

BluGlass Annual General Meeting

Tuesday 4 October 2022

CONTENTS

01. Chair's Report	4
2022 Highlights	5
Financial Performance	6
Intellectual Property Update	7
Overview & Strategic Position	8
02. President's Report	9
Year in Review	10
Market Opportunities	18
Strategy & Roadmaps	25
Outlook	29
05. Questions & Answers	31

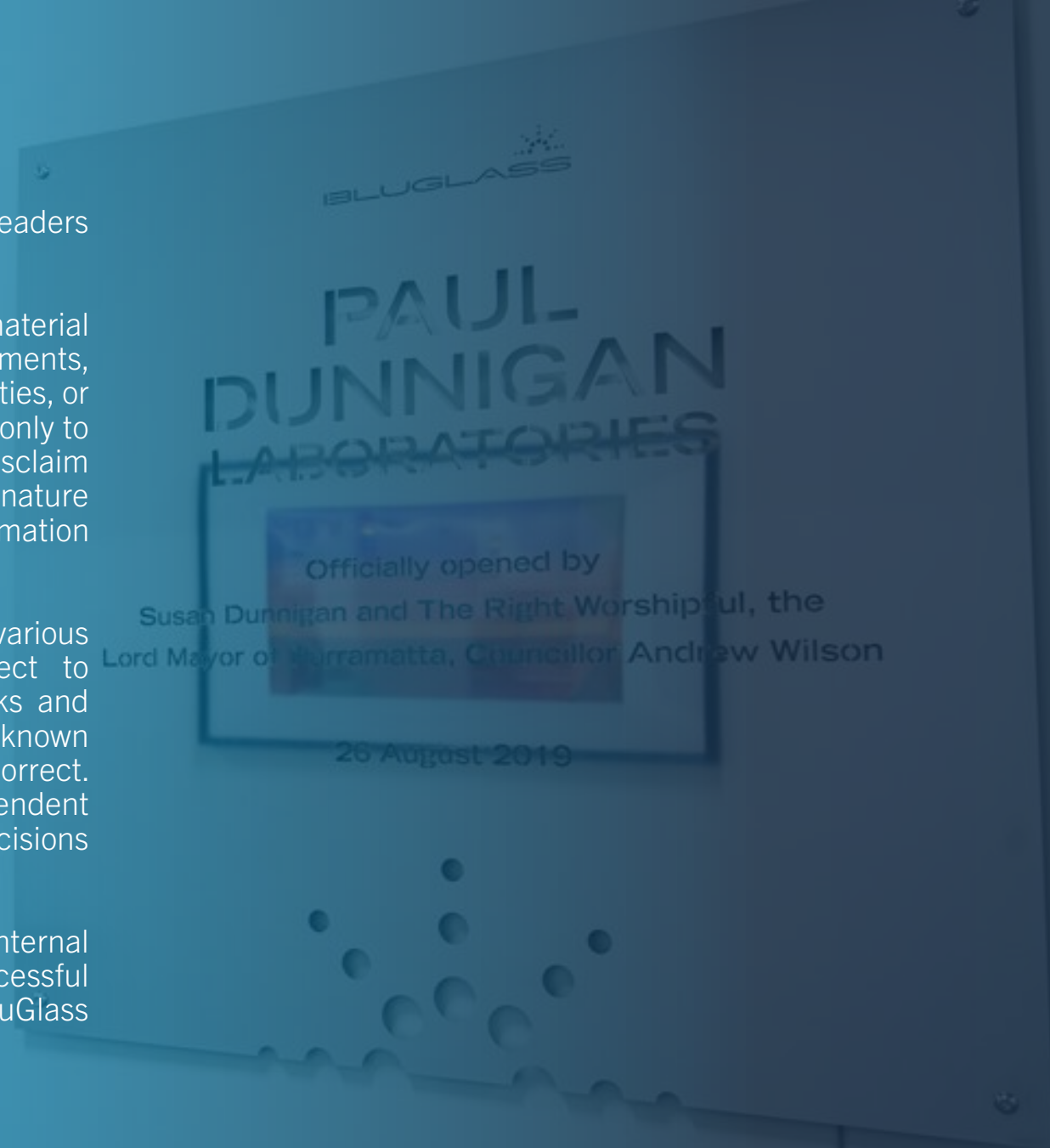
FORWARD LOOKING STATEMENT

This document has been prepared by BluGlass Limited to provide readers with an update of the Company and the Company's technology.

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Information on Service Addressable Markets (SAM) is based on internal BluGlass modelling and assumptions, both of which depend on successful R&D outcomes and results achieved within estimated timetables. BluGlass recommends a cautious interpretation be taken by investors.





JAMES WALKER
CHAIR'S REPORT



2022 HIGHLIGHTS



BluGlass' Silicon Valley fab contributing to operations

US fab is now operational and contributing to technical roadmaps, progressively coming online for GaN laser diode manufacturing.



Strengthened industry experienced team across three international facilities

Significantly strengthened leadership team and technical expertise with the appointment of Jim Haden; and retained and attracted top talent in Silicon Valley and Nashua.



Developing a portfolio of in-demand products with strong customer demand

Executing on a clear technology and commercialisation roadmap to transition BluGlass from its deep innovative heritage to a commercial laser diode manufacturer of bright, efficient and reliable GaN lasers.



Launched alpha products for real-world customer trials

BluGlass' alpha laser diodes are being evaluated by potential customers in real-world applications, following significantly improved performance.



BluGlass is vertically integrating; bringing its supply chain in-house will speed production and profitability, reduce costs and increase margins.



BluGlass joins the world's leading GaN consortium as invited member

Testament to BluGlass' internationally recognised leadership position in RPCVD growth technology and novel GaN device development.

FINANCIAL PERFORMANCE

	2022	2021	YtY Movement 2022-2021
	\$	\$	%
Revenue	604,749	363,573	Up 66%
Other Income	3,661,282	3,993,477	Down 8%
Interest	506	4,782	Down 162%
Government grants	314,231	657,329	Down 28%
Net Assets	13,220,332	7,509,329	Up 55%
Consolidated Loss	9,355,554	6,298,360	Up 49%
R&D Tax Rebate (Receipt for prior year R&D spend)	~4,000,000	3,320,000	Up 20%
Cash Position (as at end of FY)	5,351,589	4,176,300	Down 23%

GLOBAL PATENT PORTFOLIO

93

Internationally Granted Patents

14

Applications in PCT Phase

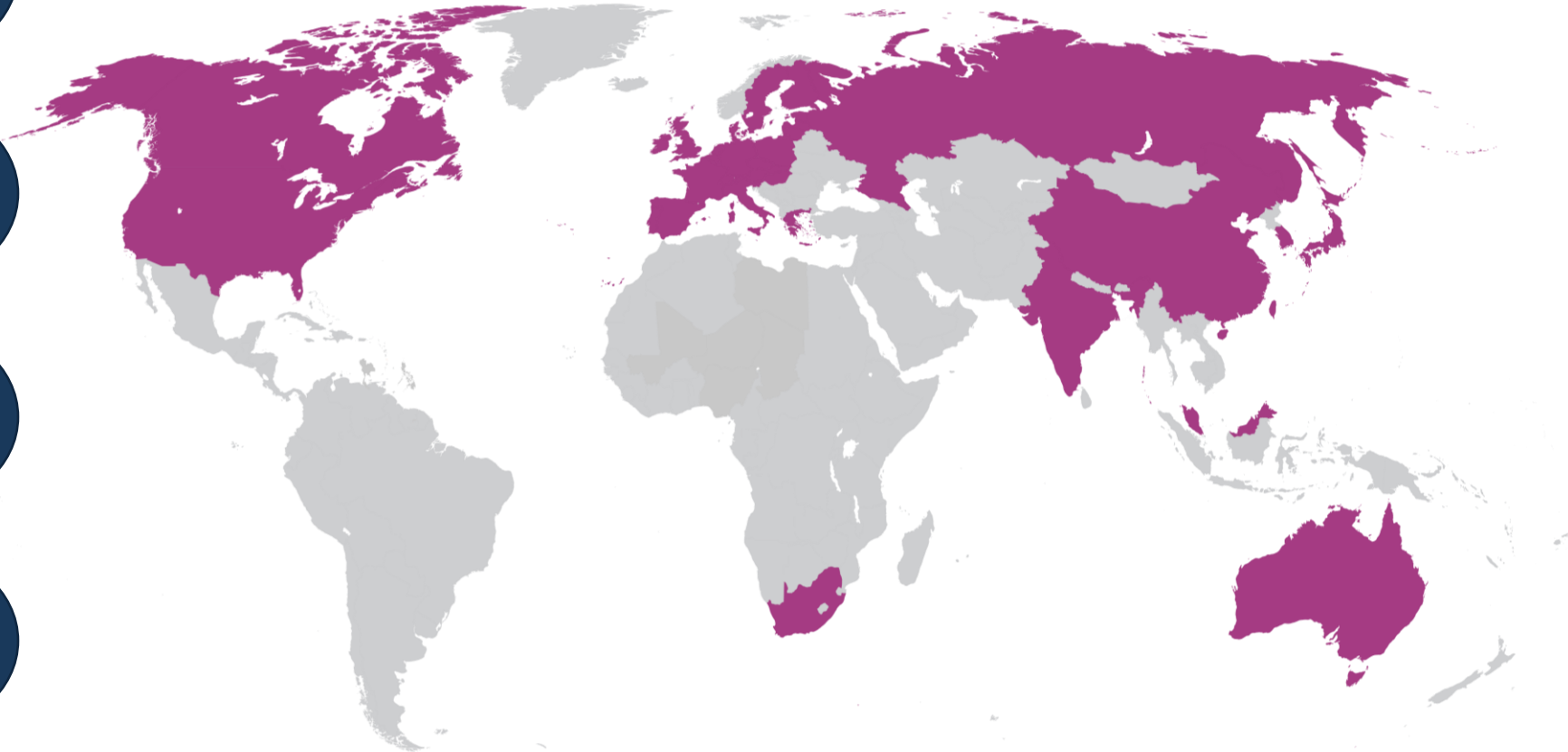
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Active Patent Families

17

Trademarks

BluGlass Intellectual Property Map



BLUGLASS OVERVIEW & STRATEGIC POSITION

Large & Growing Markets

Global laser revenue is forecast to surpass **US\$25B by 2025***. Driven by growth in high-tech applications, the gallium nitride (GaN) laser diode segment is rapidly expanding, predicted to reach **US\$2.5B in the same period**.

**Source: Strategies Unlimited*

Few Competitors

BluGlass is one of just a handful of GaN laser diode suppliers globally with significant unmet customer needs, and high barriers to market entry.

Increased Revenue Capacity & Reduced Production Costs

BluGlass' full-suite production fab fast-tracks its plan to bring fabrication processes in-house, while reducing production costs & increasing profit margins. The fab scales operations, increasing annual wafer and revenue generation capability by four-fold to **US\$160m revenue capacity**.

Strengthened, Expert Team

Under the leadership of veteran laser diode expert, Jim Haden, BluGlass' world-leading epitaxial and scientific team has been further enhanced by the addition of highly experienced manufacturing and production personnel in Silicon Valley.

Delivering an Innovative Roadmap

Progressing commercial and technology roadmaps to deliver a pipeline of in-demand laser diodes to market. In 2022, BluGlass launched its first alpha products and is in discussions with several customers wanting to trial prototypes in real-world applications.

Greater Operational Control & Simplicity

BluGlass' owned fab eliminates supply chain complexity and variation. Speeds manufacturing turns (up to 8 x faster development and production), and improves quality control, operational consistency and yields.

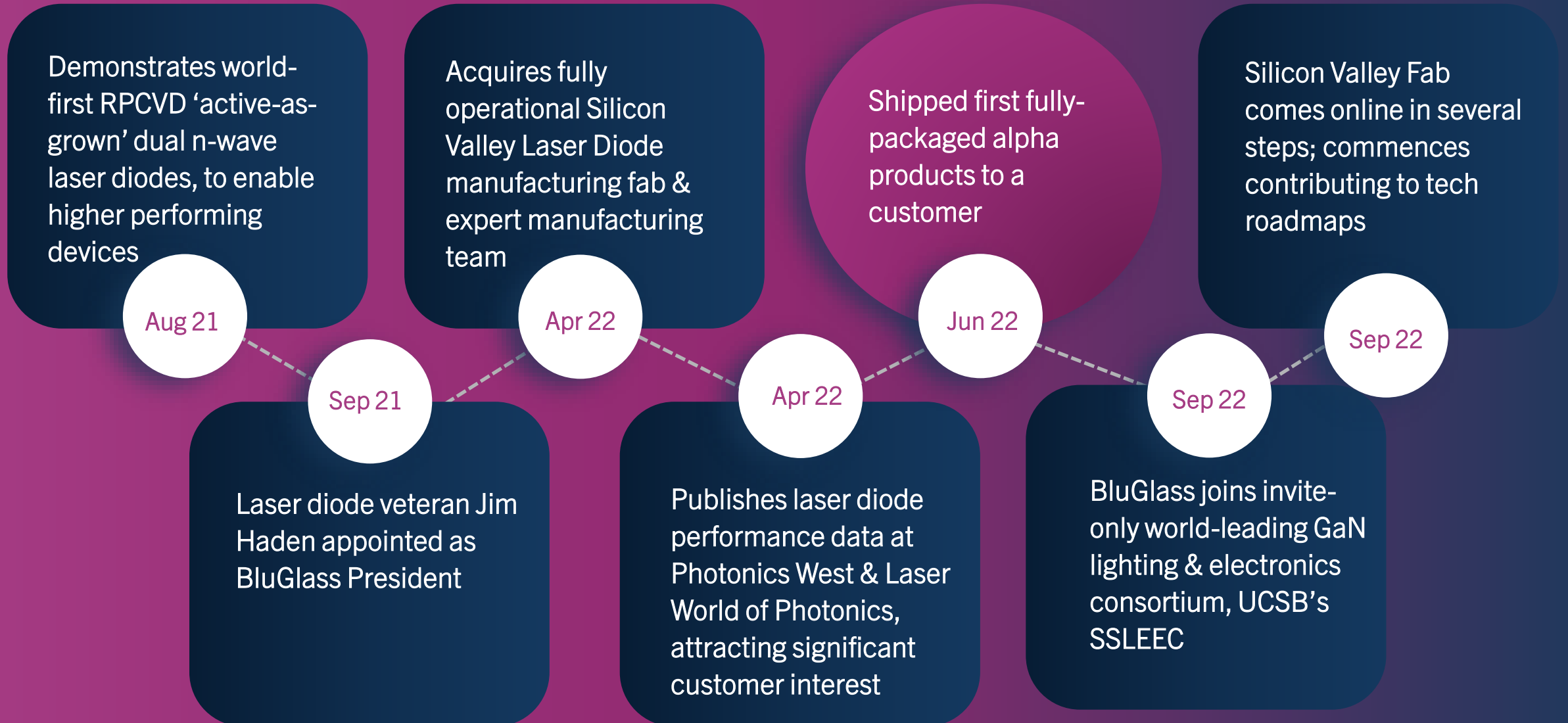


JIM HADEN
PRESIDENT'S
REPORT

YEAR IN REVIEW



YEAR IN REVIEW



DEVELOPMENT PROGRESS – FOUR KEY INGREDIENTS TO RELIABLE LDs

2. LOW RESISTANCE METALS & OHMIC CONTACTS

- ✓ Demonstrated improved metal designs, with significantly lower resistance for both negative and positive metal contacts
- ✓ Optimised ridge design

3. CLEAN FACETS & LOW LOSS AR/HR COATINGS

- ✓ Cleave improvements demonstrated at contract manufacturers, allowing sale of alpha products
- ✓ Improved low loss AR and HR coatings
- ✓ Demonstrated best cleaved optical facets to date

1. LOW LOSS, HIGH GAIN EPITAXY

- ✓ Launched two new improved epi-designs to optimise performance, reduce strain and increase light output
- ✓ New designs are highly promising demonstrating best light-output and power to-date

4. SOUND THERMAL & MECHANICAL BONDS

- ✓ Demonstrated first TO-Cans at CM enabling sale to an alpha customer
- ✓ Successful 'epi-down' (p-down) Chip on Submount (CoS) bonding both in-house and with CMs
- ✓ Reduced thermal path, better heat management paves way for higher-performance and higher-value products

VERTICALLY INTEGRATING – ACQUIRED SILICON VALLEY FAB



Increased revenue capacity & faster profitability

Increased manufacturing capability enables BluGlass to realise competitive advantages and value proposition. Acquisition reduces production costs, increases profit margins, and brings forward cash-flow positivity to 2024/2025.



Accelerated development & roadmaps

Fast-tracks longer-term plan to bring fabrication processes in-house, reducing costs and scaling operations, at the same time as accelerating development roadmaps.



Matchless opportunity

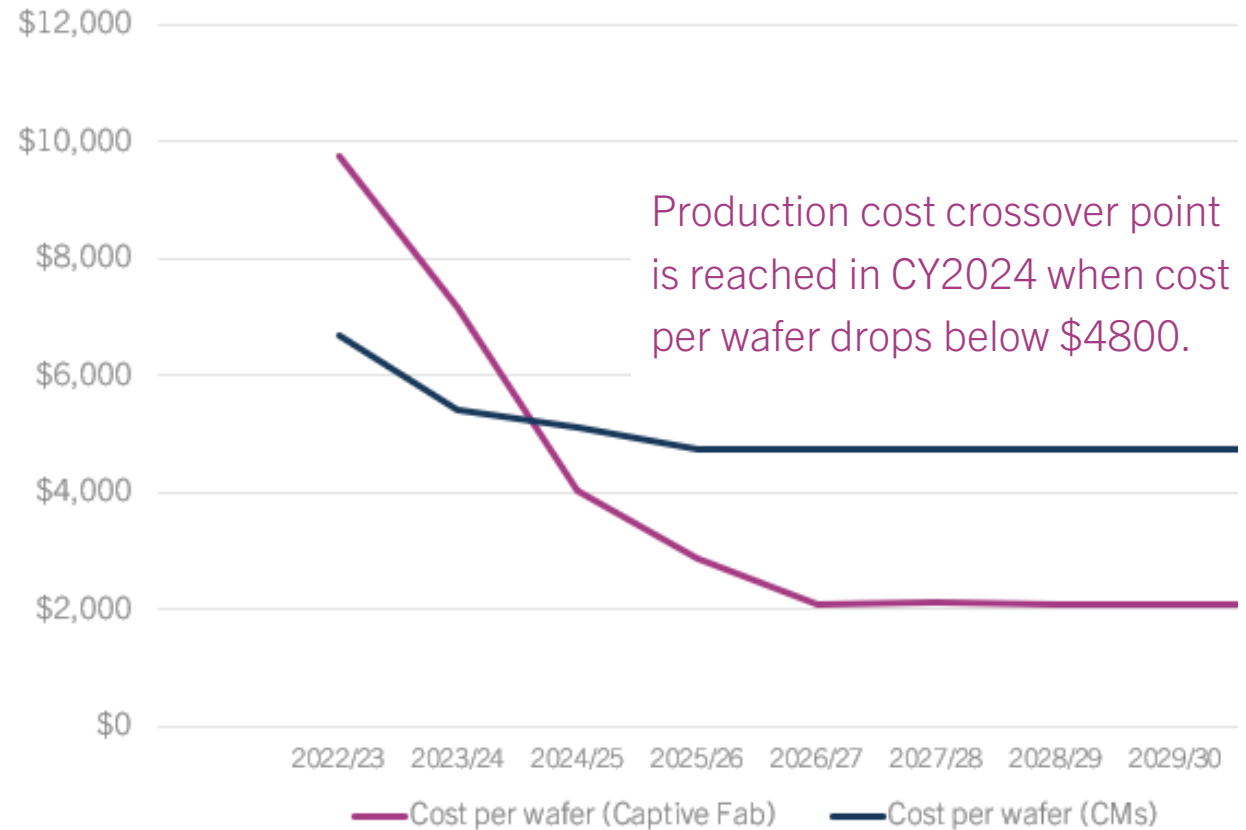
Extremely rare opportunity to acquire working laser diode fab for fraction of the ~\$US40m cost to build.



Formed an expert team

BluGlass has acquired with the facility a highly-skilled, expert manufacturing and development team with decades of laser diode experience.

BLUGLASS CAPTIVE FAB WILL HALVE WAFER PRODUCTION COSTS



SILICON VALLEY FAB COMMENCES CONTRIBUTING TO TECH ROADMAPS



Silicon Valley fab has received all required regulatory approvals to begin processing



Conversion to gallium nitride laser fabrication is well underway



The facility is now operational with development and manufacturing commencing



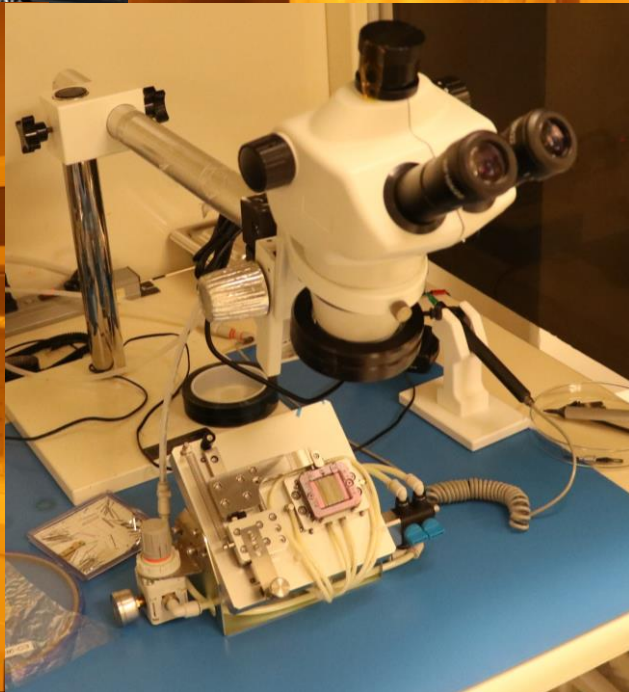
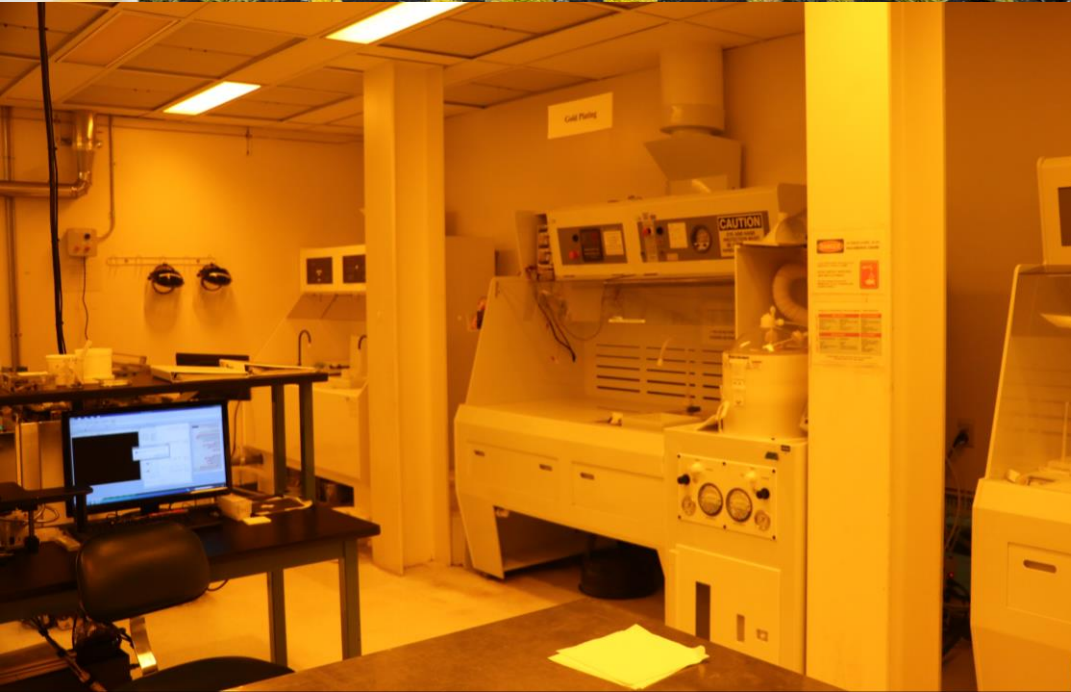
Short-loop development runs already produced significant results, enabling full laser processing



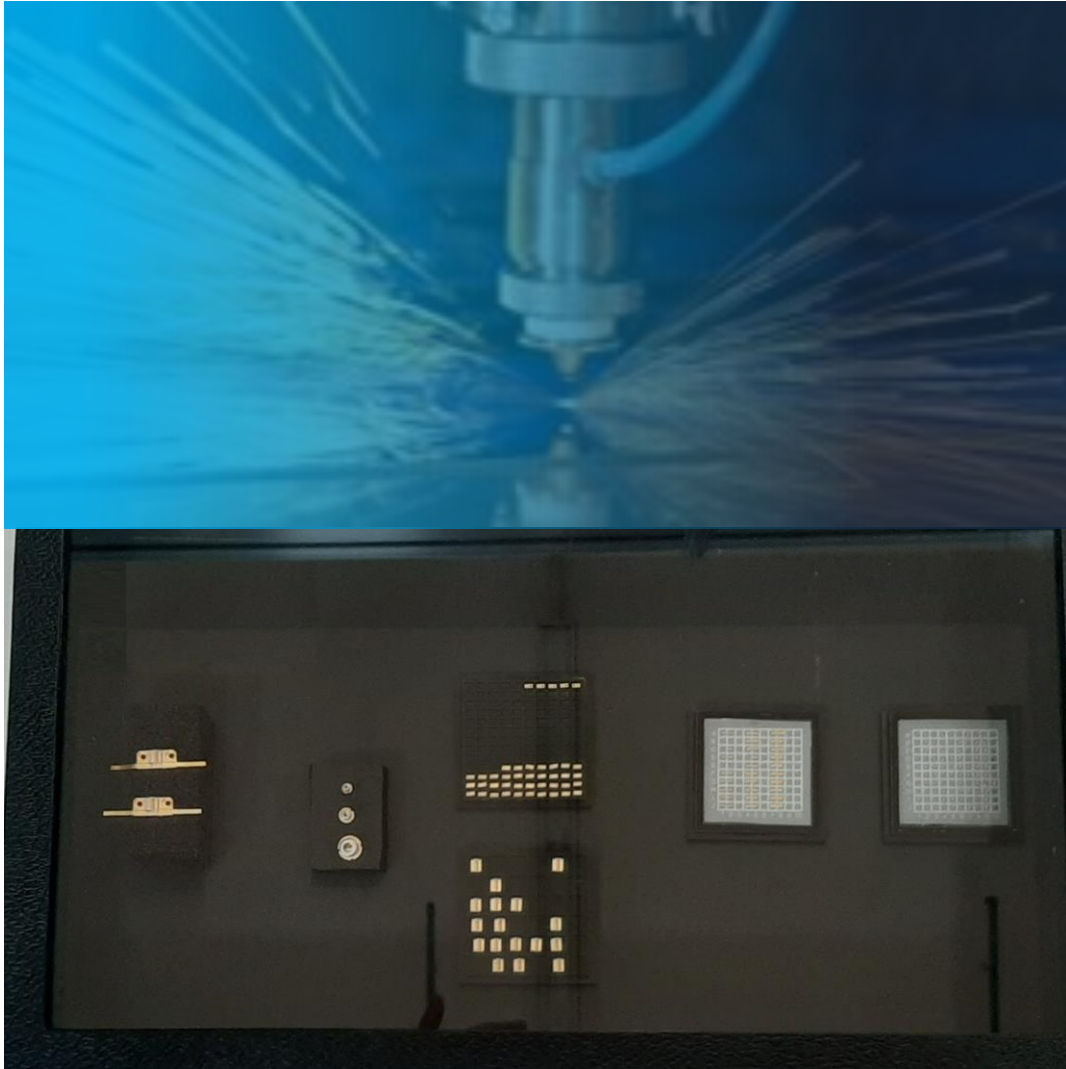
Outstanding workmanship demonstrated from first process runs



FREMONT FACILITY TOUR



SHIPS FIRST ALPHA PRODUCTS TO CUSTOMER



BluGlass shipped 405nm and 420nm alpha products to a customer for integration within new product design and development cycles for testing and feedback.



An alpha product is an advanced prototype still in the design phase and is a valuable tool to collect customer feedback in real-world applications.



BluGlass is working with several customers wanting to trial alpha products for innovative new applications, including medical devices, sensing, quantum computing, and automotive products.

BLUGLASS JOINS WORLD LEADING GaN CONSORTIUM



Invited member of the *University of California, Santa Barbara's (UCSB) Solid-State Lighting & Energy Electronics Centre (SSLEEC)* consortium



Member companies are internationally recognised as contributing to the advancement of solid-state lighting & electronics



Membership provides BluGlass with access to the UCSB's pre-eminent GaN faculty and facilities, accelerating its advanced laser product roadmaps



Testament to BluGlass' leading innovation in RPCVD epitaxy growth, novel laser architectures, and longer-wavelength GaN devices.



A close-up photograph of a microscope lens positioned over a bundle of fiber optic cables. The lens is in the foreground, and the cables are in the background, creating a sense of depth and focus. The image is overlaid with a semi-transparent purple and blue gradient.

MARKET
OPPORTUNITIES

MARKET DRIVERS - THE ADVANTAGES OF GaN

GaN lasers have many inherent advantages over traditional infrared (GaAs) laser diodes



Higher energy absorption in key industrial metals



Tighter beam focus and improved efficiency



Higher precision manufacturing, enabling increasingly advanced technology applications



Cleaner, faster materials processing

Key Metals	Improvement of energy absorption in metals
Gold	66x
Silver	17x
Copper	13x
Aluminum	3x
Nickel	1.5x
Steel	1.5x

Source: NASA, 1969

TARGET MARKETS BY APPLICATION

BluGlass is focused on key Service Available Market opportunities by 2025 worth more than

US\$735M of the \$2.5B global GaN laser market

\$355M

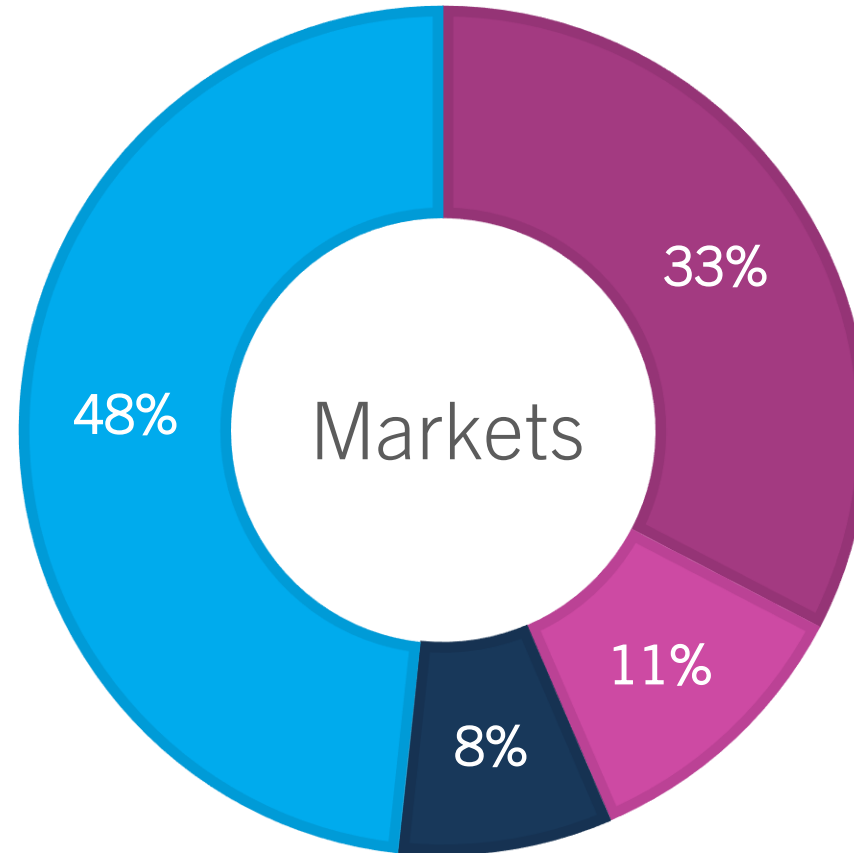
Total Other Markets

Applications: Defense, Displays, Automotive, Augmented & Virtual Reality, General Lighting

\$60M

Biotech & Medical Market

Applications: Flow cytometry, Medical diagnostics, DNA sequencing, Endoscopy, Bio-fluorescence



\$240M

Industrial Market

Applications: Industrial cutting & welding, 3D printing (metals and polymers), Machine Vision, Electric Vehicles, Batteries, Renewables, Aviation

\$80M

Scientific Market

Applications: Quantum Computing, Autonomous Vehicles, Robotics, Sensors

INDUSTRY CHALLENGES – BLUGLASS VALUE PROPOSITION

BluGlass' target market position

Providing plug and play **easy-to-use laser light** through:

- Unique form factors and vertically integrated packaging
- Novel laser architectures including **multichip modules** and **RPCVD enhanced lasers** to achieve brighter, cost effective, higher efficiency and higher power laser light
- Flexible and custom manufacturing

Why there is a need for BluGlass



Existing large players do not provide flexible form-factors and wavelengths – requiring significant customisation and post purchase packaging by customers

How BLG meets these needs: Short-Term



Focused on addressing customer requests to serve unmet needs across 405 to 450 nm laser diodes with standard packages

How BLG meets these needs: Long-Term



Offer an expanded range of wavelengths, form factors and package integration options



Deliver novel laser architectures designed to increase efficiency, power, and brightness while reducing customer integration costs – providing the industry's leading easy-to-use laser light

BLUGLASS TARGET MARKETS: Industrial Segment

US\$240M

Product Addressable Market
by 2025

Key Customers:

- IPG Photonics
- TeraDiode (Panasonic)
- nLight (OPI)
- NUBURU
- LaserLine
- Convergent Photonics -3D Systems
- FormLabs
- EOS

Wavelengths:

- 450nm MM
- 405nm SM/MM

Key Applications:



Industrial Welding

Blue laser light is absorbed many times more than traditional (infrared) laser welding systems in key industrial metals (gold, silver, copper). Early adoption markets include Electric Vehicles & Consumer Electronics.



Additive Manufacturing

Blue LDs enable 3D Printing of an extended range of metals; and also offer performance enhancements in polymer-based applications to enable both larger format and higher precision manufacturing.



Material treatment/finishing

Material softening & hardening plays a key role in many industrial manufacturing processes, e.g. creating designated “crumple zones” within high strength steel for automotive manufacturing. Blue lasers offer improved accuracy and control of these processes over traditional process capabilities.

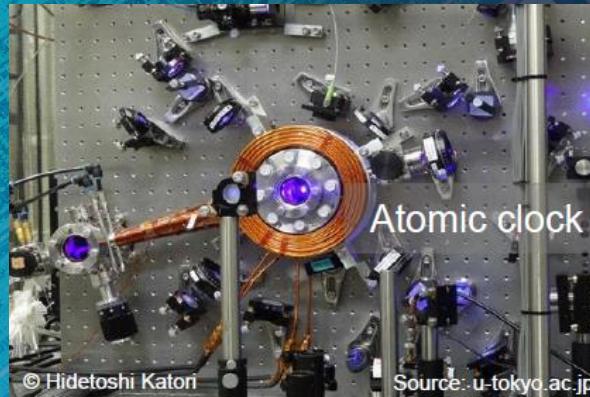
BLUGLASS TARGET MARKETS: Scientific Segment/Focus on Quantum

US\$80M

Product Addressable Market
by 2025

Key Customers:

- Toptica Photonics
- NKT Photonics
- Bosch
- Coherent
- Hubner Photonics
- M-Squared
- Laser Quantum
- AMS Technologies
- MKS



Wavelengths:

- 450nm MM
- 405nm SM/MM

Key Applications:

Quantum Sensing

Laser-based quantum sensors are superseding traditional sensing technologies such as accurate atomic clocks, sensitive quantum gravimeters, and low-noise quantum interference microscopy for navigation systems e.g autonomous vehicles, drones and robotics.



Quantum Computing

Cold-atom systems are a key building block for types of quantum computers. Cooling lasers freeze the atoms and hold them still, mid-air, using the Doppler cooling technique. The cooled atoms will work as qubits, the basic building block for quantum computing.



Laser pumping (DPSS / Ti:Sa)

Disruptive technology for pumping of solid-state lasers in particular Ti-sapphire lasers, the dominant product in the ~\$1B tunable scientific laser market.



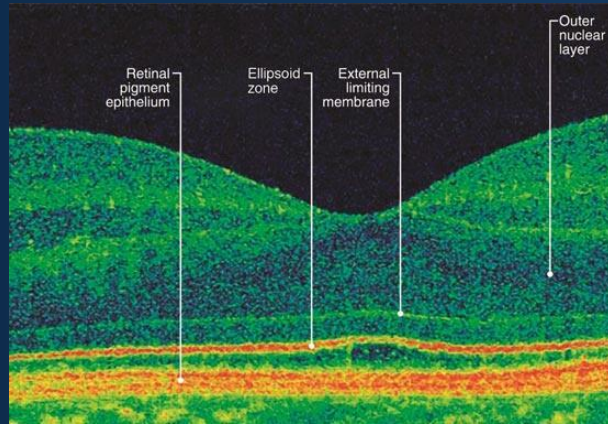
BLUGLASS TARGET MARKETS: Biotech Segment

US\$60M

Product Addressable Market
by 2025

Key Customers:

- Modulight
- BioLase
- IPS Lasers
- 3DHitech
- Innovative Photonic Solutions



Wavelengths:

- 405nm SM
- 488nm SM
- 532nm

Key Applications:



Flow Cytometry

As the need for more personalised medicine increases, researchers are finding that new laser wavelengths and integrated multiwavelength laser light engines are enabling high-dimensional analysers with improved performance.



Optical Coherence Tomography (OCT)

Optical Coherence Tomography (OCT) is a fundamentally new biomedical imaging technology that generates high-resolution, cross-sectional and volumetric image of subsurface tissue structure and pathology by measuring echo time delays of light.

Multi-Wavelength lasers sources show improvement in system performance in the >\$1B market.



AIXTRON

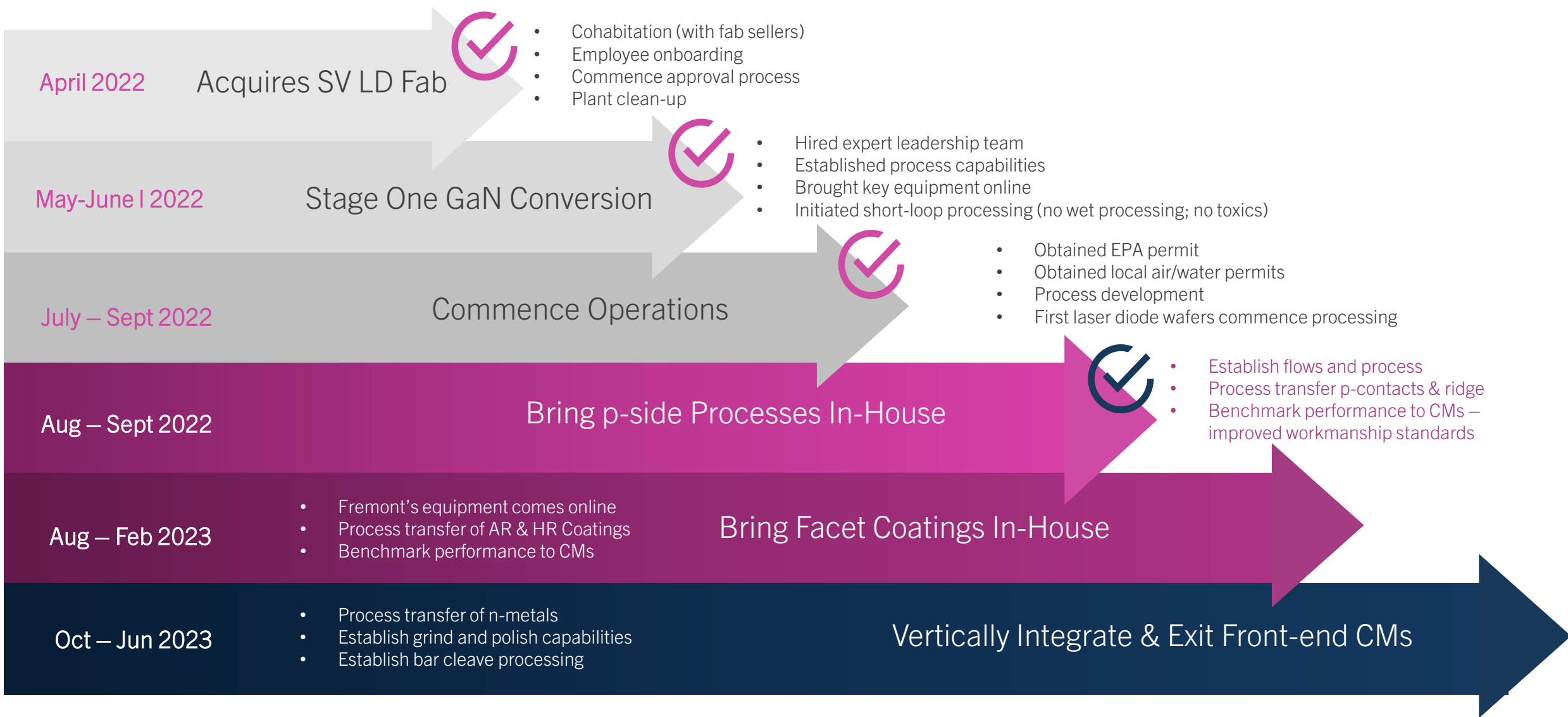
PLANETARY REACTOR™

GAS FOIL ROTATION™

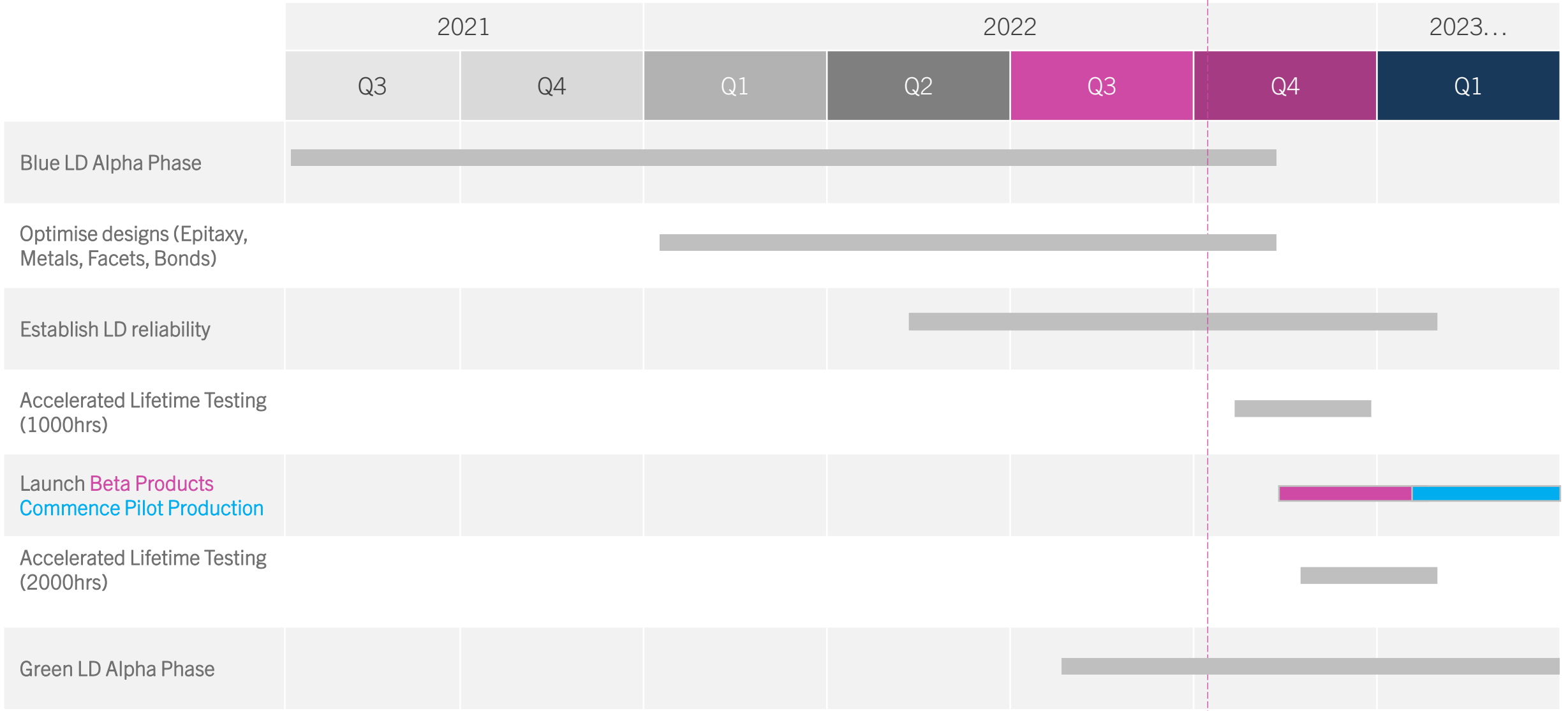


STRATEGY &
ROADMAP

BRINGING FREMONT ONLINE - MORE SPEED, BETTER CAPABILITY



TECHNOLOGY & COMMERCIALISATION ROADMAPS



DELIVERING AGAINST CLEAR PRODUCT DEVELOPMENT PIPELINE

BluGlass has demonstrated strong progress on initial product offering

Violet	405nm	MM – 1W SM – 100-200mW	MM – 1.2W SM – 250mW	
	420nm	MM – 1W SM – 100-200mW	SM – 250mW	MM – 1.8W
Blue	450nm		MM – 1.6W	MM – 3.5W MM – 5W
	470nm		SM – 100 -250mW	MM – 2W
	488nm		SM – 100-200mW	MM – 1.5-2W
Green	525nm		MM – 1.5-2W SM – 100-200mW	

MM: Multi Mode

SM: Single Mode

2022

A close-up photograph of a microscope's objective lens, positioned above a slide. The scene is overlaid with a semi-transparent blue and green gradient. Numerous fiber optic cables are visible, some extending from the bottom and others fanning out from the right side, suggesting a connection between the microscope and a fiber optic network.

OUTLOOK

SUMMARY & OUTLOOK

Fast-tracked Company Goals

BluGlass' acquisition of a full-suite production fab supports company vision and **fast-tracks longer-term plan** to bring fabrication processes in-house, reducing costs and scaling operations.

Matchless opportunity to acquire working fab for fraction of cost to build.

Demonstrated LD Improvements & Launched Alpha Products

Strong performance improvements have generated high-levels of interest at Photonics West and Laser World of Photonics, with first alpha products shipped to a customer for real-world application trials.

Delivering on Clear Roadmap

BluGlass is delivering on its commercial and technology roadmaps to deliver a pipeline of in-demand products to market. New fab also accelerates a higher-value product pipeline including tunnel junctions, longer/ shorter wavelength lasers (UV/Green).

Large & Growing Markets

Global laser revenue is forecast to exceed **US\$25B by 2025***.

The GaN segment is growing faster than anticipated, forecast to reach **US\$2.5B by 2025***.

One of only a handful of end-to-end GaN laser diode manufacturers globally.

*Source: Strategies Unlimited 2020

2022



2022

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405nm

420nm

450nm

488nm

525nm

THANK-YOU & QUESTIONS

