

June 5, 2024



# Bank of America Global Technology Conference

The Westin St. Francis Hotel, San Francisco

Fermi Wang, President & CEO

John Young, CFO

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# Forward-Looking Statements

This presentation contains forward-looking statements that are subject to many risks and uncertainties. All statements made in this presentation other than statements of historical facts are forward-looking statements, including, without limitation, statements regarding Ambarella's strategy, future operations, financial targets, future revenues, projected costs, prospects, plans and objectives for future operations, future product introductions, future rate of our revenue growth, the size of markets addressed by the company's solutions and the growth rate of those markets, technology trends, our ability to address market and customer demands and to timely develop new or enhanced solutions to meet those demands, our ability to achieve design wins, our ability to build and deliver products to customers, and our ability to retain and expand our customer and partner relationships.

In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "could," "would," "expects," "plans," "anticipates," "believes," "estimates," "projects," "predicts," "potential," or the negative of those terms, and similar expressions and comparable terminology intended to identify forward-looking statements. We have based forward-looking statements largely on our estimates of our financial results and our current expectations and projections about future events, markets and financial trends that we believe may affect our financial condition, results of operations, business strategy, short term and long-term business operations and objectives, and financial needs as of the date of this presentation. Although these forward-looking statements are based upon information available at the time the statements are made and reflect management's good faith beliefs, forward-looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause actual results, performance or achievements to differ materially from anticipated future results. Important factors that could cause actual results to differ materially from expectations are disclosed in Ambarella's annual reports on Form 10-K and quarterly reports on Form 10-Q filed with the Securities and Exchange Commission (the "SEC"), particularly in the sections titled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations." You should not place undue reliance on forward-looking statements, which speak only as of the date on which they are made. We do not undertake to update or revise any forward-looking statements after they are made, whether as a result of new information, future events, or otherwise, except as required by applicable law. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this presentation may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

Before you invest, you should read the annual and quarterly reports and other documents Ambarella has filed with the SEC for more complete information about the company and its ordinary shares. Additional information will also be set forth in Ambarella's future quarterly and annual reports and other filings made with the SEC from time to time. You may access these documents for free by visiting EDGAR on the SEC web site at [www.sec.gov](http://www.sec.gov).



# Ambarella Overview

Advanced deep learning AI inference hardware and software



**2024 to-date**  
~22M AI SoCs shipped



**2012**  
IPO, NASDAQ: **AMBA**

**2004**  
Ambarella founded

**Founded on the premise that video is a unique type of data requiring an optimized SoC architecture**

- Ambarella's deep neural network AI inference processor integrated with a state-of-the-art video & radar processor yields highly optimized domain controller SoCs
- VisLab, a pioneer in CV and autonomous driving software, acquired in 2015
- Oculii, a pioneer in high-definition radar perception technology, acquired in 2021

**World-class engineering team**

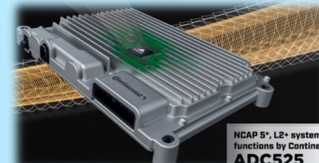
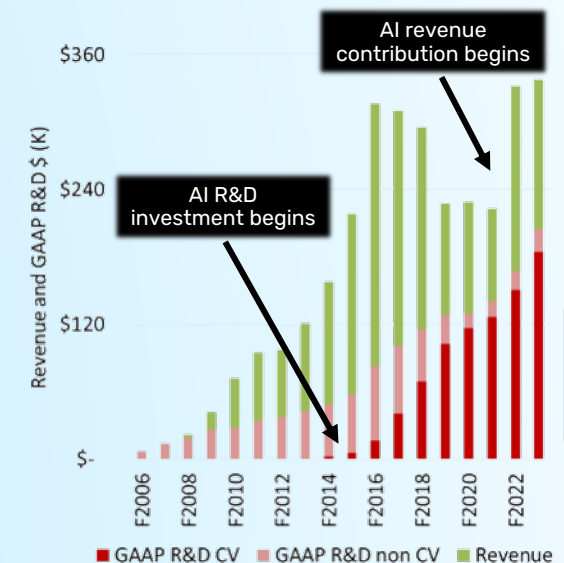
- ~500 software, algorithm and image processing engineers globally
- 2nm in development, 5nm in mass production, 10nm ~60% of revenue
- >10yrs of flawless VLSI execution with step "A" silicon into production

**Products: 2<sup>nd</sup> Gen AI (e.g., Computer Vision), 3<sup>rd</sup> Gen AI (e.g., Central Domain Controllers, N1 and CV7x), and legacy human viewing only video processors**

- Low-power and high-performance SoCs for auto and IoT markets
- Scalable family allows SW to be reused across a customer's portfolio

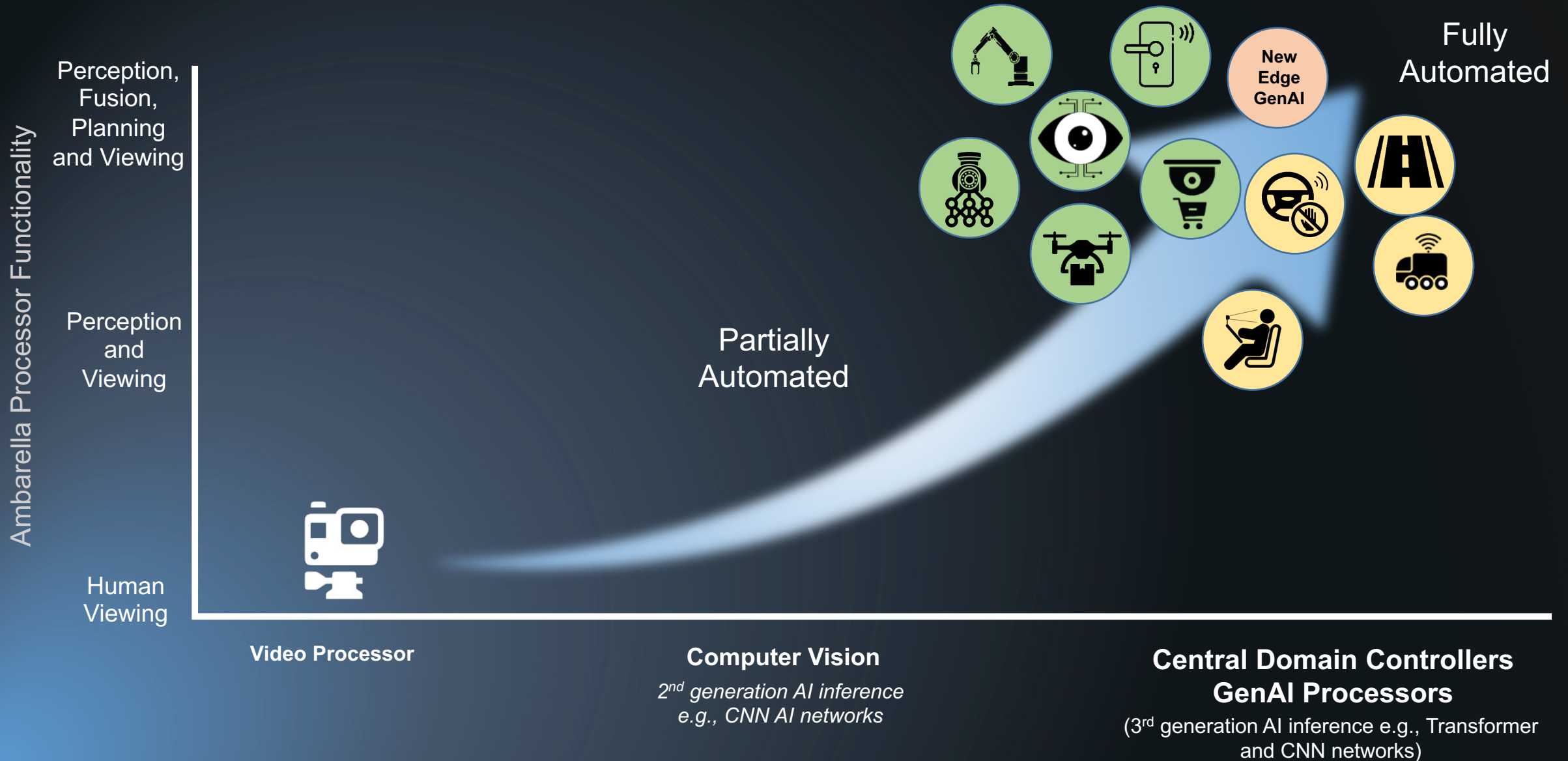
**Significant R&D investment funded by operations and strong balance sheet**

- >\$1 billion cumulative R&D investment into AI



# AI Inference the Foundation for Growth

*Successfully leveraging perception heritage into multiple high value deep learning AI inference applications*





# Ambarella's "Algorithm First" Approach

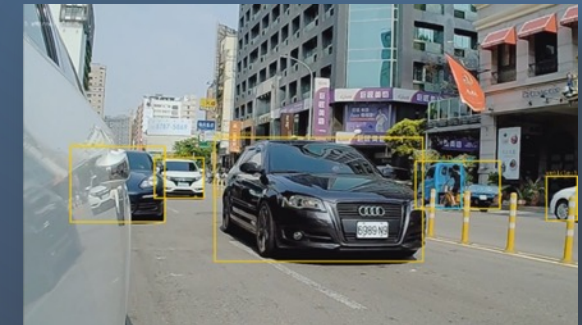
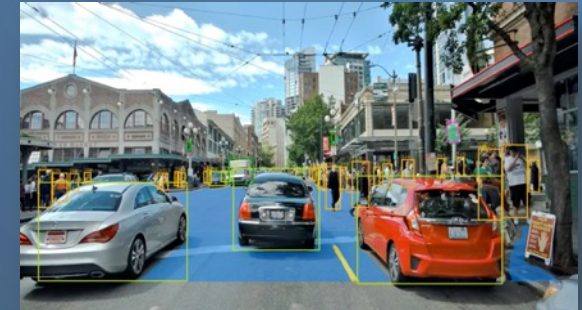
*Differentiated approach enables superior efficiency and scalability*



Superior Image Quality



AI-based Computer Vision & Radar Processing



## "Algorithm First" Approach

Programmable AI Platform  
with Optimized Acceleration



Image  
Processing &  
Compression

**17 years of  
Image  
Processing and  
Compression  
Experience**



Autonomous  
Driving

**25 years of  
Autonomous  
Driving  
Experience**



Radar  
Processing

**Oculii  
Patented  
Adaptive AI  
Radar  
Algorithms**



CVflow® - Deep  
Neural Network  
AI processor

**CVflow® -  
Superior AI  
Performance  
Per Watt**

# Scalable Deep Learning AI Inference Processor Portfolio

Superior AI performance per Watt

AI Inference SoCs

**3<sup>rd</sup> generation AI**  
(e.g., Transformer AI networks)

**2<sup>nd</sup> generation AI**  
(e.g., CNN AI networks)

5nm Samsung

CV3-AD family of central domain controllers



2024S  
~1.5x CV22 AI



2024S  
~6x CV22 AI



2024S  
~13x CV22 AI



2024S  
~27x CV22 AI



2023  
~80x CV22 AI



Jun 2022S  
~160x CV22 AI

10nm Samsung



Feb 2021P  
1/4 of CV22 AI



Jul 2019P  
1/2 of CV22 AI



Dec 2018P  
Baseline (CVflow DNN AI)



Apr 2021P



Aug 2019P  
4x CV22 AI



Apr 2021P  
2x CV22 AI



2022P  
3.5x CV22 AI

Human Viewing



20xx = Calendar Year  
P = Production  
S = Sample

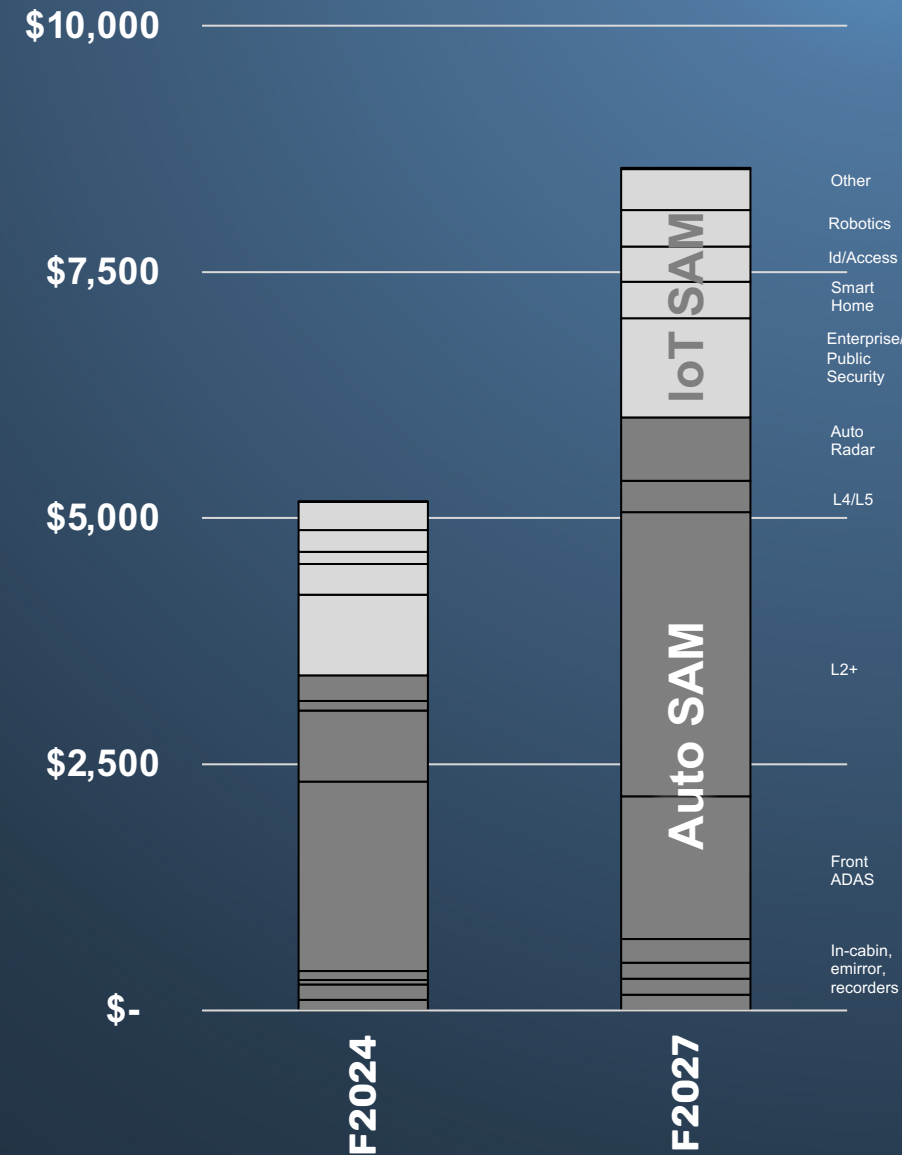


# Large and Growing Markets

Serviceable market (“SAM”) revenue CAGR in the high teens

- **F2024 revenue was ~34% Auto and ~66% IoT**
- **F2028 revenue SAM estimate ~70% Auto and ~30% IoT**
- **We are focused on IoT edge applications**, including both edge endpoints and edge infrastructure systems (e.g., AI box, edge server)
- **We address the megatrends of security, safety, and automation**
- **Key driver is to enable electronic systems to perceive the world and make intelligent decisions**; human viewing business expected to decline as a proportion of revenue
- AI has triggered **new product cycles** in existing IoT markets and opened **entirely new opportunities** in the auto and IoT markets
  - GenAI is expected to be an important new product cycle
- **SAM estimates do not include opportunities for autonomous driving software nor Generative AI (“GenAI”)**

Ambarella's Serviceable Market (K)



Source: Ambarella, ABI, Gartner, IHS, Strategy Analytics, TSR

# Automotive Applications

(~34% of fiscal 2024 revenue from vehicles)



	Visualization Human Viewing + Recording		ADAS Machine Sensing + Viewing + Recording		Part-time	Autonomous Driving Full-Time
	Dataloggers, Drive Recorders <small>(pre-install, dealer-fit, aftermarket)</small>	Front ADAS <small>(front facing camera)</small>	Other ADAS <small>(emirror, in-cabin (DMS, OMS) access, personalization)</small>	L2+	L4	
Application	C2023 penetration <small>(% of new vehicles produced globally)</small>	~15%	~70%	~1% other ~4% emirror ~15% in-cabin	~3%	~0.1%
	C2023 → C2027 Ambarella SAM*	\$275M → \$400M	\$1.6M → \$1.3B	\$200M → \$500M	\$500M → \$2.5B	\$200M → \$900M
Products						
	Ambarella Processors	Human Viewing	2 <sup>nd</sup> Generation AI		3 <sup>rd</sup> Generation AI	
	Other Ambarella Products			CV3-AD Platform <ul style="list-style-type: none"><li>• 4D radar perception</li><li>• End-to-end AI SW Stack</li></ul>		

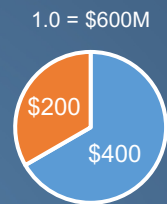




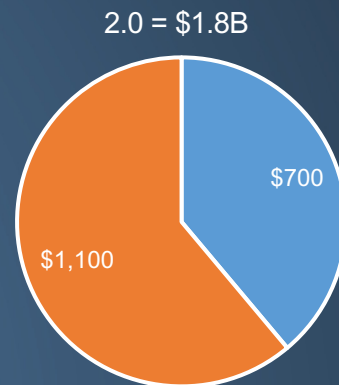
# 6-Year Automotive Revenue Funnel 4.0 ~\$2.4B

Consistent methodology: Won = notified of award with 1 discount factor Pipeline = in the bidding process with 2 discount factors (1) confidence in customers revenue forecast for a project and (2) probability of winning a project

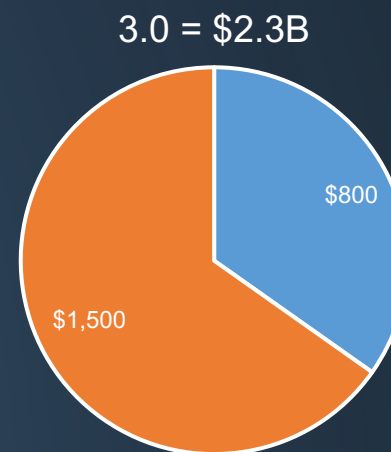
- **Our auto business generated about \$77 million of revenue in F2024 and our six-year \$2.4 billion funnel is an indication of the strong revenue growth we anticipate from the auto market**
  - >90% funnel is AI and a large portion of the AI is CV3
- **Significant revisions between funnel 4.0 and funnel 3.0**
  - There were a significant number of revisions to the prior funnel including changes in OEM/T1 forecasts and project delays, projects won or lost and the addition of new projects
- **Distribution of funnel revenue is exponential in shape**
  - Assumptions for auto funnel ASP to rise with time
  - Rising adoption of new technologies in vehicles produced
  - Series production SoP can be ~3 years from award



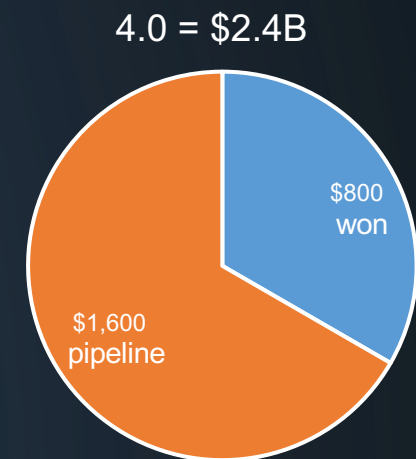
November 2020



November 2021



November 2022



November 2023

# IoT Applications

(non-auto IoT applications represented ~66% of fiscal 2024 revenue)



## IoT

(Proportions approximately based on F2024 revenue)

## “Security”

## Other

## Enterprise “Security”

## Home Security

**Access Control**  
Drone  
Consumer Camera  
**LLMs**  
**Multi-modal**  
Robotics; fixed and mobile  
VR  
Wearable

- **IoT historically camera-based human viewing and endpoints**
  - 2<sup>nd</sup> gen AI SoCs now a majority of revenue and typically process CNN networks, enabling machine sensing + human viewing → ASP approximately doubled
  - 3<sup>rd</sup> gen AI SoCs add transformer network processing support. Expected to enable entirely new applications, potentially expanding SAM deeper into the network → further increase in ASP anticipated
- **Enterprise currently the largest security market**
  - Global installed base in C2023 estimated to be 1.1 billion cameras with <10% of the installed based on embedded deep learning SoCs
    - Installed base growing low single digits Y/Y (AI a key driver)
    - Annual unit demand heavily influenced by replacement units (AI a key driver)
  - Consistent with our revenue, we estimate a majority of the installed base is represented by enterprise + public capital expenditures, the balance home spending
- **Other IoT includes emerging GenAI and legacy**
  - 2<sup>nd</sup> gen and 3<sup>rd</sup> gen AI SoCs are enabling entirely new applications, including access control, consumer cameras, fixed and mobile robotics and virtual reality
  - GenAI represents both a new product cycle and an extension into new markets as larger models can be condensed into smaller, more efficient models at the edge
    - N1 serves the “missing middle” for 3B to 50B parameter models such as Llama-v2, Gemma, Phi-2 and CLIP in network infrastructure HW
    - CV7x family addresses <3B parameter models including within an endpoint



**BOSCH**





# Q2 (July) F2025 Outlook and Q1 (April) F2025 Recap

*Q2 fiscal 2025 outlook and Q1 fiscal 2025 results provided May 30, 2024*

## **Q2 F2025 (July, 2024) Outlook**

- Our Q2 revenue guidance is \$60.0 million to \$64.0 million (consensus estimate was ~\$59.4 million on May 29th)
- Expect our IoT and Automotive businesses to both grow in F2025 (consensus estimate on May 29<sup>th</sup> \$250.1M, up 10% from F2024)
- Q2 non-GAAP gross margin estimated to be 62.5% to 64.0% (consensus 62.2%) with non-GAAP operating expense \$47.5 to \$49.5 million (consensus \$48.3M)

## **Q1 F2025 (April, 2024) Results**

- Revenue of \$54.5 million was 1% higher than the mid-point of our guidance range of \$52.0 million to \$56.0 million (consensus estimate ~\$54.0 million)
- Non-GAAP gross margin was 63.4% versus the consensus estimate of 62.2% and non-GAAP operating expense was \$46.7 million (consensus \$47.4M)
- Non-GAAP loss per share was \$0.26 versus the consensus estimate for a loss per share of \$0.31

## **Multi-year transformation underway; cyclical challenges waning; geopolitical risks remain elevated**

- AI is becoming pervasive, we are embedding it in all our new products and we have growing evidence of market acceptance
- We see a wide variety of risks outstanding, including pandemic, geopolitical and supply chain factors. These risks include\*:
  - customers' are continuing to reduce their levels of inventory
  - potential export regulations on advanced technologies
  - market share shifts between our customers
  - the evolution of new markets and rates of adoption of new technologies
  - customers seeing some pockets of end-market demand weakness
  - supply chain issues such as long lead times, shortages of materials, components, electricity and manufacturing capacity, and adverse weather conditions
  - changes to tariffs and/or the Entity List
  - the risk customers in China continue to take actions to reduce their dependence on components they believe could be subject to new export controls, including the creation of dual China/non-China supply chains

*\*Potential risk factors that could affect our financial results are more fully described in the documents that we file with the SEC, including annual reports on Form 10-K and quarterly reports on Form 10-Q.*

# Additional Investor Resources

Investors may download white-paper and replay to learn more about Ambarella's edge AI strategy



- On April 22, 2024 10:00am EST Omdia and Ambarella presented “**Unleashing Generative AI’s Next Wave at the Edge**”
  - The discussion describes how our AI SoCs can enable Large Language Models (LLMs) at the network edge
  - We are particularly focused on multi-modal (e.g., text, vision) models at the network edge
- [Webinar Registration](#) is complimentary
- [Whitepaper](#) “Generative AI at the Cutting Edge with market forecast information from Omdia

**AI BUSINESS WEBINAR**

**Unleashing Generative AI's Next Wave at the Edge**

  
**Amit Badlani**  
Director of Product  
for AI / ML,  
Ambarella

  
**David Green**  
Consulting  
Director,  
AI & IoT,  
Omdia

  
**Alexander Harrowell**  
Principal Analyst,  
Advanced  
Computing for AI,  
Omdia

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# Thank you!

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