



# Corporate Presentation

February 2023

# Forward-Looking Statement

Certain statements included herein may constitute forward-looking statements within the meaning of the securities laws of certain jurisdictions. Certain such forward-looking statements can be identified by the use of forward-looking terminology such as “believes”, “expects”, “may”, “are expected to”, “intends”, “will”, “will continue”, “should”, “would be”, “seeks”, “anticipates” or similar expressions or the negative thereof or other variations thereof or comparable terminology. These forward-looking statements include all matters that are not historical facts. They include statements regarding Alphawave IP Group Plc’s (“Alphawave IP”) intentions, beliefs or current expectations concerning, amongst other things, its results in relation to operations, financial condition, prospects, growth, strategies and the industry in which it operates. By their nature, forward-looking statements involve risks and uncertainties because they relate to events and depend on circumstances that may or may not occur in the future. Forward-looking statements are not guarantees of future performance and Alphawave IP’s actual results of operations, financial condition, and the development of the industry in which it operates, may differ materially from those made in or suggested by the forward-looking statements contained in this Presentation. In addition, even if Alphawave IP’s results of operations, financial condition, or the development of the industry in which it operates are consistent with the forward-looking statements contained in this Presentation, those results or developments may not be indicative of results or developments in subsequent periods. Important factors that could cause those differences include, but are not limited to customer demand, Alphawave IP’s innovation and R&D and technology capabilities, target market trends, industry trends, customer activities and end-market trends, market acceptance of Group technologies; increased competition; macroeconomic conditions; changes in laws, regulations or regulatory policies; and timing and success of strategic actions. These forward-looking statements speak only as of the date of this Presentation. As such, undue reliance should not be placed on forward-looking statements. Other than in accordance with legal and regulatory obligations, Alphawave IP undertakes no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.



# Founding Team and Track Record


























Alphawave's founding team has supplied connectivity solutions for global tier-one customers since 1998

## Experienced Founding Management Team

<b>JOHN LOFTON HOLT</b> Executive Chairman, Founder	 	<ul style="list-style-type: none"> <li>&gt;20 years of executive and investment experience</li> </ul>
<b>TONY PIALIS</b> Chief Executive Officer, President, Founder	  	<ul style="list-style-type: none"> <li>&gt;20 years of executive experience</li> </ul>
<b>DANIEL AHARONI</b> Chief Financial Officer	   	<ul style="list-style-type: none"> <li>&gt;20 years of finance experience</li> </ul>
<b>JONATHAN ROGERS</b> SVP Engineering, Founder	  	<ul style="list-style-type: none"> <li>&gt;20 years of executive experience</li> </ul>
<b>RAJ MAHADEVAN</b> SVP Operations, Founder	  	<ul style="list-style-type: none"> <li>&gt;20 years of executive experience</li> </ul>

## Swift Success at Alphawave Underpinned by a >20 Year Track Record

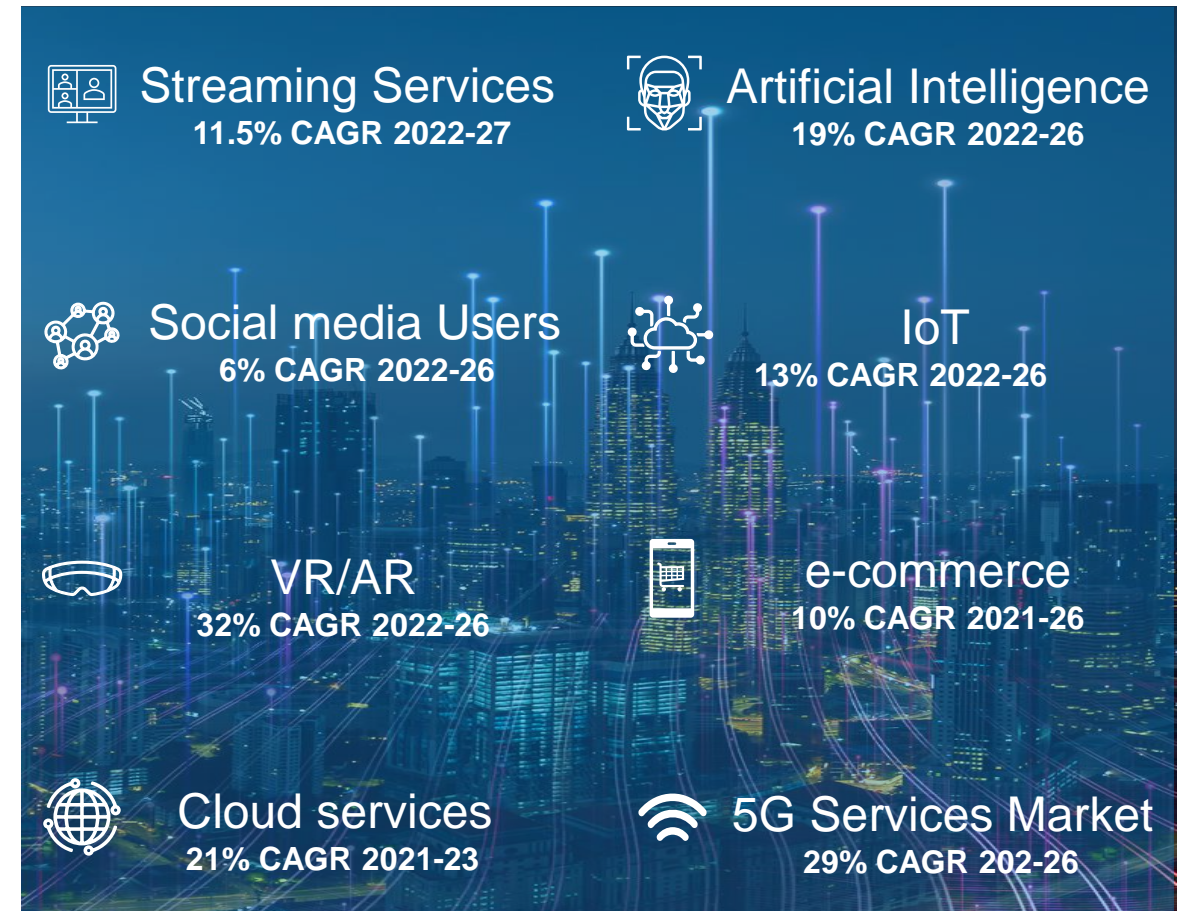
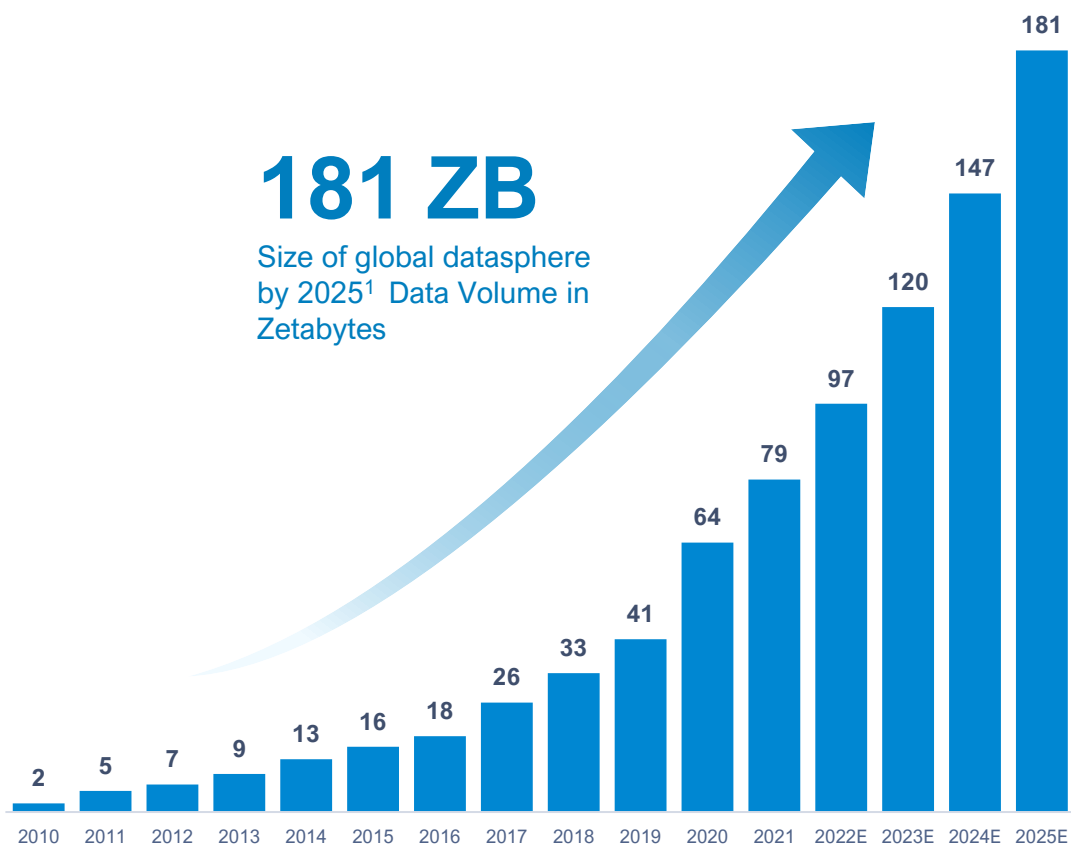
- ✓ Members of the Management team have worked together for nearly two decades
- ✓ Technical team has developed in every advanced technology from 180nm → 3nm
- ✓ Communications products shipped to Tier-One customers globally since 1998
- ✓ Founders have raised and deployed \$300M across four successful semiconductor companies that have generated nearly \$3B of value since 2004

1998 – 2007	2008 – 2012	2013 – 2017	2018 – Today
 <b>Leader in 8G</b> 180nm-90nm        	 <b>Leader in 10G</b> 65nm-28nm        	 <b>Leader in 16G PCIe</b> 22nm-10nm   	 <b>Leader in 100G</b> 7nm-5nm-3nm   + others



# The Age of Exponential Data Growth

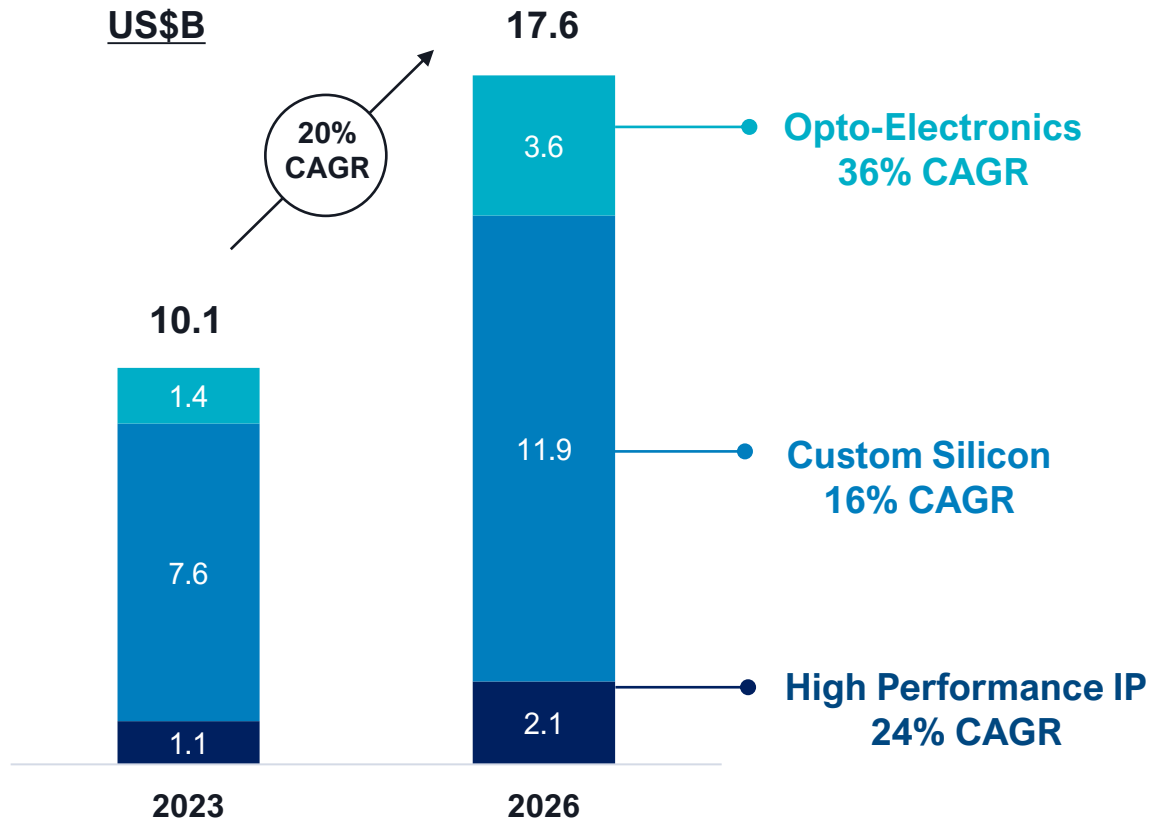
More Sensors, Devices, Images and Multimedia... More Enterprise Data



<sup>1</sup> The Data Center Journey, From Central Utility To Center Of The Universe (semiengineering.com). Source Statista  
See slide 93 for all other references



# Addressable Market Expanding to \$18B by 2026



## Market Drivers

- Digitalisation drives exponential growth in data
- Data bandwidth doubles every 2-3 years driving a technology refresh of switches and transceivers
- High-speed and power-efficient connectivity technology is a key enabler
- Hyperscalers investing through the economic cycle



Semico Research Corporation, December 2022, IPNest and Lightcounting

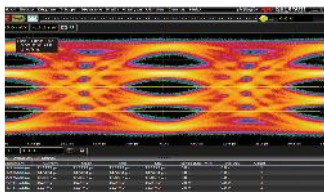




# Alphawave Technology Strengths

## Leading Edge Capabilities and Technologies to Deliver the Fastest Connectivity Solutions

### High-Speed Connectivity IP



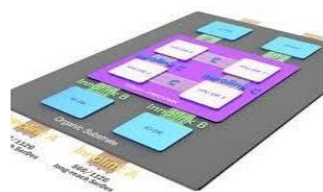
- 224Gbps, 112Gbps, chiplets
- **#1 TSMC OIP partner 2020-2022**
- **2022 Samsung Best Collaboration Award**

### Advanced Silicon



- First in 7nm, 6nm, 5nm, 4nm and 3nm

### Chiplet – Package Design



- Deep expertise in chiplet packages design
- 2.5D and 3D package designs in production

### Opto-Electronics



- PAM4, Coherent DSPs, and silicon photonics for 1.6T Ethernet
- 224Gbps photonics in silicon



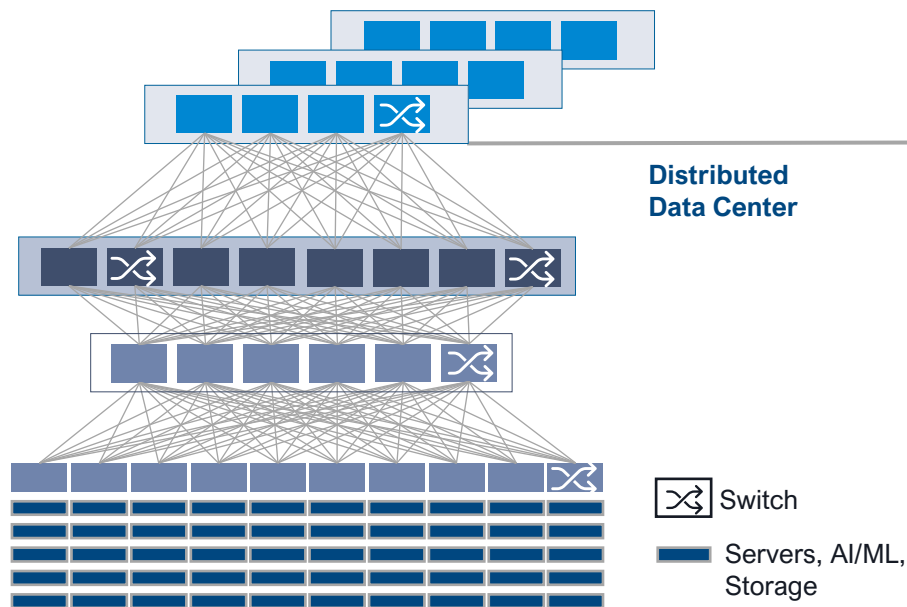
# Data Connectivity Everywhere

## Our Expertise is in The Circuits and Systems Required to Communicate Data...

...Whether separated by kilometres of optical fibre or meters of copper cable, sub-millimetre printed wiring, the start- and end-points of data are silicon chips

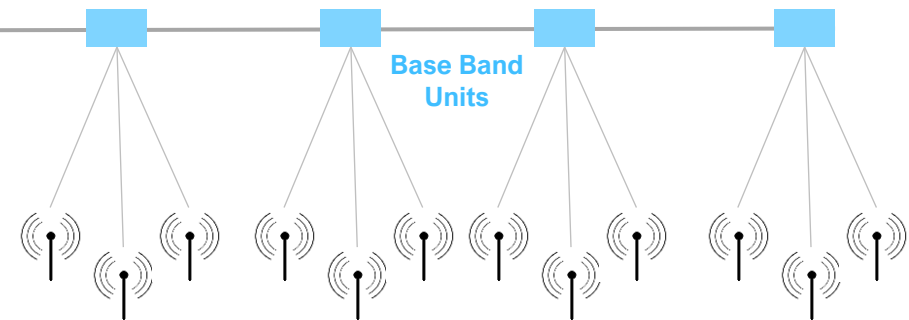
### Inside Data Centers...

- Up to 76% of all data centre internet traffic traverses internally within data centres



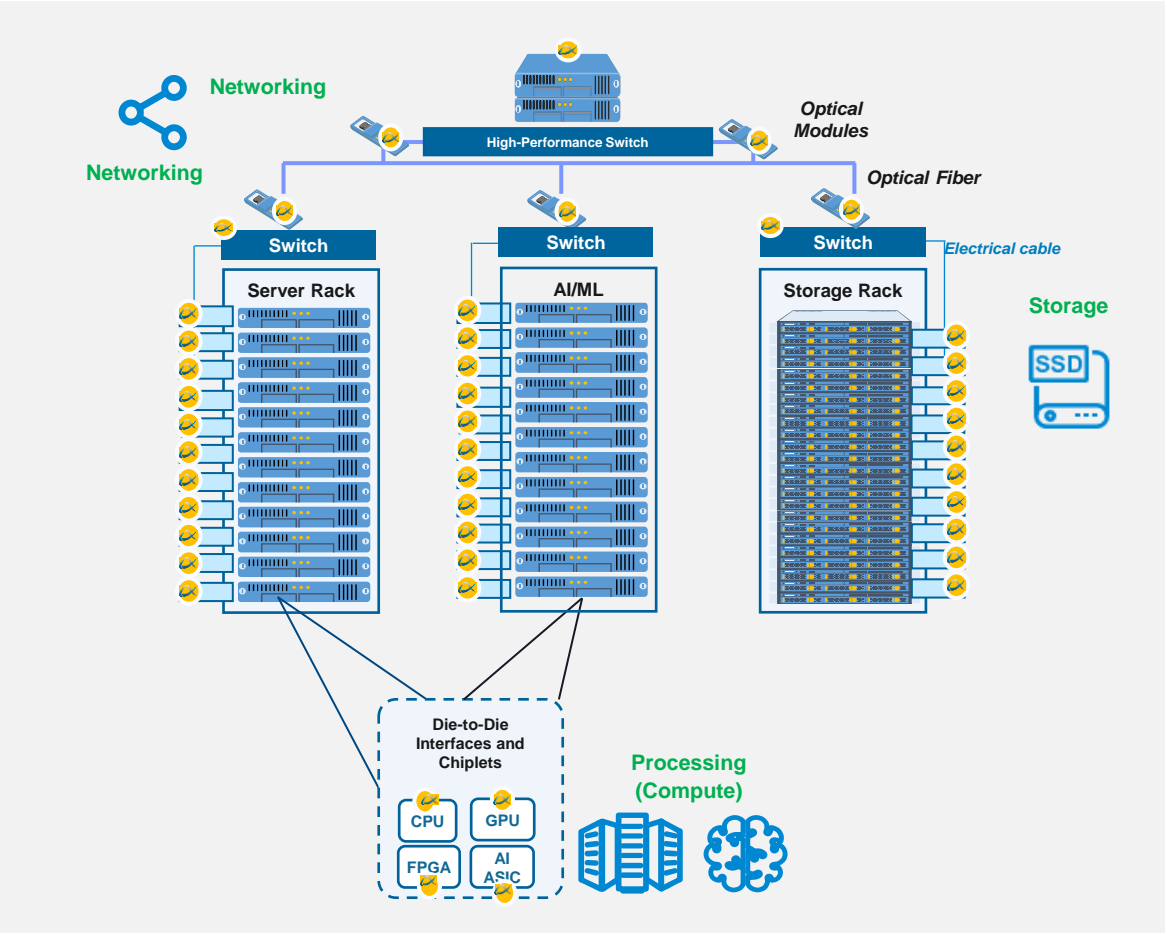
### ...and at the Edge (5G rollout a major driver)

- Placing application-specific compute close to the sources of data
- Creating new applications for high-speed connectivity



# Our Technology Enables High-Speed Data Transmission

## In Key Applications Inside Data Centers



**Semiconductors are at the start and end points of any transmission of data**

	Applications	Where
Processing (Compute)	CPU, GPU, FPGA, AI	In Servers and AI/ML racks
Networking	Network cards (NICs), Switch, optical modules and cabling	In servers and AI/ML racks, switches, optical modules, and cabling
Storage	Solid State Drives (SSD), Flash Memory, Hard Disk Drives (HDD)	In storage rack





# Key Technology Trends

## Optics Getting Closer to The End Points

Increasing use of optical cables over copper and co-packaged optics for lower cost, power and latency

## Coherent Optical

Increasing use of coherent optical communication inside data centers to overcome the bandwidth limitations of optical components

## Disaggregated Computing

Disaggregation of compute and storage to increase efficiency

## Advances on CMOS Technology

Higher development and manufacturing costs of high-end semiconductors

## Chiplet

Emergence of the chiplet design paradigm



# Long-Term Technology Trends

## Today

- Emphasis on using copper connectivity wherever possible to keep costs low
- Computer and system designers select packaged electronic parts and wire them together on a custom circuit board
- Global and interconnected supply chain

## 10 Years

- Ubiquitous use of low-cost optical connectivity solutions, even over short reaches
- Complete systems designed and made by packaging multiple standard silicon chiplets within a few centimetres
- Complete on-shore ecosystem for integrated circuits, chiplets, advanced packaging

## Alphawave Semi is well-positioned to:

Extend and expand technology leadership

Deliver solutions for emerging optical connectivity

Offer complete custom silicon expertise and chiplet IP

Leverage solid relationships with major western companies and governments



# Drivers of Our Vision and Ambition



## Adapting to External Environment and Stage of Our Business



Maximising Value For Our Customers



Expand and Extend Technology Leadership



Greater Scale

## Building a Leading Connectivity Business



Land and Expand



High-Performance Silicon IP and Products

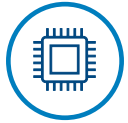
People and culture



Vertically Integrated



# Building a Leading Connectivity Business



## High-Performance Silicon IP and Products

- Leading edge connectivity IP
- Delivering the fastest connectivity solutions
- Complete set of products and expertise aligned to long-term market trends



## Vertically Integrated

- Monetising our IP through IP licences, custom silicon and connectivity products
- Greater scale
- Enhanced competitive position



## People and Culture

- Technology-centric, open and diverse culture fosters innovation
- Approximately 700 employees
- Key design centres in Canada, US, Israel and India



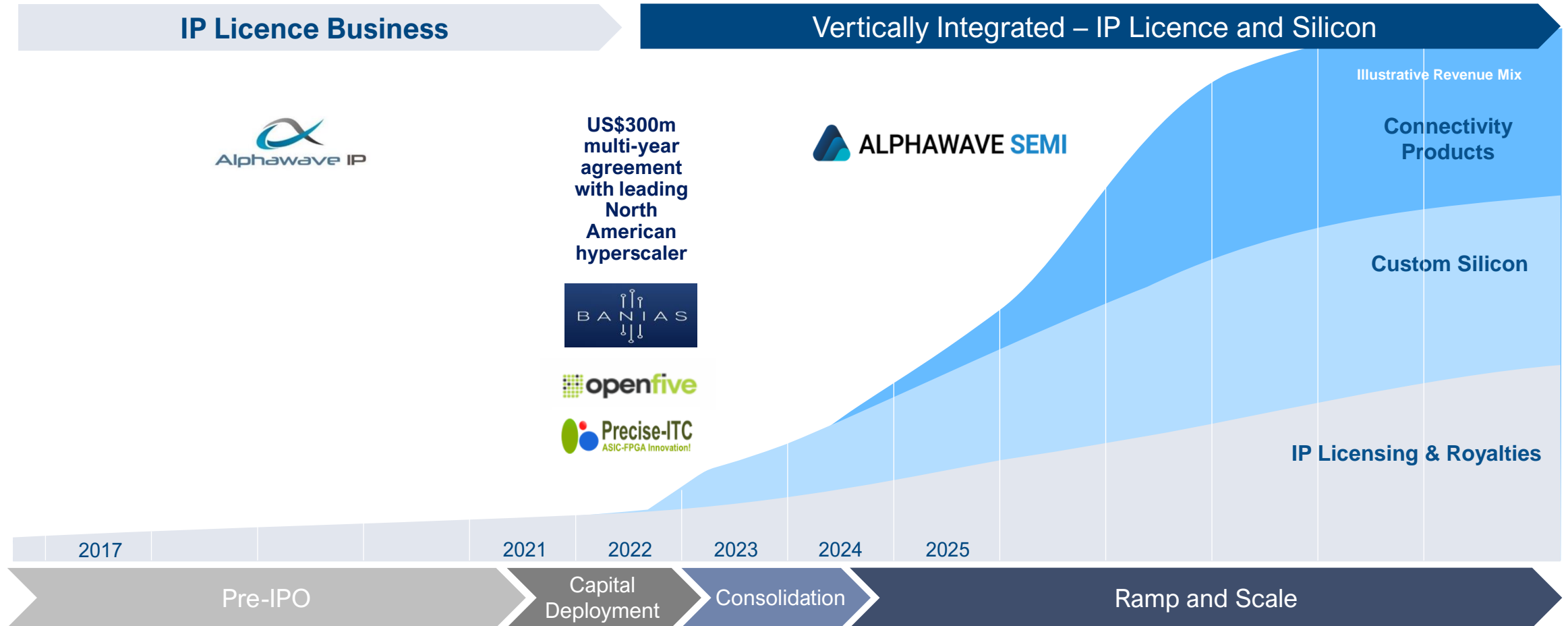
## Land & Expand

- Adding value to customers by servicing more of their connectivity needs
- Growing opportunity with large cloud, wireless infrastructures and hyperscalers
- Collaborative approach with customers promotes innovation



# Leading Connectivity Technology for Digital Infrastructure

## Vertically Integrated - Monetising our IP Through IP Licence and Silicon



# Offering Customers a Wide Range of Products and Solutions

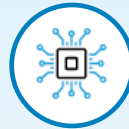
## Connectivity Silicon IP



Networking, Optical, Compute,  
Storage, AI, CPU, 5G Infrastructure,  
Automotive

> 220 IPs and partnered with TSMC,  
Samsung, Intel

## Custom Silicon



Bespoke silicon to customers'  
requirements incorporating our  
Connectivity IP

80 active customers

## Connectivity Products



High bandwidth, advanced node  
optical and electrical networking  
products




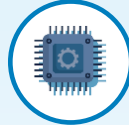




PAM4 & Coherent Transceivers

Leveraging our IP





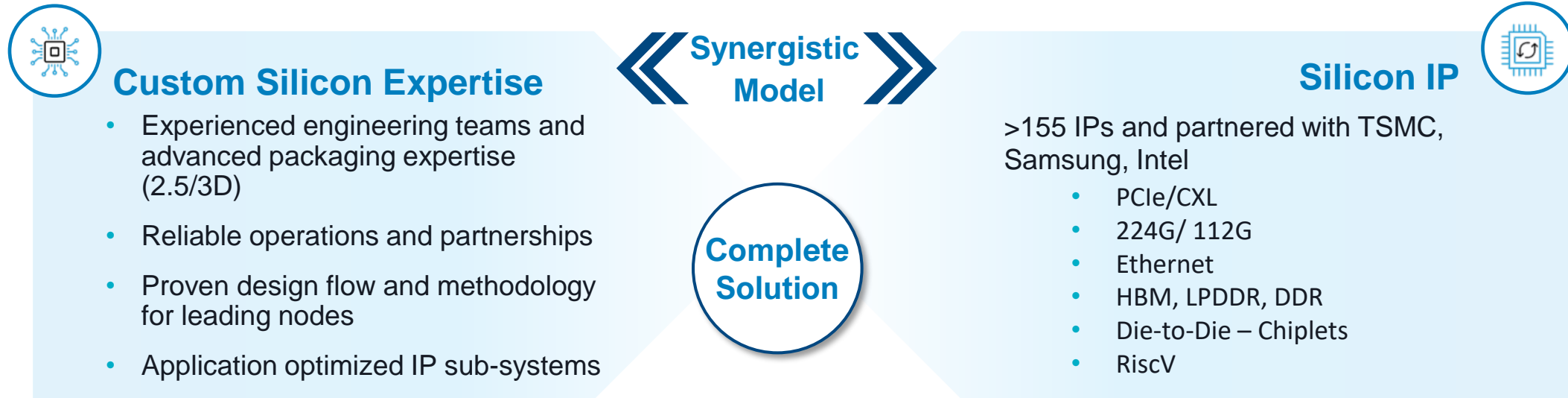
# Connectivity Silicon IP

<div>Servers and Storage</div> <div></div> <div>High-speed Interface IP for data centre compute – CPU, GPU, AI &amp; FPGA</div>	<div>Networking</div> <div></div> <div>Interface IP for Networks – Switches, Routers, DPUs, NICs</div>	<div>Memory</div> <div></div> <div>Memory Interface IP for DRAMs &amp; HBM – CPU, GPU, AI, FPGA, DPUs</div>	<div>Chiplets</div> <div></div> <div>Chiplet Interface IP 2.5D and 3DIC</div>
PCIe Gen6 / CXL 3.0	400G, 800G, 1.6T Ethernet	HBM, LPDDR, DDR	UCIe, BOW, Open-HBI
<div><div>PipeCORE    PicoCORE KappaCORE</div></div>	<div><div>AthenaCORE    ApolloCORE ZeusCORE    AlphaCORE    OmegaCORE</div></div>	<div><div>HelenaCORE    DemiCORE</div></div>	<div><div>AresCORE    DieCORE GammaCORE</div></div>



# Custom Silicon

## Silicon Proven Solutions Leveraging Our High-Performance IP

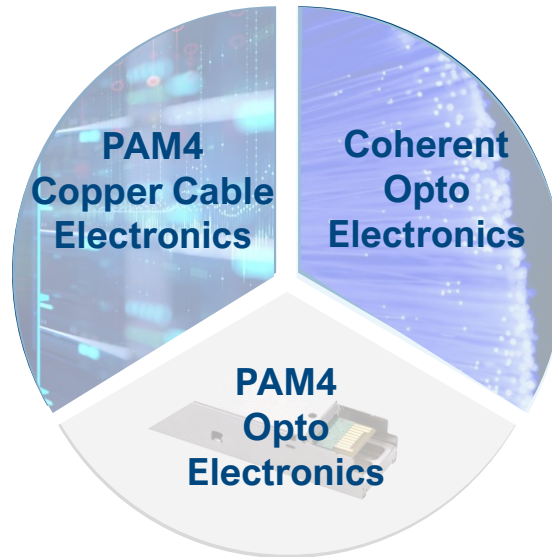
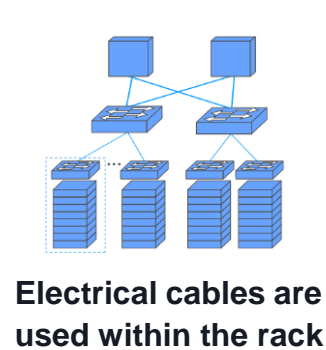


## Strong Partnerships Across the Supply Chain



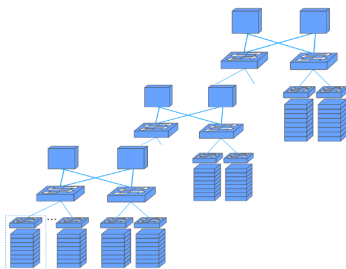
# Connectivity Products

## Full Range of PAM4 and Coherent DSPs – Electrical and Optical



Optical coherent signalling is used today, to connect regional data centers through optical cables

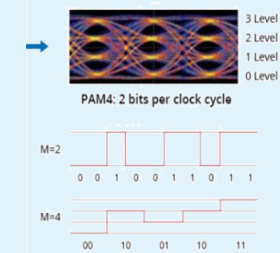
Growing opportunity to use coherent inside data centers



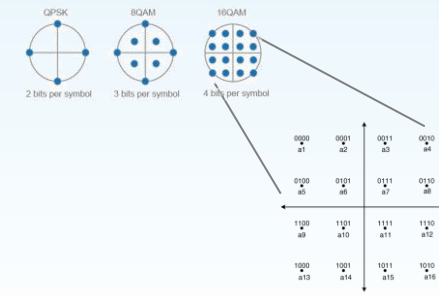
Optical cables distribute data across a data center

Co-packaged Optoelectronics

Direct Detect modulation such as **PAM4 DSP** for speeds up to 200G

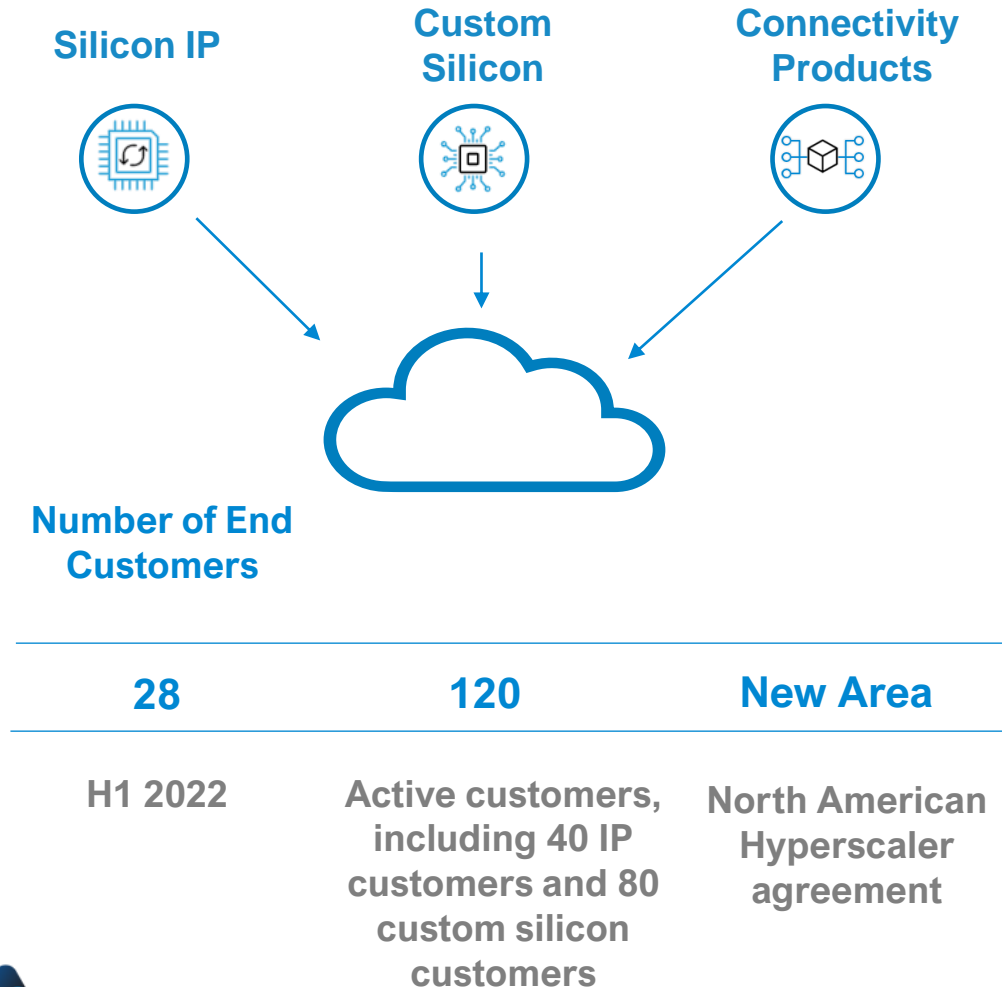


**Coherent DSP** for longer reaches and for shorter reaches at 200G and above



# Adding Value to Customers - Land & Expand

## Servicing More Connectivity Requirements



- Technology refresh/upgrade provide an opportunity to work with new customers
- Once technology is qualified and deployed is easier for customers to increase adoption
- Close R&D collaboration with customers drives product development
- Hyperscaler multi-year agreement provides unique platform to develop new products and scale the business
- More than 120 customers added since 2018



# People and Culture

## Attracting Talent and Creating an Environment to Foster Leading Innovation

- Welcomed approximately 400 new employees from Precise-ITC, OpenFive and Banias Labs
- Attracting and retaining talent:
  - Employee share ownership aligned to shareholder's interests
  - Working on leading edge technology
  - Supporting employees' wellbeing through period of accelerated business expansion
- Technology-centric culture focused on solving the hardest challenges
- Promoting an open and diverse environment to foster innovation



20% Female



>50% Visible Minority



# Alphawave's Commitment to ESG

## Building the Team to Support a Responsible Business Expansion

- New hires in 2022 reinforcing our Governance, Finance and Comms functions
- ESG Steering Group to drive improvements and long-term sustainability strategy



### Environmental

- Our products contribute to more sustainable data centers
- Fabless business model with relatively lower carbon footprint
- Ongoing commitment to actively manage and reduce our carbon footprint
- Environmental disclosures following TCFD recommendations



### Social

- Talent identification and retention programme
- Commitment to Diversity & Inclusion
- Corporate values fostering innovation and the next wave of innovators
- University Relations, Internships, and Community Engagement programme



### Governance

- Responsible Company – adhering to high standards as per our Code of Ethics and Business Conduct
- Increasing focus on Supply Chain Governance
- Head of Governance driving further improvements





# Recent Company Announcements

Capital Markets Day 2023 –  
Alphawave to outline long-  
term strategy and financial  
targets

01.13.2023

Alphawave IP announced as  
one of Deloitte's Technology  
Fast 50™ and North American  
Technology Fast 500™ 2022  
award winners

11.17.2022

Alphawave IP Receives 2022  
TSMC OIP Partner of the Year  
Award for High-Speed SerDes  
IP Innovations

11.09.2022

Alphawave IP Achieves Its  
First Testchip Tapeout for  
TSMC N3E Process

10.24.2022

Acquisition of Optical DSP  
Developer Banias Labs

10.13.2022

OpenFive Joins Universal  
Chiplet Interconnect Express  
(UCIe) Consortium

06.16.2022

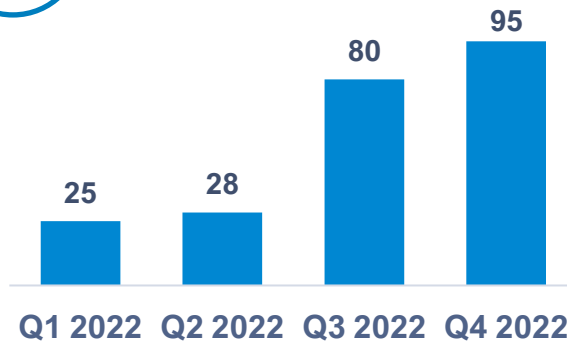


# FY 2022 Bookings

## H2 2022 Bookings Reflect Vertically Integrated Business Model

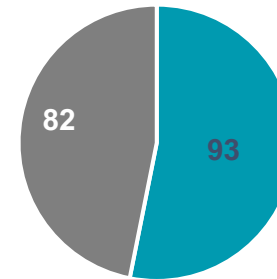


### FY 2022 Bookings (US\$m)

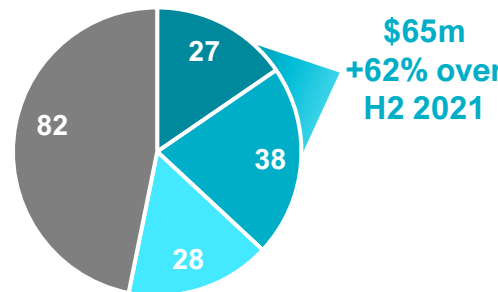


- 8 new design wins in Q4 2022
- Second design win with opto-electronics products
- Working with 7 of the top 10 semiconductor device companies<sup>1</sup>

### H2 2022 Bookings (US\$m)



- License and NRE
- Silicon and Royalties



- Stand alone IP
- Silicon + embedded AWE IP
- Silicon NRE
- Silicon and Royalties

### US\$175m bookings in H2 2022

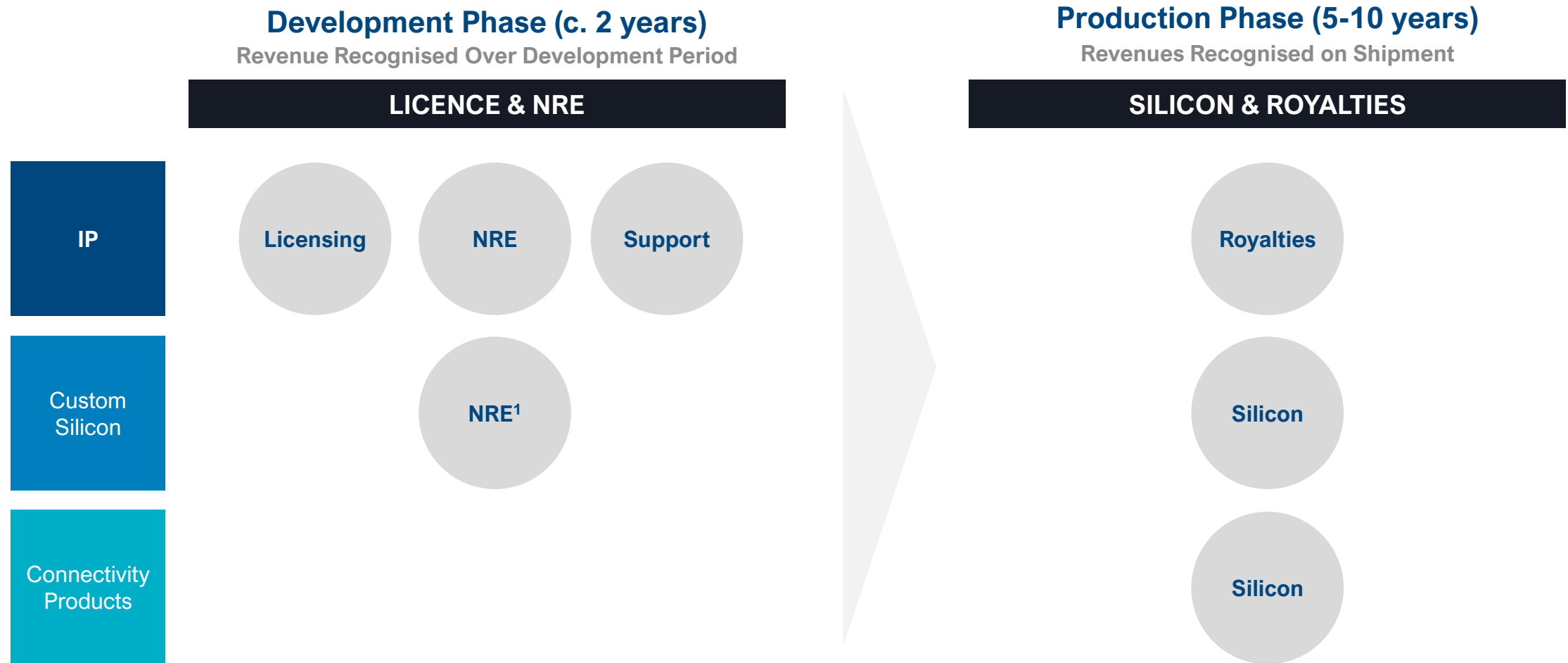
- US\$65m of orders reflect Alphawave's IP monetised through licence and silicon, up 62% over H2 2021
- Approximately 40% of Licence and NRE bookings in H2 2022 (US\$38m) monetise our IP through larger silicon opportunities. This is a reflection of our vertically integrated business model



<sup>1</sup> By market capitalisation as of 09.01.23

# Monetise Core IP Through Licensing and Silicon

## Design Wins Lock in Long Tail of Royalties or Silicon Revenues



<sup>1</sup> Includes IP, engineering, and masks & tooling

# Medium-Term Operating Model

<b>US\$</b>	<b>2023</b>	<b>2025</b>
<b>Revenues</b>	\$340-360m	\$500m
<b>Gross margin</b>		c.60%
<b>Opex %</b>		c.30%
<b>R&amp;D %</b>		<i>Below 20%</i>
<b>Adjusted EBITDA<sup>1</sup></b>	Approx. \$87m	Approx. \$150m
<b>Adjusted EBITDA %</b>	c. 25%	c.30%
<b>Capex (exc. Cap R&amp;D)</b>	c. 12%	c. 10%

- 2023-2025 revenue CAGR of approximately 20%
- Operating expenses as a percentage of revenue gradually decreasing towards 30%
- Adjusted EBITDA growing faster than revenue over the period resulting in 5% improvement in adjusted EBITDA margin
- Capex increase driven by investment in own products

<sup>1</sup> 2023 assumes mid-point of the guidance range and 25% adjusted EBITDA margin; 2025 assumes US\$500m revenue and 30% adjusted EBITDA margin

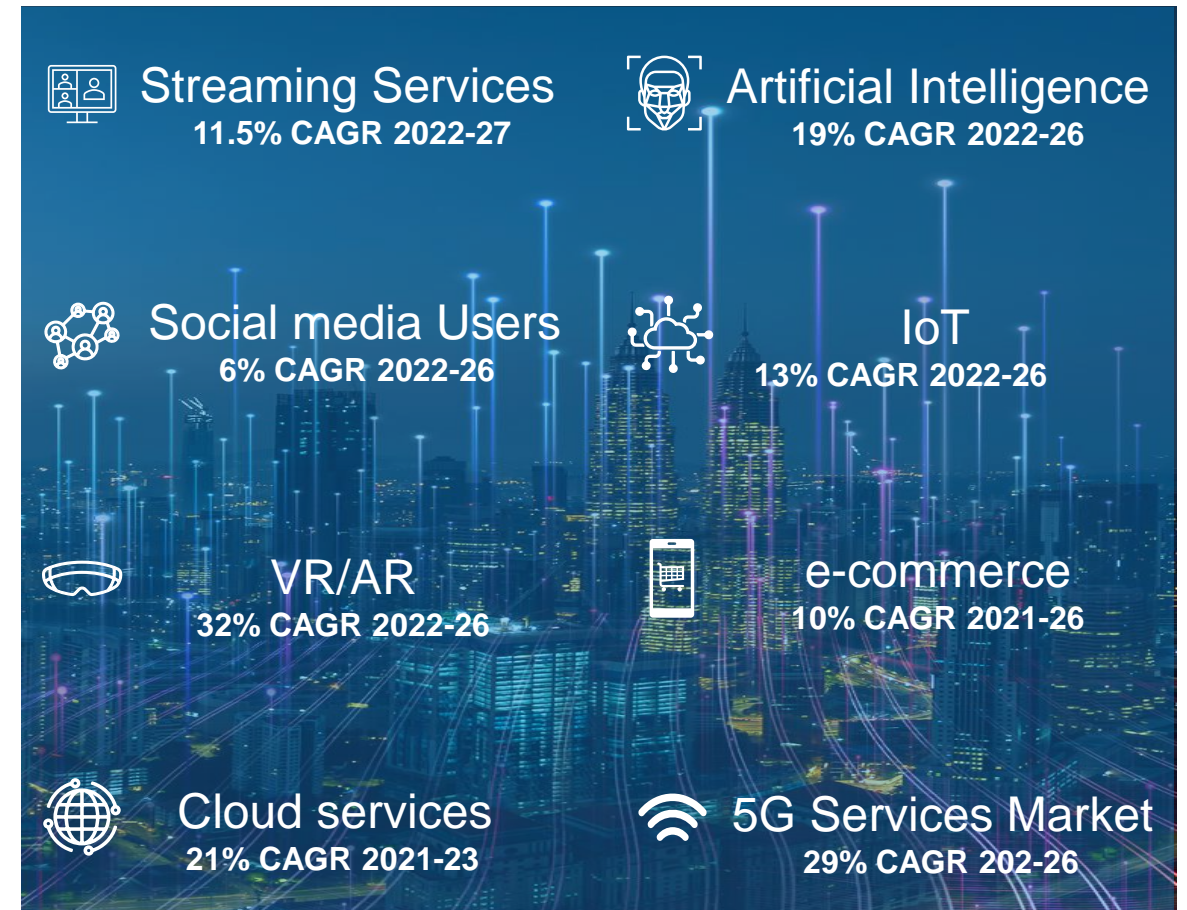




# Appendix

# References Slide 4

- **Streaming Services** [Video Streaming \(SVoD\) - Global | Statista Market Forecast](#) Revenue is expected to show an annual growth rate (CAGR 2022-2027) of 11.48%, resulting in a projected market volume of US\$139.20bn by 2027
- **Social Media Users** [Number of worldwide social network users 2027 | Statista](#) Number of users from 4.26 billion in 2021 to almost six by 2027
- **VR/AR** [IDC Spending Guide Forecasts Strong Growth for Augmented and Virtual Reality](#) The five-year compound annual growth rate (CAGR) for AR/VR spending will be 32.3%. Virtual reality will account for more than 70% of all AR/VR spending throughout the 2022-2026 forecast
- **Cloud Services** [Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach Nearly \\$500 Billion in 2022](#) 2021:\$419m 2023 \$600m
- **AI** [IDC Forecasts 18.6% Compound Annual Growth for the Artificial Intelligence Market in 2022-2026](#)
- **IoT** <https://www.statista.com/statistics/1183457/iot-connected-devices-worldwide/>
- **e-commerce** [Global Ecommerce Growth Forecast 2022 | Morgan Stanley](#) Over the long term, the e-commerce market has plenty of room to grow and could increase from \$3.3 trillion today to \$5.4 trillion in 2026.
- **5G Services Market** [Global 5G Services Market Size is Anticipated to Reach \(globo.newswire.com\)](#) The global size to grow from USD 53.0 billion in 2020 to USD 249.2 billion by 2026, at a Compound Annual Growth Rate (CAGR) of 29.4% during the forecast period.





# Non-GAAP Metrics

See note 4. to the accounts **Alternative Performance Measures H1 2022 Interim Report and FY 2021 Annual Report** at <https://www.awaveip.com/en/investors/results-reports-presentations/>

- Bookings are a non-IFRS measure representing legally binding and largely non-cancellable commitments by customers to license our technology. Bookings comprise licence fees, non-recurring engineering, support and, in some instances, our estimate of potential future royalties.
- Backlog is a non-IFRS measure representing our bookings less revenues recognised to date.
- Adjusted EBITDA excludes IPO-related non-recurring costs, foreign exchange adjustments, share-based payments, M&A-related expenses and one-time legal fees associated with WiseWave.

