

# Accelerating The Creation of Semiconductors

**Corporate Overview** 

Charlie Janac CEO Nick Hawkins CFO



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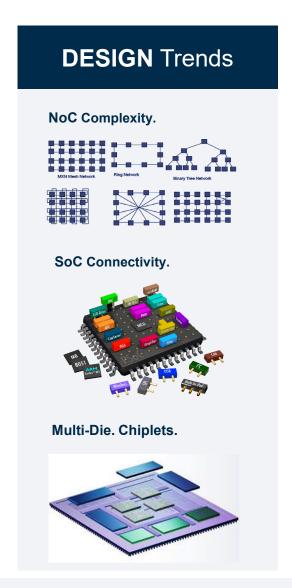
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## Macro Factors Driving Arteris Growth



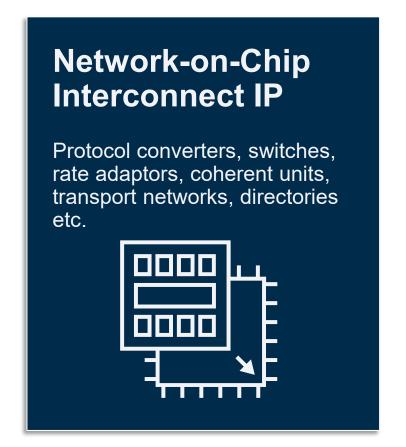


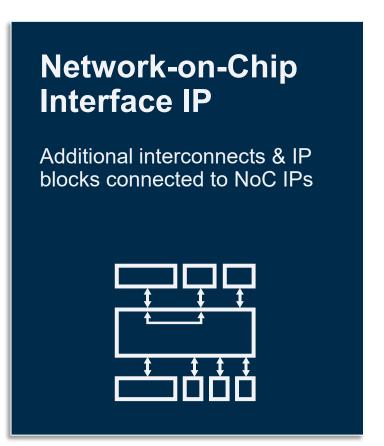


#### **Arteris' Market Definition**

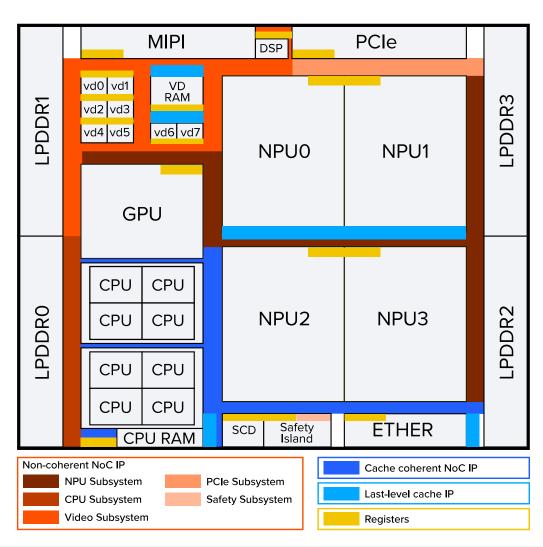
Driving the system IP market to overcome complexity with maximum flexibility for optimized SoCs







# Modern SoCs Require Multiple Interconnects For Optimal Performance Cache coherent + non-coherent interconnects work together



Arteris interconnect NoC IP, cache coherent and non-coherent, improves communication and data flow across the entire SoC including various subsystems.

Cache controller and register management solutions are also available for time to market acceleration.

Arteris content in an SoC:

NoC IPs: 10-13% of Silicon, and

Registers: **3-20%** of Silicon

## Arteris – A Leading SoC System IP Company & NoC Pioneer

Global customer base deploying Arteris interconnect IP and SoC integration software

- Silicon-proven IP used in ~3.5 billion+ SoCs shipped to date
- 200+ customers and 775+ SoC design starts to date
- 70-80% market share of automotive ADAS SoC market¹
- Strong traction in AI/ML systems
- Interoperability any processor, any IP, any EDA, any foundry
- Customer retention rate of 90+%
- 77 patents and 78 patent applications
- ISO 9001:2015 Quality Management System (QMS) Certified

<sup>1</sup> Management estimates



## Technology & Economic Factors Driving Arteris' Customer Adoption

Arteris enables customers to create complex SoCs efficiently and reliably

Accelerated SoC Creation Improved
SoC
Economics,
Performance

Novel SoC Architecture Support Lower Power, Smaller Die-Size



Faster time to market and shorter time to revenue



Reduction of customer R&D cost and SoC unit cost



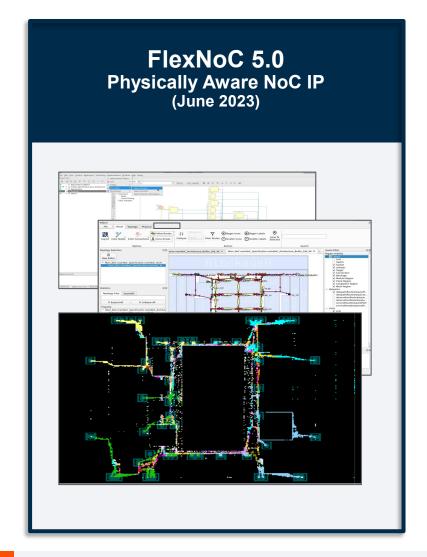
Creation of more complex, differentiated SoCs



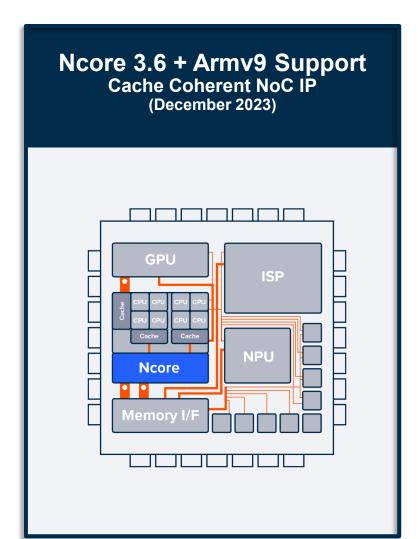
Develop lower cost, more market-attractive SoCs



## **Technology Achievements**



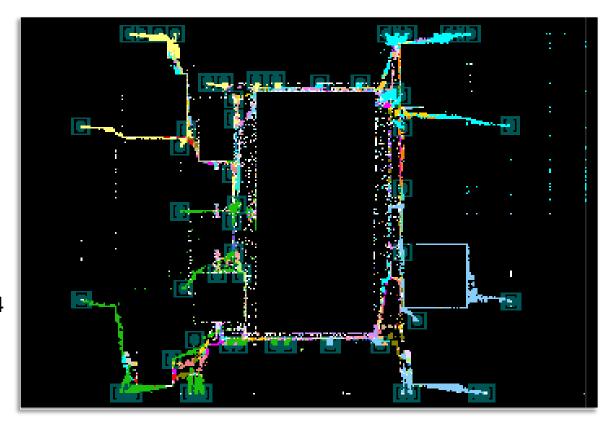




## Arteris Product Innovation: FlexNoC 5 Network-on-Chip IP

One of the industry's first *Physically Aware* NoC **IP** designed to reduce complexity + optimize design

- Customers get to physical convergence up to 5X faster.
- Engineering resources are optimized, reducing manual iterations, cutting months to days.
- Power, performance, and area (PPA) goals are achieved within schedule and budget constraints.
- Solid adoption with 25 FlexNoC 5 customers through 1Q24 and numerous evaluations.



## Arteris Improving SoC Creation via Advanced System IP

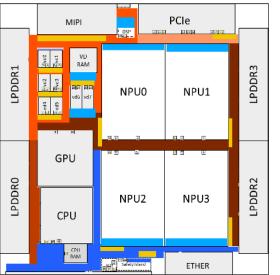
 System-on-Chips present unique implementation challenges for effective communication between IP modules while meeting power, performance, and area requirements

ARTERIS IP Requirements Specification IP Integration Verification Physical NoC Estimation RTL Generation Documentation

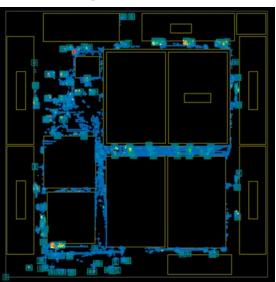
#### Architectural view



#### SoC view



#### Physical view



### **Arteris Has Deep Moats**

## Marketable Product

Annual product releases + new product innovation

Competition: 2 to 5 years to develop & mature

## Product Design In

Customer SoC design win into electronic systems

Competition: 3 to 6 years to deploy

## Royalty Engine

Generating royalties over a decade

Competition: 5 to 8 years to develop & mature

#### Investment

Established products supported by market leading expertise

Competition: \$100M+ dollars for full product line

#### **Ecosystem**

Foundry, IP & EDA ecosystem established

Competition: Lengthy development

## **Engineering** Resources

Global team

Competition: Deep expertise, difficult to find

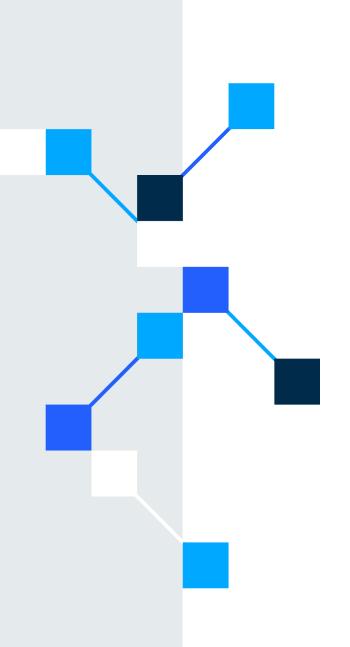
## Intellectual Property

77 patents issued, 78 pending

Competition: Patent infringement risk

Total time to a solid market position:

10 to 20 years

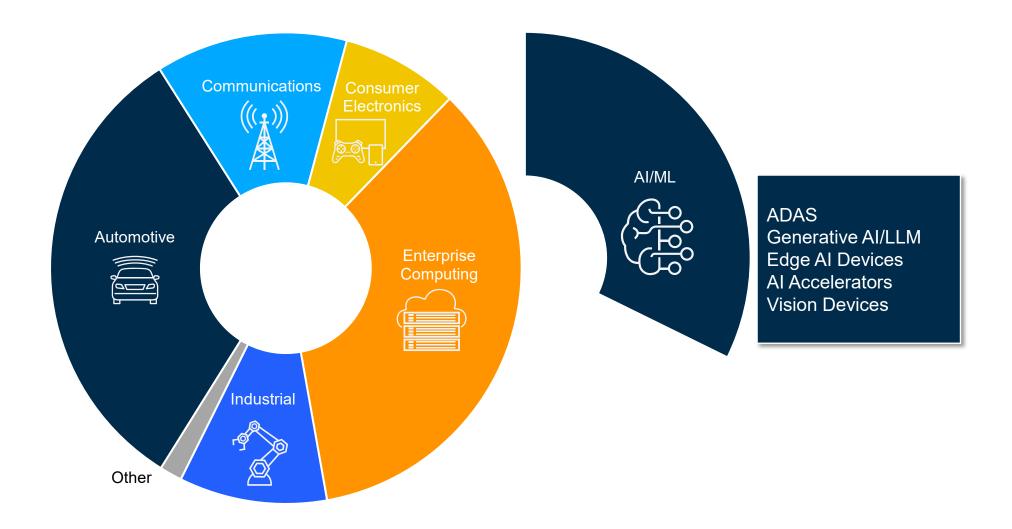


## Market Segments

Addressing the most attractive segments

## Accelerating Innovation in Key Verticals

#### 1Q 2024 Revenue Vertical Breakdown



## Artificial Intelligence/Machine Learning (AI/ML) Horizontal

## Al Semiconductor Market: ~7x Increase from 2023 to 20301



2023 Al-Semiconductors: \$105B<sup>1</sup>

2030 Al-Semiconductors: \$780B<sup>1</sup>

Generative Al 56% CAGR<sup>2</sup>

- Generative AI is a revolution in man/machine interface technology → productivity revolution
- Generative Al ASICs & accelerators require high data bandwidth & unique features
- Moving data through system IP a key competency
- Many Generative AI ASICs use Arteris system IP

#### Arteris Customers Include

Data Center
Hyperscalers
(subject to NDAs)
Bitmain
Neureality
Rain Al
Rebellions

Edge Renesas NXP Sima.ai Axelera

Endpoint
Mobileye
Socionext
Hailo

1. Source: IBS 2. CAGR 2023 – 2028; Source: Omdia Informa

## Arteris and Rebellions Generative AI and Edge AI

#### **Market Need**

 Addressing the need for increased data execution with minimum power consumption for latency-critical AI inference applications such as Generative AI and Large Language Models

#### AI/ML Use Case

 Arteris FlexNoC interconnect, Magillem Connectivity, and Magillem Registers software will be used in Rebellions next-generation Al Hardware Accelerator Neural Processing Unit

We selected Arteris interconnect IP technology and SoC integration software to optimize product performance, minimize latency and accelerate the creation and delivery of our Al accelerator. Arteris is a leader in system IP and their FlexNoC interconnect IP and Magillem software are synergistic with our vision for the future of Al computing.

Park SungHyun, CEO of Rebellions



#### **Automotive Vertical**





ADAS 32% CAGR<sup>1</sup>

Auto HPC (High Performance Compute) 99% CAGR<sup>1</sup>

Infotainment / Telematics SoC 15% CAGR<sup>2</sup>

- 145+ SoC design wins across both EV and ICE; OEMs take on silicon
- ~\$13 billion automotive SoC market by 2027<sup>2</sup>
- Partnered with Arm in Automotive
- Selected by 5 major Auto OEMs in 2023
- Unique safety capabilities

**Arteris Customers Include:** 

**BMW** 

NXP

Mobileye

Dreamchip

Many others subject to NDA

1. CAGR 2022 – 2030; Source: Gartner 2. CAGR 2023 – 2027; Source: Omdia Informa

## Arteris' System IP Position in Automotive Transformation

#### Arteris enables novel automotive SoC architectures

	SoCs per Function	Arteris IP Customers → 145+ SoC design wins		
ADAS / Machine Learning / Car Controller (1-4 systems per vehicle)	2	Horizon Robotics  RECOGNISCENSIA  Toshiba  Major Automotive EV OEM  HAILO SESAME TELECTIPS  Major Design Services Company  Major Design Services Company  Major ADAS System Maker  Major ADAS System Maker		
Vision Camera – Local Processing (4-16 systems per vehicle)	4	mobileye"		
Radar / Lidar	6	Orbe **CALTERAH Vayyar*		
Infotainment	1	₩ Texas Instruments Major FPGA Company #1 Major FPGA Company #2 Telechips		
Dashboard / HUD / DMS	2	> siengine * Siengin		
Chassis / Engine / Motor Control	5	life.augmented Indie		
V2X / V2I / WAN Modem / Gateway	3	Morningcore Sequents Sequent Mobility		
Source: IHS Markit, McKinsey	average complex SoCs per electronically-enabled vehicle by 2026			

## Arteris Expands Automotive Solutions for Armv9 CPUs

#### **Market Need**

 Need for customers to accelerate the path to complete highperformance and power efficient automotive SoC designs

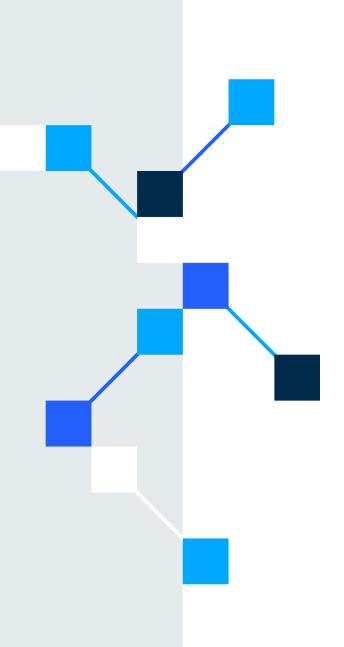
#### **Arteris and Arm Partnership**

 Arteris has optimized and pre-validated its Ncore cachecoherent interconnect with Armv9 Cortex-A cores, DynamilQ Shared Units (DSUs) and Generic Interrupt Controller (GIC)

We are at an inflection point in the automotive industry that requires a fundamental rethink of automotive product development and deployment methodologies. The latest generation of Arm Automotive Enhanced compute and software solutions, integrated with Arteris' flexible and configurable Ncore cache coherent interconnect IP, means customers can begin development sooner, accelerating time to market for next-generation vehicle electronics.

Suraj Gajendra, VP of Products and Solutions, Automotive Line of Business, Arm

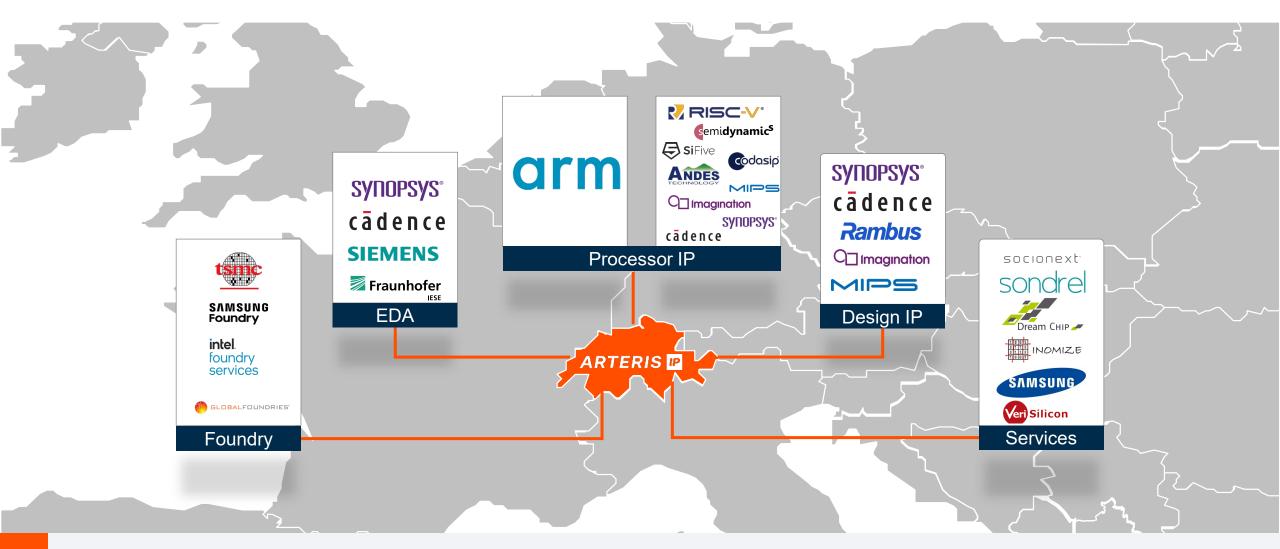




## **Growth Strategies**

### Arteris Ecosystem: The 'Switzerland' of IP

Neutral, trusted partner for IP providers and semiconductor makers



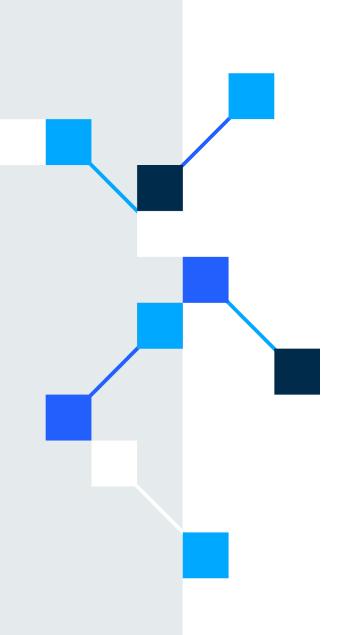
## Arteris Broadens RISC-V Ecosystem Support

- Damo Academy, Alibaba Group
   Holding's research arm, launched the
   "Wujian" ("swordless") alliance to build a
   RISC-V ecosystem in China and further
   accelerate the commercialization of
   RISC-V innovations
- As part of this alliance, Arteris is prevalidating the integration of its NoC IP with their RISC-V XuanTie cores in emulation, and furthering its broad support for a variety of processor types



## Arteris Growth Strategies and Milestones

#### **Inorganic growth** ■ Dec. 2022 – Acquisition of Semifore ■ Nov. 2020 – Acquisition of Magillem **Business Balance** Geography Balance Customer Size Balance Focus on high growth Application Balance market segments License vs Royalty Balance **Organic product** ■ Automotive – 5 Auto portfolio expansion OEMs YTD; ISO26262 cert ■ RISC-V – Semidynamics, **Dec. 2023** – Ncore 3.6 XuanTie release ■ Generative AI – next killer **Jun. 2023** – FlexNoC 5 production shipments (21 app. customers to date)



## **Financial Overview**

Nick Hawkins

### 1Q 2024 Actuals vs Guidance

In \$ millions	1Q 2024 Guidance	1Q 2024 Results	
ACV + Royalties	55 – 59	58.2	Above midpoint of guidance range
Revenue	12.1 – 13.1	12.9	Above midpoint of guidance range
Non-GAAP Operating Income <sup>1</sup>	(7.9) - (5.3)	(5.3)	Above midpoint of guidance range
Free Cash Flow	(1.2) – 1.4	0.3	At mid-point of guidance range

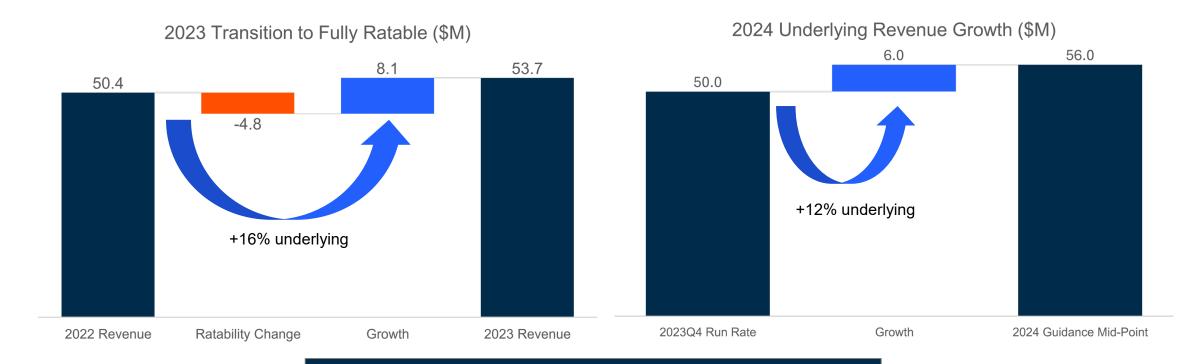
<sup>&</sup>lt;sup>1</sup> See appendix for reconciliation of GAAP to non-GAAP

## **Business Highlights**

	1Q'23	1Q'24	Y/Y
ACV + Royalties	54.8	58.2	<b>▲</b> 6%
Revenue	13.2	12.9	▼2%
NG CoR	1.0	1.2	▲20%
NG GM%	92%	91%	▼-1%
NG OpEx	17.7	17.0	▼4%
NGOI	(5.6)	(5.3)	<b>▲</b> 5%
Free Cash Flow	(8.5)	0.3	<b>▲</b> 104%
RPO	57.3	74.7	<b>▲</b> 30%
Confirmed Design Starts	22	21	-1

- ACV + Royalties at \$58.2M
- 1Q Revenue, excluding shift to ratability would be +16% Y/Y
- Free cash flow positive in the quarter
- Robust licensing activity leads to 74.7M RPO, +30% Y/Y
- Ncore 3.6 cache coherent interconnect
  - Any processor, multiple protocols
  - Flexible configuration
  - ISO 26262 compliant
- Momentum in key verticals
  - Enterprise Computing and AI/ML:
    - Rebellions selects Arteris FlexNoC for its Neural Processing Unit aimed at Generative Al
  - Automotive:
    - First deliverables of Arteris and Arm automotive partnership, optimizing Arteris for Armv9

## Continued Growth During Transition to Fully Ratable Revenue



- Lower China deals (starting 3Q'23) created substantial headwinds in 2H2023 and 2024
- 4Q'23 ACV+TTMR = \$56.1M, supporting 2024 \$56.0M revenue guidance

### Guidance

2Q 2024 Guidance

FY 2024 Guidance

ACV + Royalties \$58M - \$62M **Revenue** \$13.2M - \$14.2M

ACV + Royalties \$62M - \$68M **Revenue** \$54.5M - \$57.5M

Non-GAAP Op. Income (\$6.5M) – (\$4.5M)

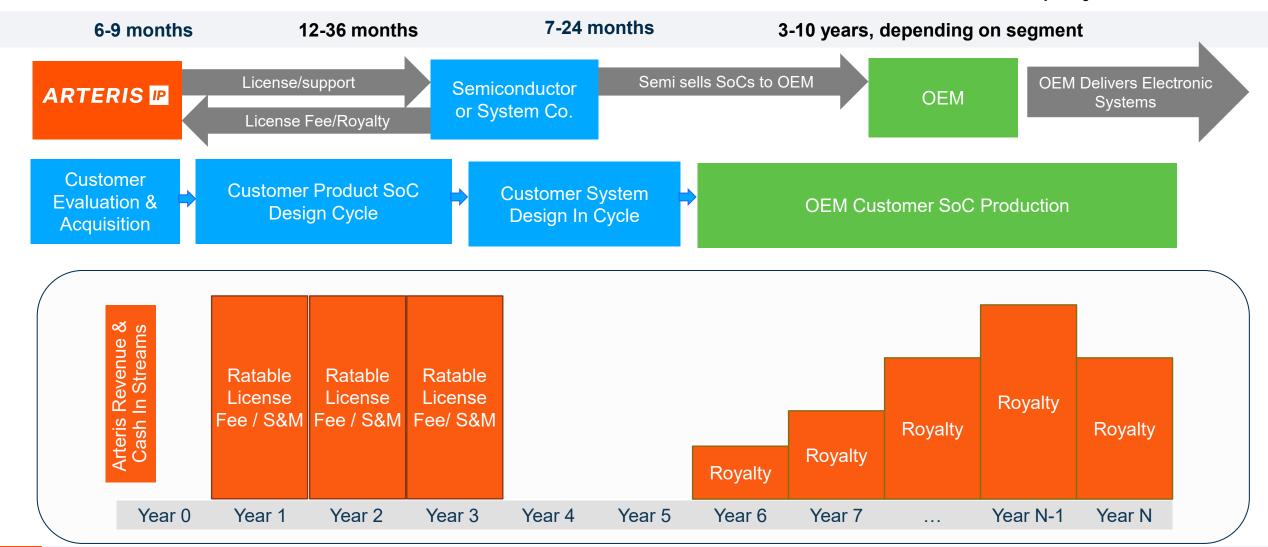
Free Cash Flow (\$1.4M) - \$1.6M

Non-GAAP Op. Income (\$23.4M) – (\$19.4M)

Free Cash Flow (\$2.4M) – \$2.6M

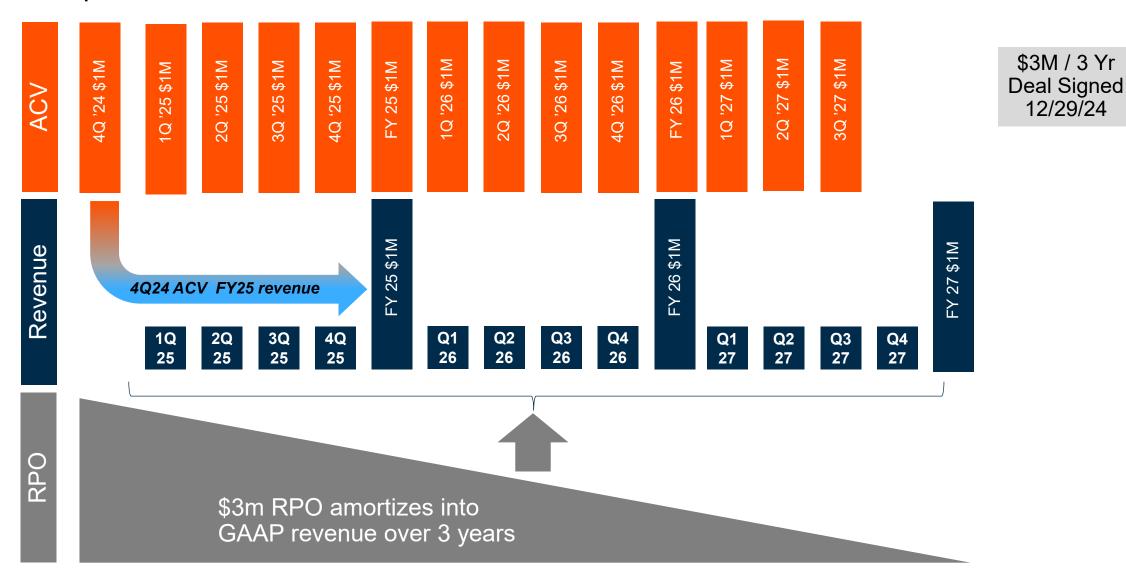
#### **Arteris Business Model**

Arteris customers have delivered over 3.5 Billion SoCs based on 775+ SoC projects



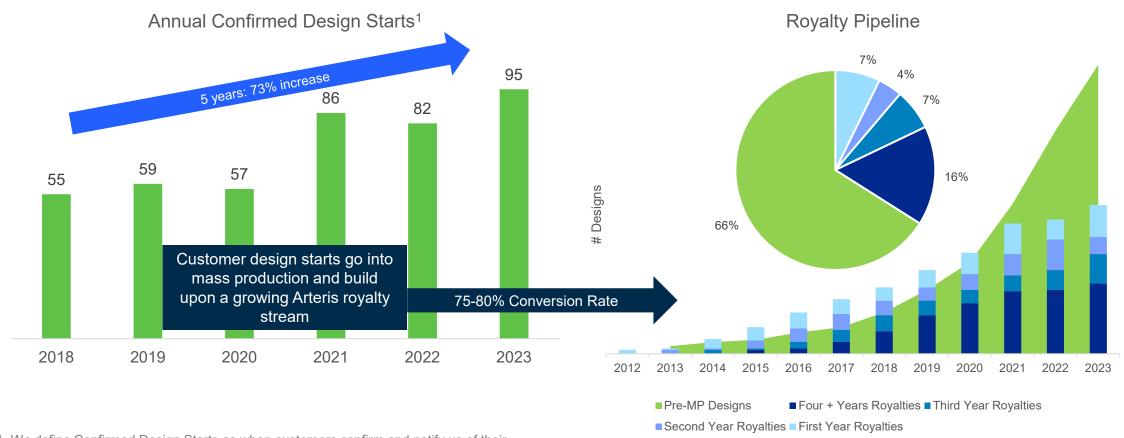
### License Revenue / ACV / RPO Model

Example \$3M Deal, 36-Month License Term



### Royalty Revenue

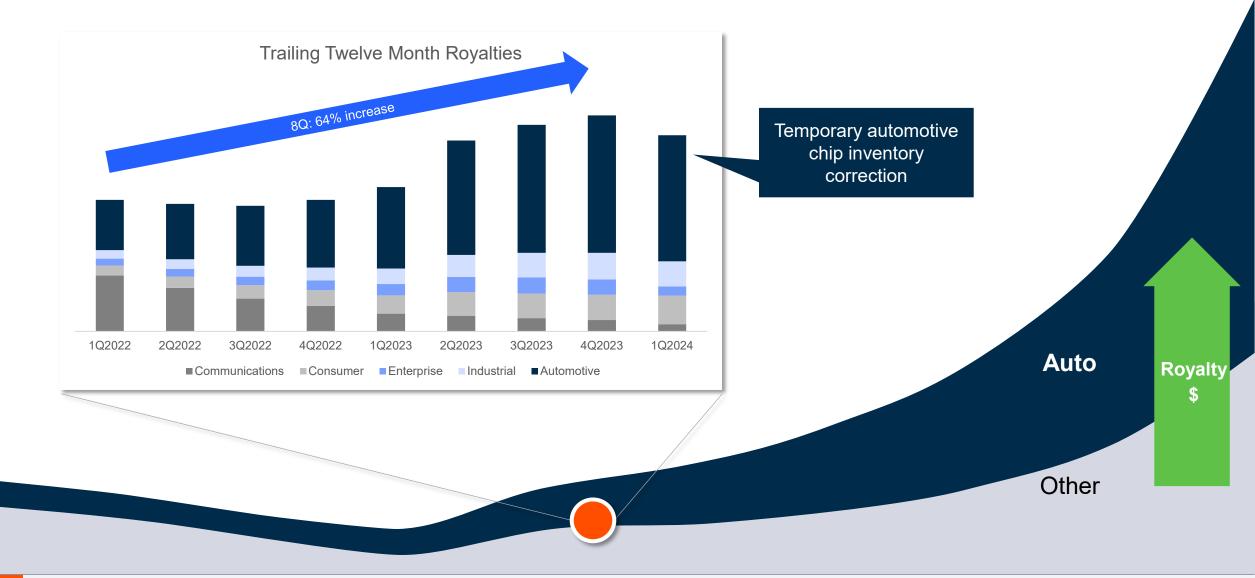
### 66% of Design Wins Waiting to Product Royalty Revenue



<sup>1.</sup> We define Confirmed Design Starts as when customers confirm and notify us of their commencement of new semiconductor designs using our interconnect IP



## Design Wins Result in Future Royalty Expansion



#### **Arteris In Numbers**

\$58M

+6% Y/Y ACV + Royalties

+30% Y/Y

RPO<sup>1</sup>

Free Cash Flow Positive 200+

**Active Customers** 

775+
Design Starts

3.5B

SoCs shipped to date

## **High Growth Markets**

Automotive, Enterprise Computing, Communications, Consumer Electronics, Industrial + AI/ML across all verticals <sup>1</sup>RPO: "Remaining Performance Obligations." We define this as the amount of contracted future revenue that has not yet been recognized, including deferred revenue, billed and unbilled cancelable and non-cancelable contracted amounts.

### **Investor Highlights**

#### **Market Leadership**

- Leader in semiconductor system-on-chip (SoC) system IP
- Over 50% increase in active customers since 2020
- 775+ SoC confirmed design starts
- ~3.5 billion SoCs shipped

#### **Differentiated Technology**

- Networking technology inside semiconductors
- Strong SoC integration technology, IP-XACT committee member
- Global customer support
- 77 issued patents and 78 patent applications

## Well-Positioned in High Growth Segments

- 70 80% market share of automotive ADAS SoC market<sup>1</sup>
- ADAS SoC market growing at 32% CAGR through 2030<sup>2</sup>
- Strong position in AI/ML system IP with over 200 design wins

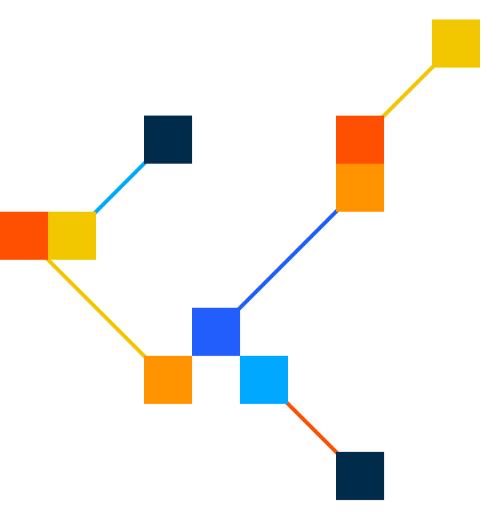
#### **Large Addressable Market**

- \$1 trillion semiconductor market by 2030<sup>3</sup>
- Demand for system IP growing due to greater SoC complexity

#### **Scalable Business Model**

- IP business model
- Address high-growth segments with growing royalty streams
- Targeting high operating margin
- ~\$75 million contracted future revenue (RPO)<sup>4</sup>

- <sup>1</sup> Management estimates
- <sup>2</sup> Gartner
- <sup>3</sup> IBS
- <sup>4</sup> As of March 31, 2024. We define this as the amount of contracted future revenue that has not yet been recognized, including deferred revenue, billed and unbilled cancelable and non-cancelable contracted amounts.





# Thank you

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# Appendix - GAAP to Non-GAAP Reconciliation Income (loss) from operations

	Three Months Ending:		
In \$ thousands	March 31, 2023	March 31, 2024	
Income (loss) from Operations	(8,757)	(9,134)	
Add:			
Stock-based Compensation	2,985	3,657	
Amortization of acquired intangible assets	192	192	
Non-GAAP income (loss) from operations	(5,580)	(5,285)	

## Appendix - RPO Breakdown

