



Investor Presentation
October 2025

NASDAQ
ALMU

Forward Looking Statements

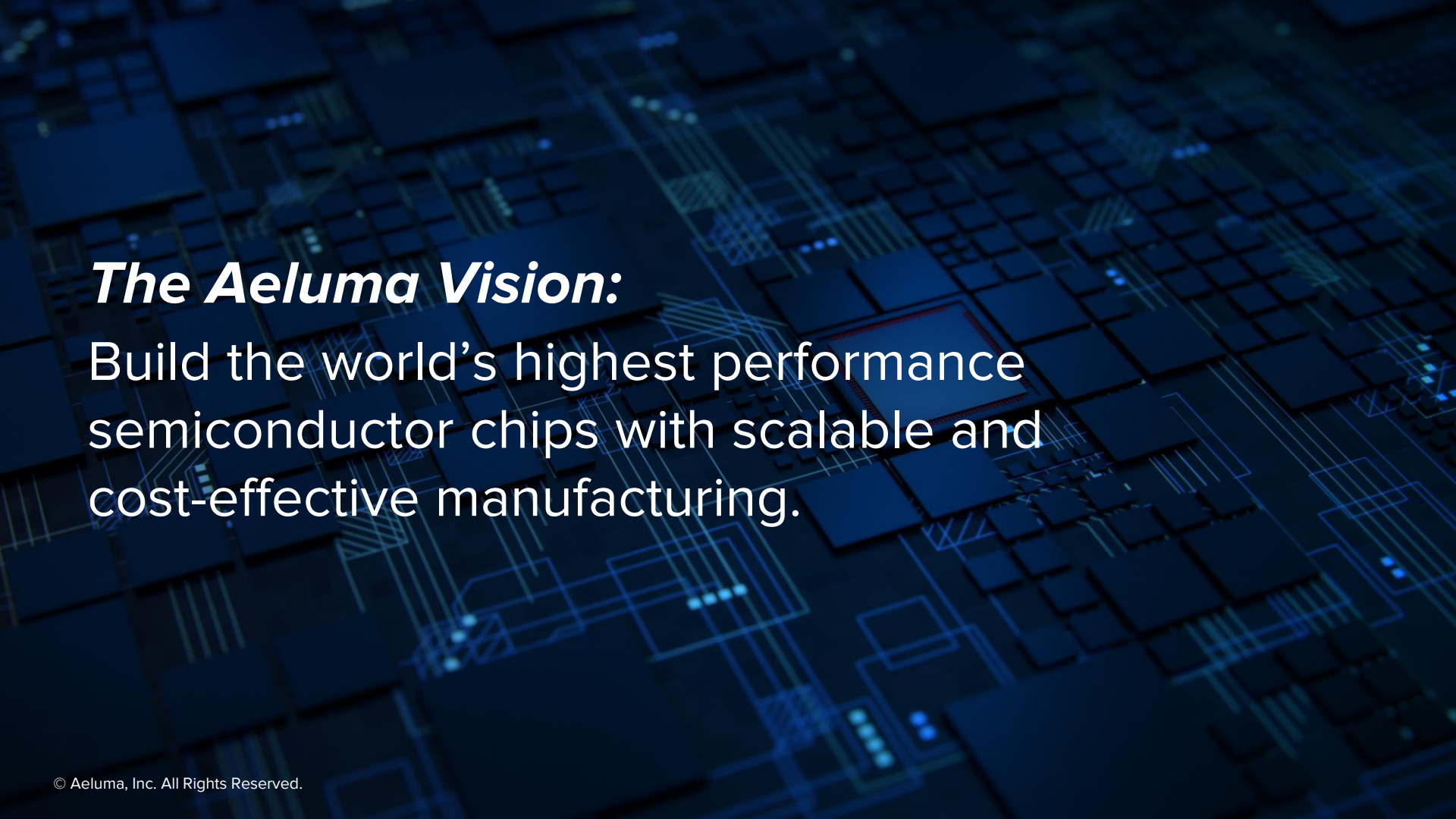
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The Aeluma Vision:

Build the world's highest performance semiconductor chips with scalable and cost-effective manufacturing.

Background Story: Gallium Nitride (GaN) and the Blue LED

A materials breakthrough that enabled an industry and more



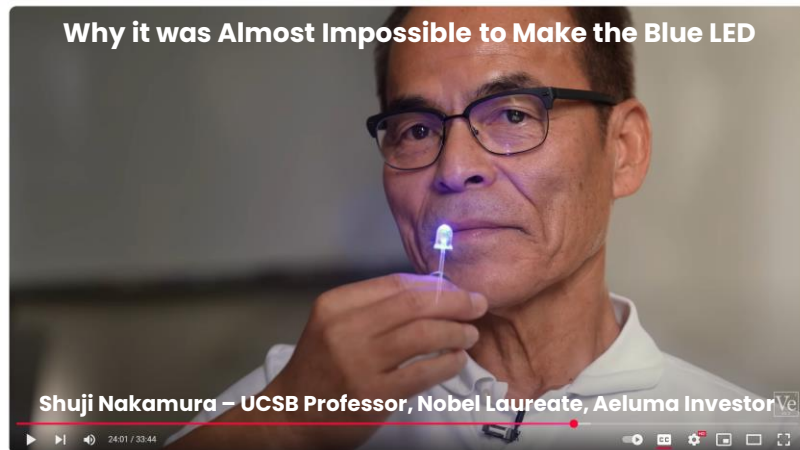
"These won't ever replace the kitchen light."

"The research is a waste of money."

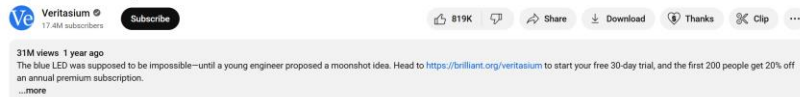
The blue LED revolutionized lighting and displays, and gallium nitride broadly impacted many photonics and electronics applications.

LEDs use **75% less energy** and last **25 times longer**

Energy savings by 2035 of **569 TWh** (92 1,000 MW power plants)



Why It Was Almost Impossible to Make the Blue LED



<https://www.youtube.com/watch?v=AF8d72mA41M&t=1399s>



Aeluma's Indium Gallium Arsenide (InGaAs) Breakthrough

Best-in-class materials with scalable manufacturing

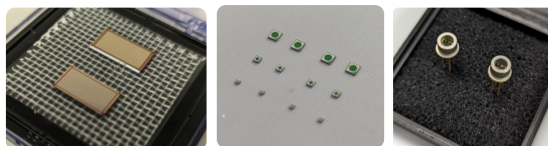


"InGaAs on silicon won't work, people have tried."

"You can't grow quantum dots by MOCVD."

InGaAs is the best material for shortwave infrared (SWIR) applications, impacting defense & aerospace, mobile and consumer electronics, AI infrastructure, industrial and robotics, quantum, and automotive.

Eye safe, operation in direct sunlight, night vision, higher sensitivity, higher speed, lower power consumption, and lower cost



Investment Highlights



Derisked business model poised for growth as U.S. recaptures semiconductor preeminence



Rapidly Expanding SAM ***\$4.9B in 2030***

Broad applications across Defense and Aerospace, Mobile and Consumer Electronics, AI Infrastructure, Quantum, Industrial and Robotics, and Automotive



Transformative Technology

- Best-in-class materials with large-volume manufacturing
- Highest performance at scale
- **30+ issued and pending patents**



Significant Business Traction

- Disruptive tech validated by U.S. agencies and customers
- Sampling, small volume orders, and NRE contracts
- **20 customer engagements**



Capital-Light Manufacturing

- Primarily outsourced manufacturing for rapid scaling
- Some proprietary steps carried out in house
- ISO9001:2015 certified



Clean Balance Sheet

- No debt or overhang
- \$39.2M cash (pro-forma at 6/30)



Attractive Financial Profile and Outlook

- Recurring R&D revenue
- Additional capital to fund business and accelerate commercialization

Recent Developments

FY2025 Results Announced on 9/9/25



Operational and Financial Highlights

- ✓ Nasdaq IPO (Uplist) and **\$13.8M** capital raise In March
- ✓ **\$25.4M** capital raise in September
- ✓ FY2025 revenue **\$4.7M** (up from \$0.9M in FY24)
- ✓ 6 R&D contracts secured in 2025, including 2 in Q4
- ✓ 20 active customer engagements
- ✓ Unveiled scalable manufacturing process applicable to quantum computing and communication systems
- ✓ Chris Stewart with strong semiconductor and public-company experience appointed CFO
- ✓ Strong balance sheet with **\$39.2M** in Cash and Cash Equivalents (pro-forma at 6/30) and **no debt**

Strategic Priorities for FY2026

- ❑ **New Contract Wins** → 3-7 new R&D contracts
- ❑ **Team Expansion** → Accelerate hiring of business development and go-to-market team, technical leadership, and operations
- ❑ **Enhanced Manufacturing Readiness** → Higher levels of wafer fab activities, expanded test and validation capabilities, technology qualification for target industries
- ❑ **Go-to-Market Traction** → Continued progress with engaged targeted commercial markets and increase customer engagements in pipeline

Actively engaged with 20 prospective customers evaluating our technology for potential integration

Aeluma Address Multiple High-Growth Markets

High-performance semiconductors that scale

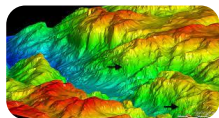


Mobile, Tablet, PC, and AR/VR



- Depth perception
- Facial ID
- 3D scanner
- Health monitoring
- AR/VR

Defense and Aerospace



- 3D imaging and LiDAR
- Security
- Autonomous systems
- Atmospheric sensing
- Topography

AI, DCI and Quantum



- AI infrastructure
- Data centers and HPC
- Telecommunications
- Quantum
- 5G/6G wireless

Automotive



- Consumer vehicles
- Robotaxis
- Trucking
- Advanced driver assistance systems

Industrial and Robotics

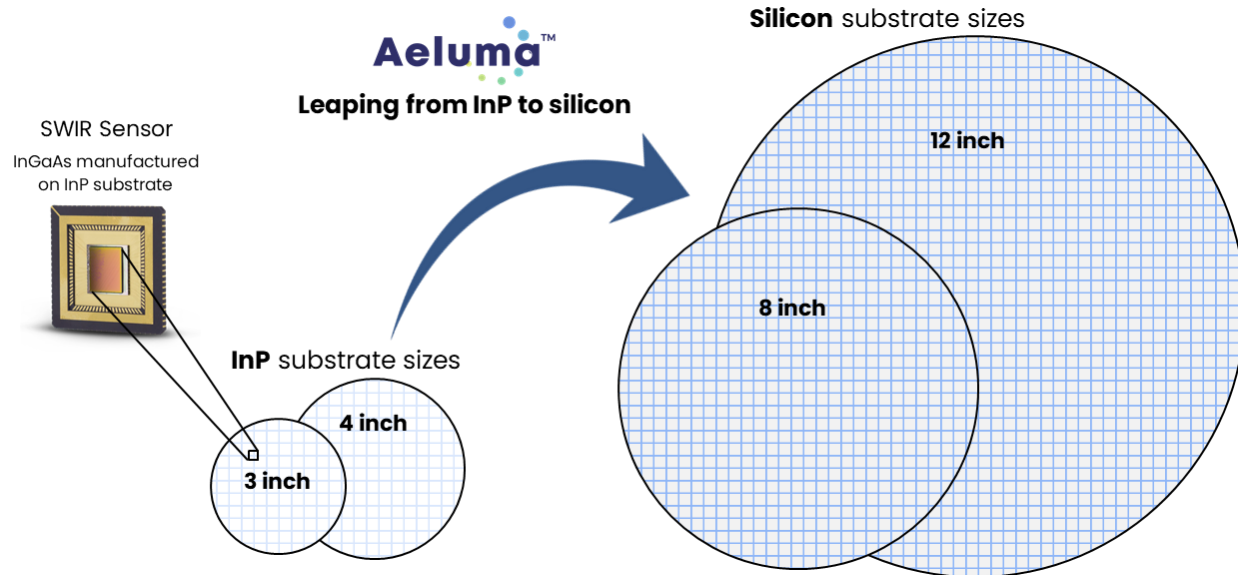


- Robotics
- Delivery robots
- Factory automation
- Logistics
- Security

Aeluma is positioned as a semiconductor technology provider to service a broad range of market verticals.

Aeluma's Breakthrough in Semiconductor Manufacturing

Best-in-class materials on large-diameter substrates



The World's First 12-inch Indium Phosphide on Silicon Wafer



Aeluma (2022)

Aeluma's Technology Breakthrough

Scalable, cost-effective manufacturing enabled by cutting-edge intellectual property



Conventional manufacturing of InGaAs semiconductor devices



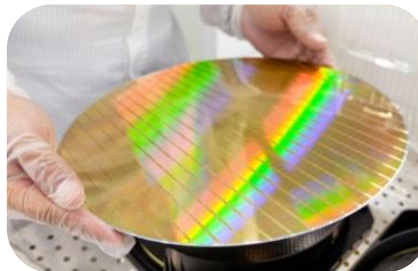
Moving from 3-inch to 12-inch wafers



16X wafer area

Not scalable, manual, and low throughput

Aeluma high-performance InGaAs with silicon manufacturing

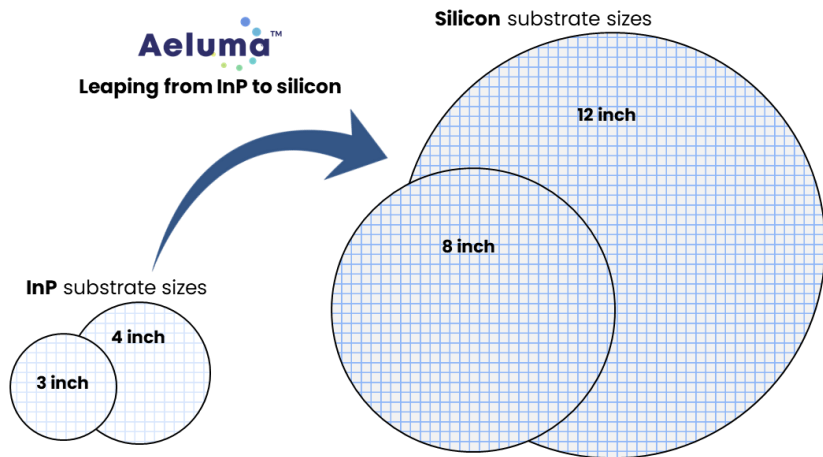


- ✓ Highly automated and ability to produce many chips per wafer
- ✓ Monolithic CMOS process integration
- ✓ Wafer-scale integration and packaging
- ✓ 10X lower manufacturing cost for mass market applications

Manufacturing for a Mass Market

Aeluma's large-diameter manufacturing economies of scale

Aeluma's Large-Diameter Wafer Platform



Manufacturing Capacity Bottleneck: *Producing 20 million sensor chips for consumer market*

	Substrate size	Wafers required for 20m sensor chips	Typical fab capacity
Incumbent Technology	3-inch	425k wafers	1k-10k wafers per month
	4-inch	213k wafers	1k-10k wafers per month
 Large-diameter platform	8-inch	43k wafers	10k-100k per month
	12-inch	18k wafers	10k-100k per month

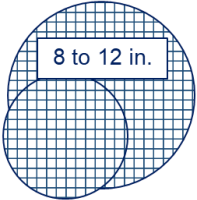
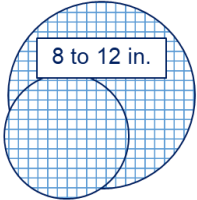
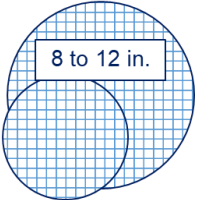
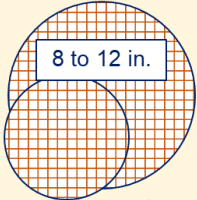
Incumbent technologies cannot meet volume requirements for consumer markets

Aeluma's manufacturing enables scaling and cost reduction required for current mass market applications

Aeluma Outperforms the Competition

Technology Comparison



	Incumbent technologies		Technologies for scaling and cost reduction		
Technology:	Si SPAD	InGaAs-on-InP	Ge-on-Si	CQD	InGaAs-on-Si
Substrate size:	 8 to 12 in.	 2 to 4 in.	 8 to 12 in.	 8 to 12 in.	 8 to 12 in.
Suppliers:			 		
Eye Safe:	No	Yes	Somewhat	Somewhat	Yes
Performance:	Good	Best	Fair	Fair	Best
Multiplication (APD, SPAD):	Yes	Yes	Possible	No	Yes
Wafer-scale integration:	Yes	No	Yes	Yes	Yes
Status:	Mature Scalable	Mature Not Scalable	Maturing Scalable	Maturing Scalable	Maturing Scalable

Aeluma's is the only known technology that combines proven, high-performance InGaAs with scalable, cost-effective silicon manufacturing, thereby overcoming the cost-performance tradeoff.

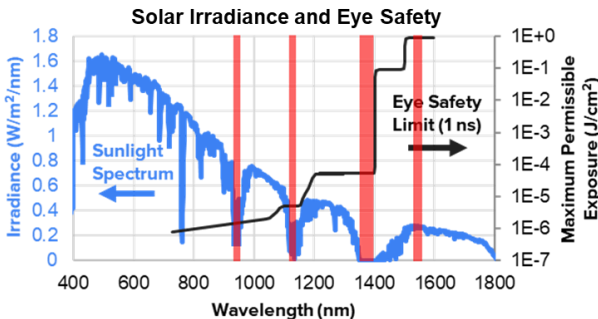
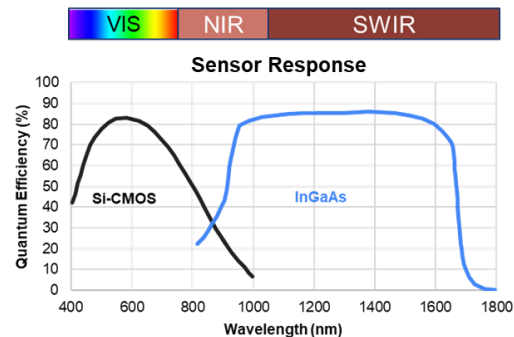
Why Aeluma and Why Now?

Better performance preferred for mass markets



Market Vertical Example 1: Shortwave Infrared (SWIR) Sensors for Mobile and Consumer Electronics

What is SWIR?



SWIR sensors needed for eye safety and other benefits

Facial ID



Automotive sensors



3D scanner



Health monitoring



AR/VR

Radical approach required to scale and reduce cost

Why Aeluma and Why Now?

High-performance required for a growing market

Market Vertical Example 2: AI Infrastructure and Data Center Interconnects



AI EFFECT

Nvidia CEO Huang says AI has to do '100 times more' computation now than when ChatGPT was released

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Kif Lewing
@KIFLEWING

SHARE f x in e

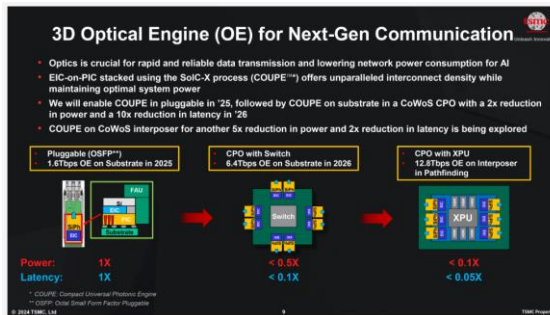
KEY POINTS

- Nvidia CEO Jensen Huang said next-generation AI will need 100 times more compute than older models as a result of new reasoning approaches that think "about how best to answer" questions step by step.

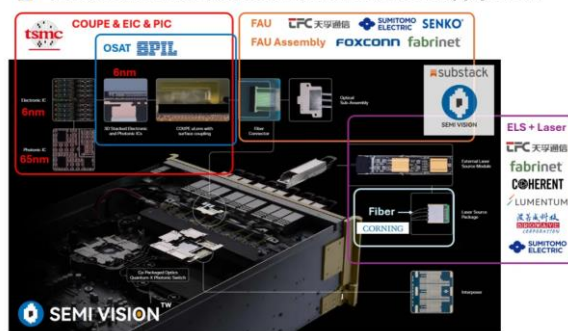


Overcoming the data transfer bottleneck:

The need for high-bandwidth, low-latency, and energy-efficient optical interconnects



Nvidia CPO Quantum X800 Photonic Switch Supply Chain



Why Aeluma and Why Now?

High-performance required for a growing market

Market Vertical Example 3: Defense and Aerospace

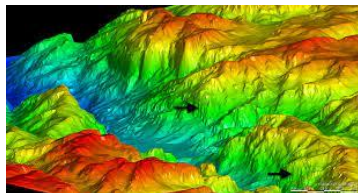


A New Era in Defense Tech

\$130B venture capital invested in defense over four years

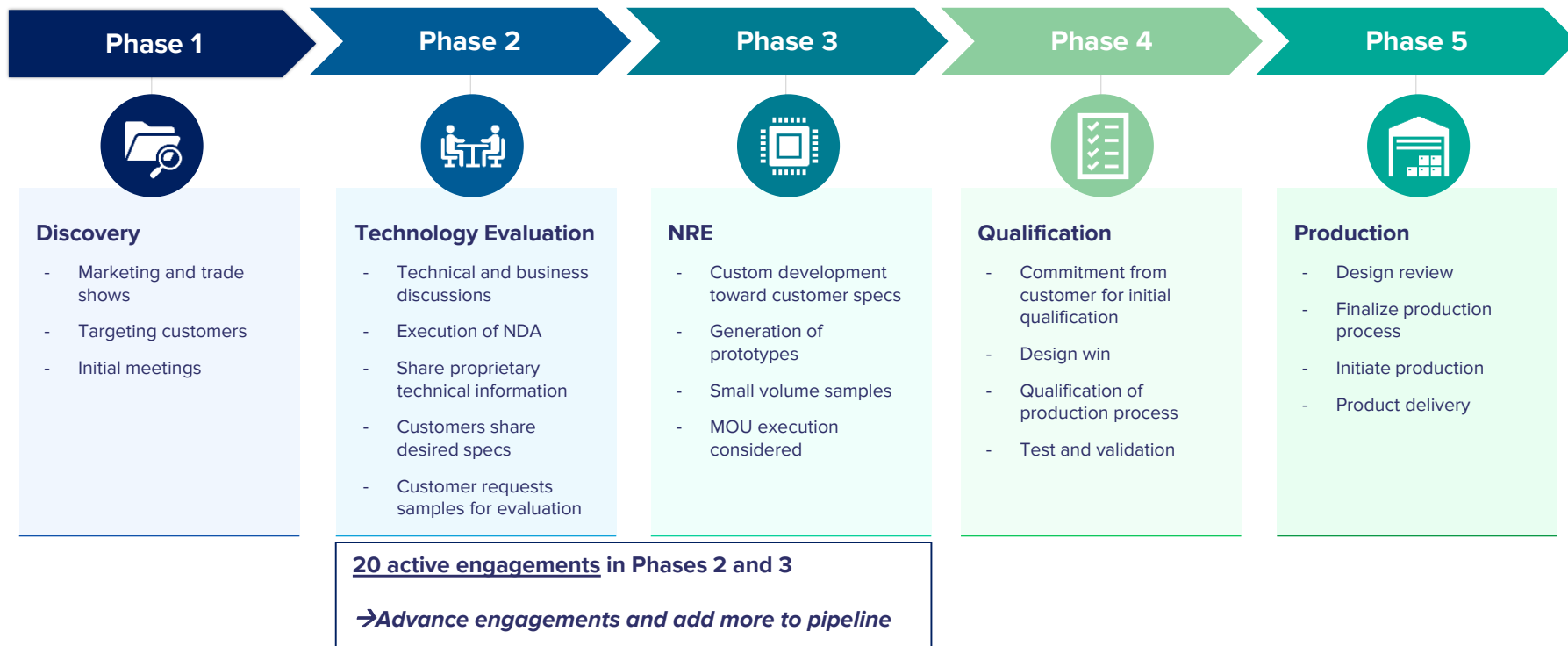


Mission-critical systems require high performance and operation in harsh environments



Progression to Commercialization

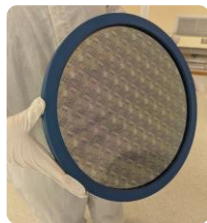
Stages of the Customer Opportunity Pipeline



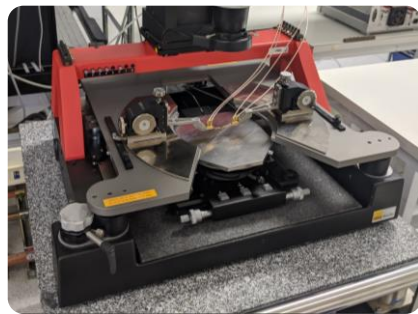
Aeluma's Cost-Effective and Scalable Manufacturing

Transitioning to Commercialization

12-inch wafer capability



Rapid prototyping and small-volume manufacturing



Partners for medium- and large-volume manufacturing



Combining rapid prototyping capabilities and volume manufacturing partners, Aeluma is positioned to effectively transition from R&D to commercialization with a capital-light approach.

Aeluma's Headquarters

Ideal Location for Development and Commercialization

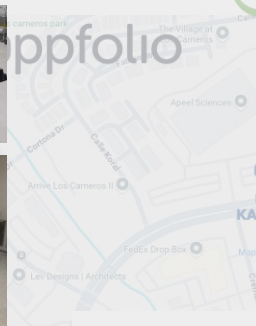
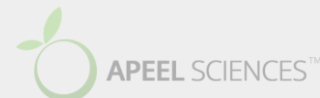


Aeluma's Headquarters

Ideal Location for Development and Commercialization



Headquarters with R&D and manufacturing capabilities [9,000 sq. ft.]



Aeluma's Headquarters: Recent Expansion

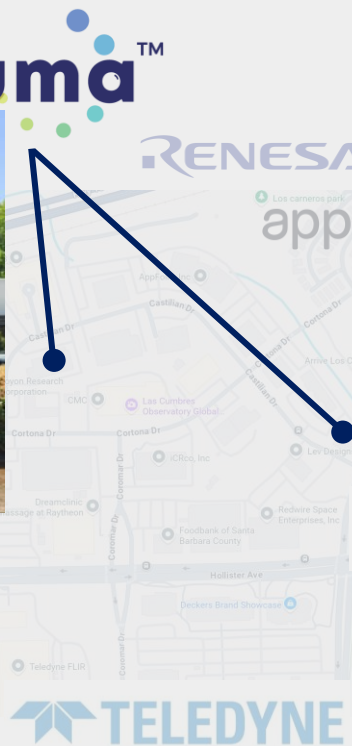
Ideal Location for Development and Commercialization



Headquarters with R&D and manufacturing capabilities [9,000 sq. ft.]



Recently added equipment for prototyping and wafer test & validation



Recently added office and meeting space [2,400 sq. ft.]



Technology Portfolio

Near-Term Focus

- Detector Arrays
- Large-area Detectors
- High-speed Detectors
- Quantum Dot Lasers
- Templates

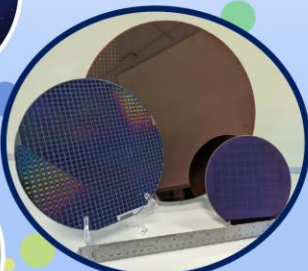
Longer Term

- QD Lasers in Silicon Photonics
- Quantum Photonics
- Nano-scale Semiconductors



High Performance Semiconductors that Scale






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Shortwave Infrared Detector Arrays

Custom Detector Arrays



Examples shown are 256 X 128 arrays

Custom Array Specifications

Specification	Min.	Typ.	Max.	Unit
Pixel Pitch	5	10	-	µm
Rows	1	-	-	-
Columns	1	-	-	-
Pixel Sensitivity Wavelength	1.0-5.0	1.5-5.0	-	µm
Detector Type	PDA, APT, or SPAD			
Configuration	Custom Array or Custom Circuitry			

Performance, Formats and Features

- Low dark current photodetector arrays manufactured with large-diameter substrate platform
- Pixel and array size customizable
- Typical array sizes: 128 X 32, 256 X 128, 640 X 512
- Availability performance exceeds generic Telcordia GR-468 optoelectronics standard
- Delivered as PDA chips or with ROICs
- FPA assembly available
- Small foot arrays (ex. 8 X 8) available for analog

Focal Plane Array Assembly



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Large Area InGaAs Detectors



High sensitivity, low dark current and high speed detectors for SWIR and XSWIR

- Typical Photoreceiver Diameter (D): 0.25 to 5.0mm
- Typical Operating Wavelength (λ): 0.90 to 1.55µm
- Detector PDA, APT or SPAD
- Custom Array size is available in 10 package

Performance Specifications for $\lambda = 1.064\mu\text{m}$, $D = 1.0\text{mm}$ InGaAs PIN

Parameter	Symbol	Condition	Value	Unit
Spectral Response Range	λ_r		0.90 - 1.55	µm
Peak Sensitivity Wavelength	λ_p		1.064	µm
Quantum Efficiency	η	$\lambda = \lambda_p$	0.6	0.75, 0.9
Responsivity	R	$\lambda = \lambda_p$	0.52	0.64, 0.97 A/W
Dark Current	I_d	$V = 0V$	0.2	nA
Terminal Capacitance	C_t	$V = 0V$ $f = 1\text{MHz}$	100	pF

Bare Die



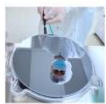
TO Package



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Heterogeneous Integration Platform



Aeluma's proprietary heterogeneous integration platform integrates high-performance compound semiconductors (ex. GaAs, InP, GaSb) on large-diameter substrates including up to 12-inch Silicon.

This technology has the potential to scale, reduce cost, and increase yield, all of which are critical for emerging and mass-market applications.

Summary of Offerings

High Quality Templates



High-quality GaAs, InP, and GaSb templates grown on up to 12-inch Silicon substrates for cutting-edge performance technologies to larger wafer sizes.

Large-Scale Detectors for Wafer-Scale Integration



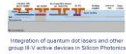
Manufacturing detectors on the same substrate size as the IC enables wafer-scale integration to improve functionality, increase yield, and reduce cost.

Monolithic Integration by Selective Growth



Selective growth enables heterostructure integration and may be applied to Silicon Photonics, Si V-electronics integrated with Silicon CMOS, integration of InGaAs detectors with CMOS read-out ICs, and more.

Lasers for Silicon Photonics



Integration of quantum dot lasers and other group III-V active devices in Silicon Photonics

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SWIR Photodiode Arrays

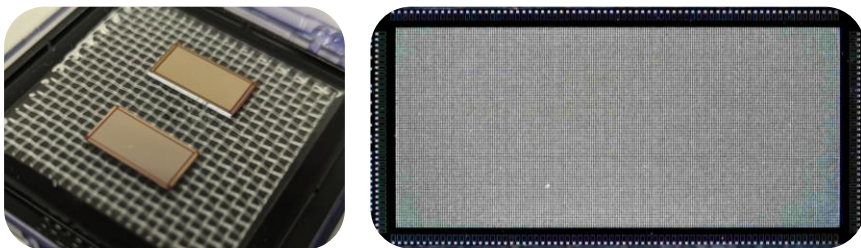
Active and Passive Imaging Sensors



Shortwave Infrared (SWIR) Array Features

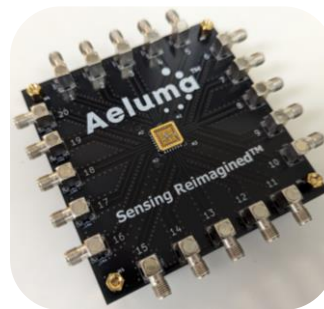
- Low dark current photodetector arrays manufactured with large-diameter substrate platform
- Pixel and array size customizable
- Typical array sizes: 128X32, 256X128, 640X512
- Delivered as PDA chips or with ROICs
- FPA assembly available
- Small test arrays (ex. 8 X 8) available for evaluation/qualification

Photodetector Array Chips

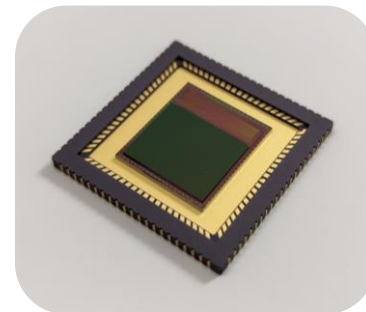


Examples shown are 256X128 format

Evaluation Board



Focal Plane Array Assembly



Applicable markets include:

- Mobile and Consumer
- Industrial and Robotics
- Defense & Aerospace
- Automotive

Large-Area Photodiodes

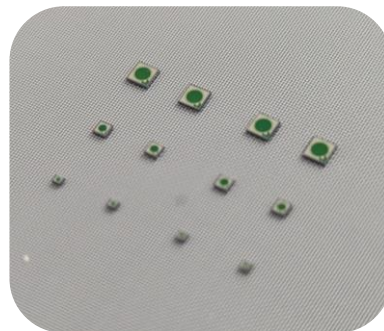
Sensors



Photodiode Features

- **Typical Photosensitive Diameter (D):**
0.25 to 5.0mm (0.25, 0.5mm most common)
- **Typical Operating Wavelength (λ):**
0.95 to 1.55 μ m
- **Device Type:**
PIN, APD or SPAD (PIN and linear-mode APD most common)
- **Sample Format:**
Bare die, mounted on carrier or mounted in TO package

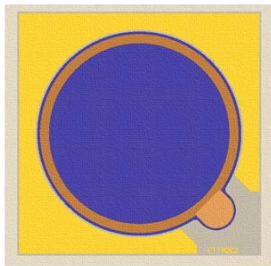
Bare Die



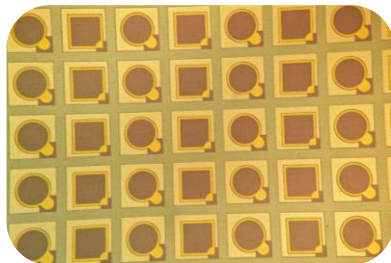
TO Package



Photodiode Schematic



Fabricated Photodiodes



Applicable markets include:

- Mobile and Consumer
- Industrial and Robotics
- Defense & Aerospace
- Automotive

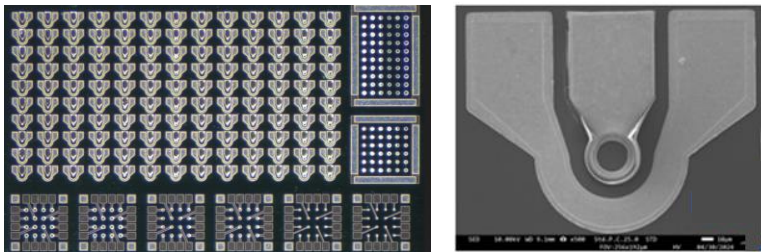
High-Speed Photodiodes

High-speed Optical Communications

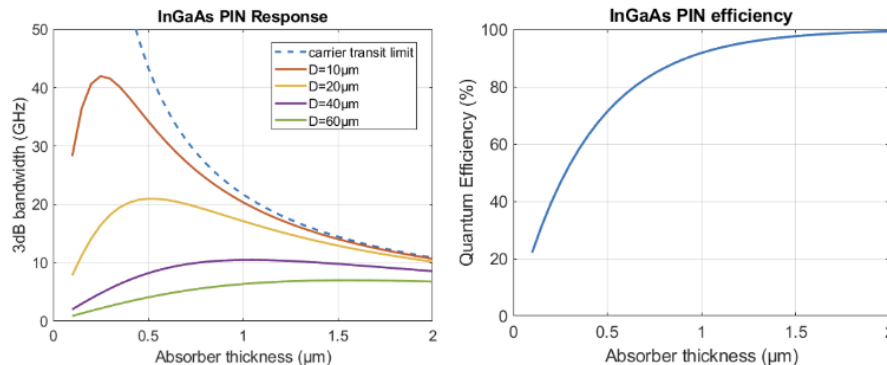
High-speed Photodiode Features

- **Typical Operating Speed:**
10-50 Gbps
- **Typical Operating Wavelength (λ):**
0.85 to 1.55 μm
- **Device Type:**
PIN, UTC-PD, APD
- **Sample Format:**
Bare die, mounted on carrier, array format, wafer-scale integrated
- **Target Architecture:**
Short-reach multi-mode fiber links and SWDM

Fabricated high-speed InGaAs PIN photodetectors



Bandwidth-efficiency design tradeoffs



Applicable markets include:

- Defense & Aerospace
- Data Center Interconnects (DCI) and AI Infrastructure
- Telecom

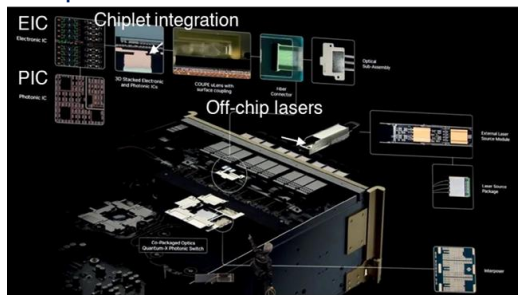
Quantum Dot Lasers

High-speed Optical Communications

Quantum Dot Lasers and Amplifiers

- **Typical Operating Wavelength (λ):**
1.25 to 1.35 μm
- **Device Format:**
Fabry-Perot Laser, SOA, RSOA, DFB Laser
- **Sample Format:**
Bare die, mounted on carrier, array format, integrated in SiPh
- **Target Architecture:**
Single-mode fiber applications, multi-wavelength comb sources (WDM), Co-packaged optics (CPO)

NVIDIA's co-packaged optics platform with external lasers



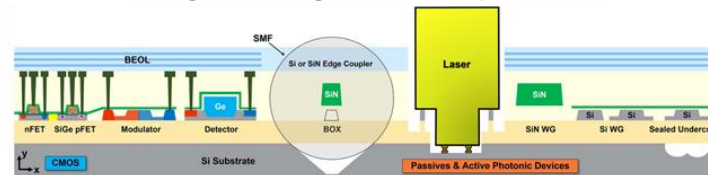
*Source: NVIDIA GTC 2025

External QD lasers for high efficiency, high temperature performance, and wavelength division multiplexing



*Source: CS Magazine, 30, 7, 2024

Integrated QD gain in silicon photonics



*Y. Bian et al., IEEE JSTQE, 29, 2023

Applicable markets include:

- Data Center Interconnects (DCI) and AI Infrastructure
- Telecom
- Mobile and Consumer
- Defense & Aerospace

Leadership Team

Vision, Entrepreneurship, and Expertise

Senior Management



Jonathan Klamkin, PhD
Founder, CEO &
Director



Christopher Stewart
CFO



Matthew Dummer, PhD
Director of Technology



Investors/Advisors



Shuji Nakamura, PhD
Seed Investor



Richard Ogawa, JD
Seed Investor & Advisor



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Steven DenBaars, PhD
Seed Investor & Director



John Paglia, PhD, CPA, CFA
Director



Craig Ensley
Director



Michael Byron, CPA
Director





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