manocha Exec. Co-Chairman	 Most recently CEO of GLOBALFOUNDRIES (second largest semiconductor foundry in the world with multi-billions \$US revenues) 35 years of semiconductor industry experience with deep knowledge of the technology and operations
TBA in 2015 VP, Product Development	 Tier I VP, Product Development

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Monetization Strategy

Product Sales

 Direct Sales of Transceiver Chipsets for Data Center and Consumer (Direct Attach Cables) applications

Product Licensing

• Enable second source licensing for high volume applications / customers

Foundry Licensing

 POET to transfer and enable foundry with POET process – applications in market adjacencies outside of short wavelength Data Communications

Chipset Royalties

- Royalties on future chip set sales by foundry or licensees
- Initial NRE Revenues expected to start in 2H2016
- End Customer NRE, Foundry NRE or a combination thereof

Navigating 2016

Building a World Class team in 2016

- Product Development
- Product Management
- Product Design
- Packaging and Optical Assembly

Outlook

POET Technologies

- Expect to be attracting customers in 2016
- Market ready product by 2017



New Challenges Require New Solutions

Power Consumption

High-Voltage Analog Applications

Broadband Connectivity

Technology Mega Trends Autonomous Sensing

Aggressive Cost Curves Integrated Intelligence **POET** Technologies

⁵ POET is the only technology that enables monolithic integration of high speed electronics and high speed photonics

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The range of applications are varied and diverse, ranging from consumer to military applications



POET puts the pieces together

- POET (Planar Opto-Electronic Technology) is a novel Gallium Arsenide III-V compound semiconductor process technology
- First GaAs process technology to support complementary HFETs AND vertical and horizontal Lasers, Detectors and Photonic elements
- of POET enables SMART optical components وأرث
- of Compatible with existing and planned package technology
- Standard wafer epitaxy techniques and equipment
- Standard lithography-based fabrication techniques and equipment



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VCSELs

4.0 eed Short inications	 Data Centers Servers/Routers FPGA optical IO High Speed Data Comms (AOC) LAN/SAN 	 LWIR/MWIR Detectors VCSEL Arrays IR Camera Illumination [850nm VCSEL arrays] 	 Industrial Heating Commercial Print Cosmetics and Health Care Pump Lasers Switch LEDs 	 Gesture Recognition Non Contact Navigation Depth Imaging – 3D Vision Smart Pixel Arrays (SPA)
le Cost r	 Module Cost Power Speed Form Factor 	 Module Cost Power Density for VCSEL arrays Electronic feedback for Power control 	 Module Cost Power Density for VCSEL arrays Switched Optical Element 	 VCSEL Cost Integration [?] Switched Optical Element for SPA

POET Technologies What is a Data Center ?

Making a hot datacenter a "cooler" place





POET Technologies Data Center Architecture

Microsoft Example of Spines/Leafs



Interconnect Volumes vs Network Hierarchy					
A End	Z End	Volume	Reach (max)	Medium	Cost Sensitivity
Server	TOR	10K-100K	3m	Copper	Extreme
TOR	LEAF	1K-10K	20m	Fiber (AOC)	High
LEAF	SPINE	1K-10K	400m	SMF	High
SPINE	DCR	100-1000	1km	SMF	Medium
DCR	Metro	100-300	10-80km	SMF	Low

- Volume increases as the "reach" gets smaller
- POET enables the cost structure to compete in the high volume segment

POET Technologies **Ethernet Transceiver Market**



Ethernet Transceiver Market dominated by the Data Centers

Does not include potential accessible market of Direct Attach Copper Cables

All of the short reach revenue is accessible by POET technology due to disruptive cost and power

The "Smart" Transceiver **POE** Technologies Solution 💣 Social networking, cloud computing and mobility driving data center requirements and growth Jé Data Center power requirements are acute 5% of all energy consumption worldwide, growing to 20% POET provides revolutionary innovation that is able to deal with more data at the speed of light POET integrates the optical communications module on a single chip 💉 Significant **reduction** in **power dissipation**, size and **cost** of optical interconnects

Performance of light at the cost of copper



POET Enables Green Data Centers

Optical "MODULE on a CHIP"

 Reduced Power Consumption
 Highest Bandwidth with multiplexing (SDM or WDM)
 Integration with Electronics
 Form Factor
 Low Cost due to assembly simplification of multiple chips
 Up to 10X lower cost
 Up to 10X lower power per link

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System Interconnect Roadmap

Continuous replacement of traditional copperbased links by optical interconnects at ever shorter transmission distance

- ہُ One to One Attach Rate with silicon ASICs
- ہُٹ Enable silicon to communicate optically



Expanding Image Sensor Applications

POET powers
Smart VCSELs
Smart VCSEL Arrays
Smart Pixel Arrays
Room Temperature MWIR and LWIR Sensors

POET Technologies





Technical Milestones and Roadmap

Milestone Date	Technical Achievement	Definition
Q4'2015	Establish External Epitaxy Source	Finalize supply agreements with epitaxial vendors
Q1'2016	Functional VCSEL, Detectors, NFETs at Foundry Partner	Establish manufacturing capability and process flow capable of building 25GHz FETs and 10GHz VCSELs and Detectors
Q2'2016	Functional Transmit and Receive Components	Demonstrate integrate Transmit and Receive Functions - integrated flow with FETs, VCSELs and Detectors
Q3'2016	Tape out first Transceiver Prototype	First pass design for 10Gbps and 25Gbps Transceivers
Q4'2016	First integrated Transceiver Prototypes	First demonstration of integrated transceivers at 10Gbps - enables start of customer validation

2017 2018 2019 Roadmap Module 10/25 100Gb QSFP 40/100Gb 400Gb QSFP AOC QSFP, CFP 980nm, SMF 980nm, SMF Prototypes PSM4, PAM4 850nm, MMF 850nm, MMF, SR4 SR4, SR10 Mid Board Optics **On Chip Optics**

Summary

POET - Ready at the right time

POET Technologies



 $\dot{\phi}^*$ Optical interconnects need a disruption in cost and power to meet growing bandwidth needs

POET will provide a much needed performance and power enhancement to Moore's Law

Industry is ready for a paradigm shift for the fabrication of integrated photonic chips

POET enables new innovations





POET offers a monolithic III-V opto-electronic process with very high performance and power gains over traditional copper interconnects

POET enables system cost savings



Possible device consolidation will lower manufacturing costs at the module and system level



POET will enable much lower system OPEX due to application power and weight savings POET enables the performance of light at the cost of copper