Ver.1.1

Arm Holdings plc
SoftBank Group Corp

Building the future of computing on Arm

Ian Thornton, Head of Investor Relations

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https://investors.arm.com

Tokyo / March 21, 2024

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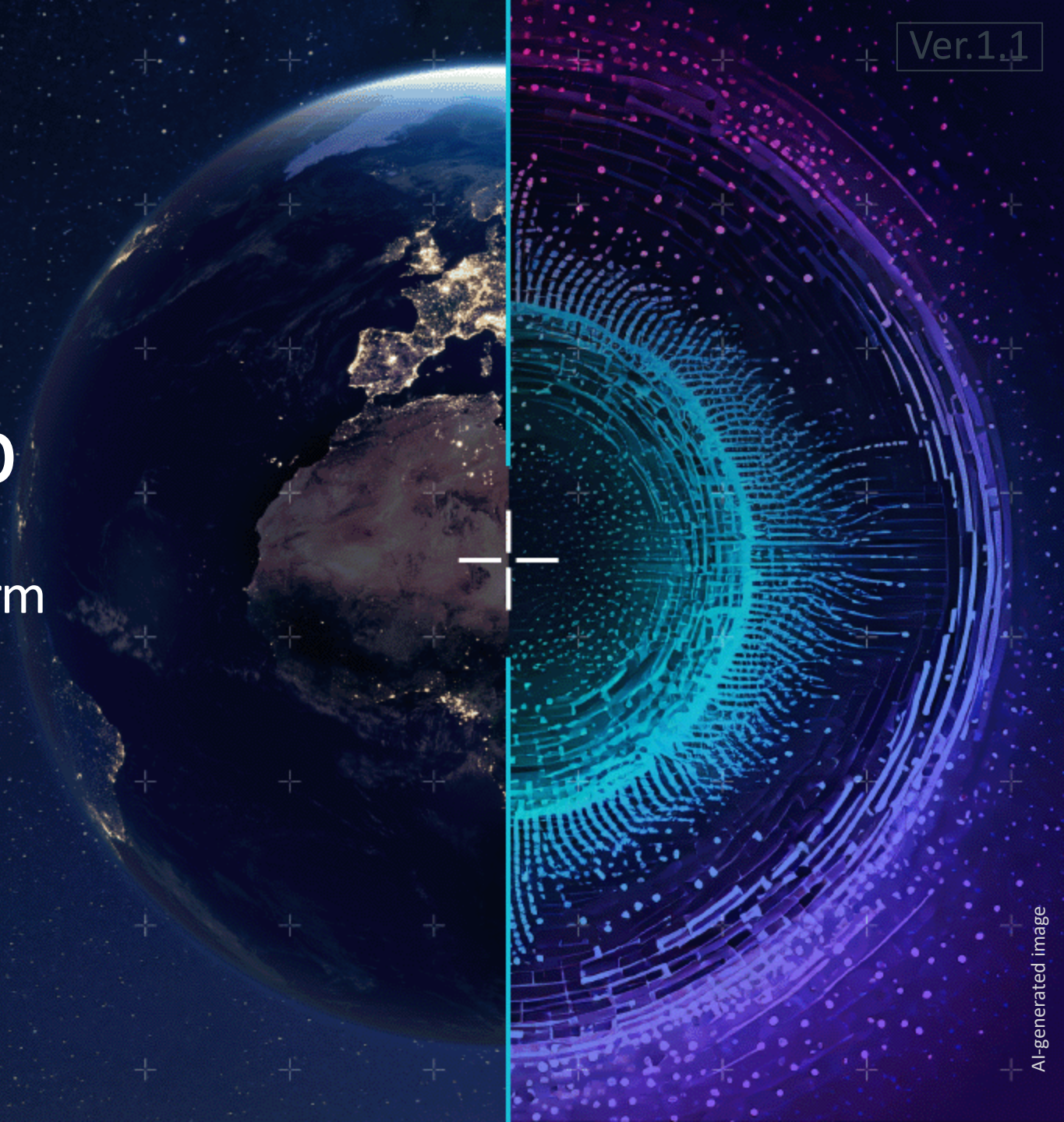

AI-generated image

Agenda

- How to design a computer chip
- Arm’s products, ecosystem, and markets
- Arm is taking AI everywhere
- Arm’s licensing and royalty business model
- Arm’s Q3 financials
- Q&A

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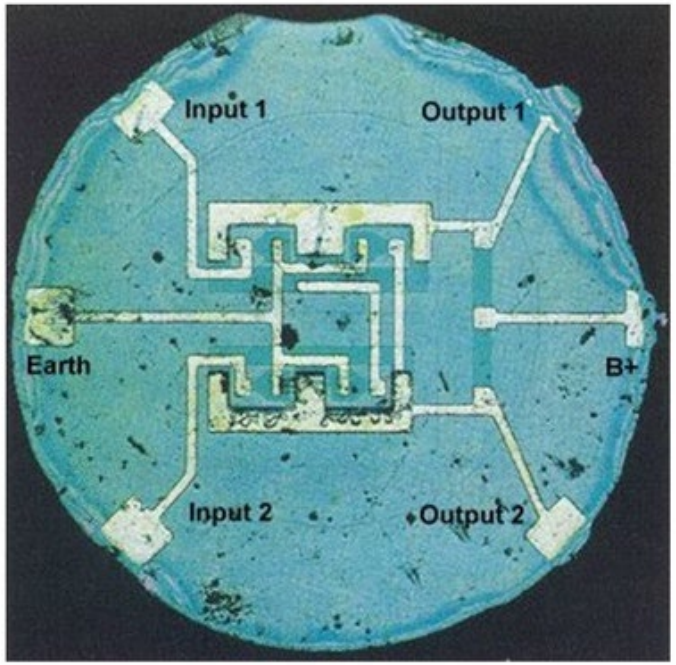
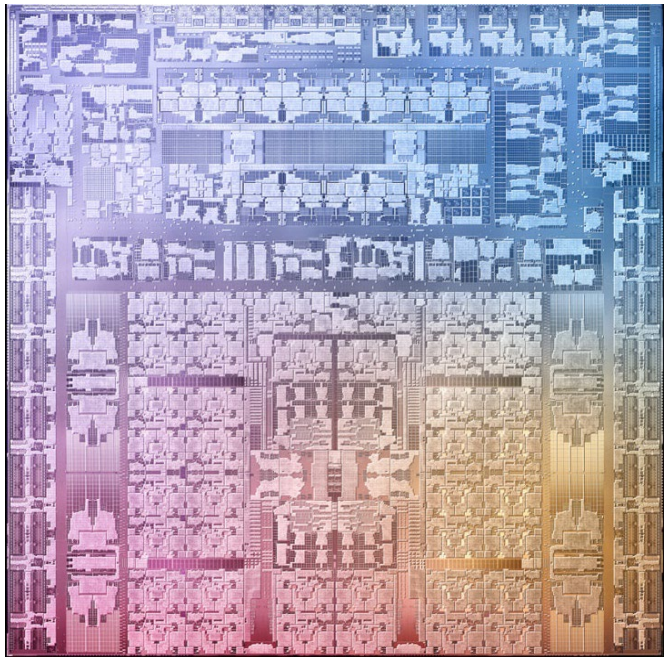
Chip design – then and now

1961



Four transistors
One engineer

Today



100 billion transistors
Thousands of engineers

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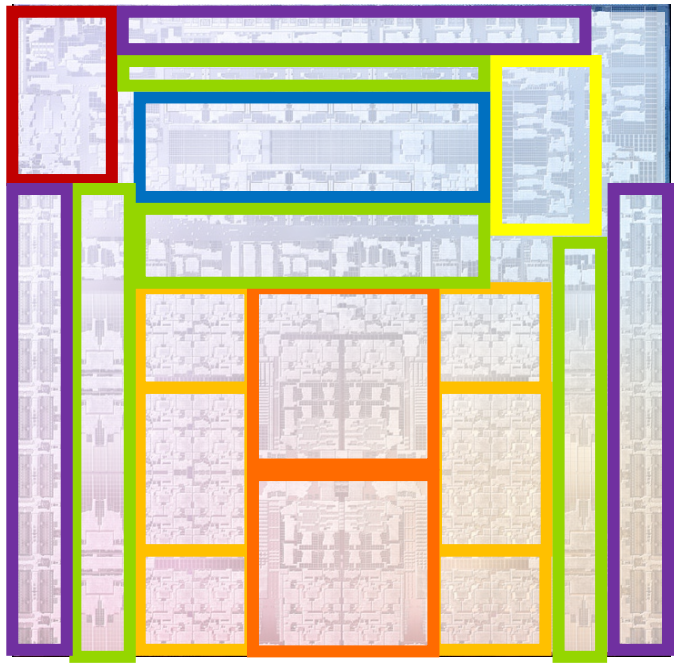
A system-on-chip contains multiple blocks of IP

- **Main processor** for running the operating system, applications and user interface
- **Graphics processor** for generating images
- **Accelerators** for frequently-used compute workloads, e.g. image processing, encryption, vision
- **Radio controllers** for mobile, wifi, Bluetooth, GPS
- **Hardware controllers** for the display, memory, image sensors, power supply, etc
- **Interconnect** to network all the internal functional blocks together
- **Input/Output** interfaces for USB, Ethernet, etc



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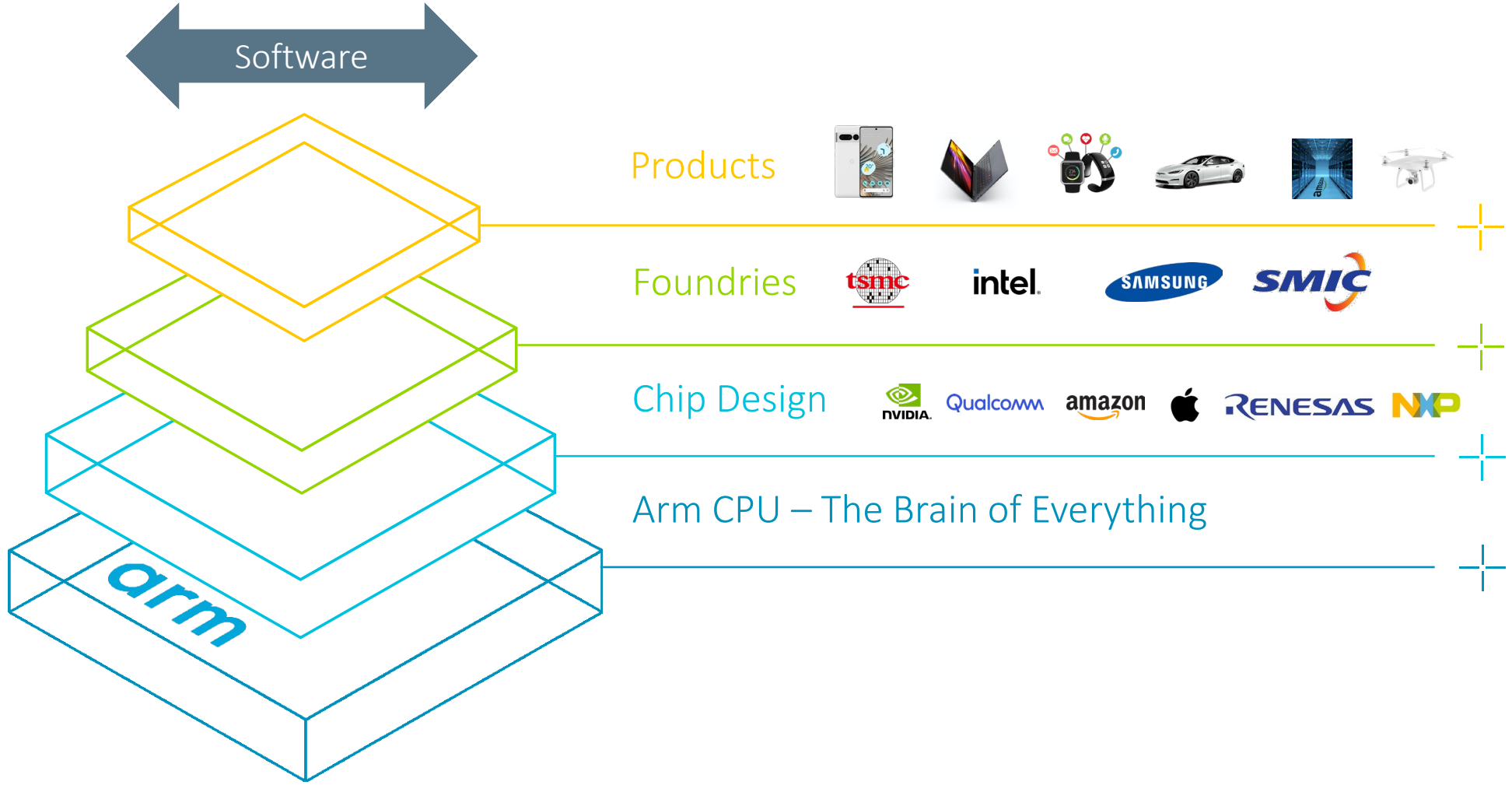
The Foundation of the Semiconductor Industry



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Arm is Building the Future of Computing

- Arm is the world's most pervasive CPU architecture
- Everything today is a computer – CPUs needed everywhere
- Strong growth, highly profitable and cash generative company

280+ Billion
Arm-based chips shipped since inception

30.6 Billion
Arm-based chips reported as shipped in FYE23

15M+
Software Developers on Arm

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Arm Products

CPUs

- Cortex-A
- Cortex-R
- Cortex-M
- Neoverse

System technology

- GPU
- NPU
- Interconnect

Compute subsystems

- Infrastructure: Neoverse CSS
- Smartphone: Total Compute Subsystems
- Automotive: Enhanced Automotive CSS

Software & Tools

- Software development tools
- Software libraries
- Software standards

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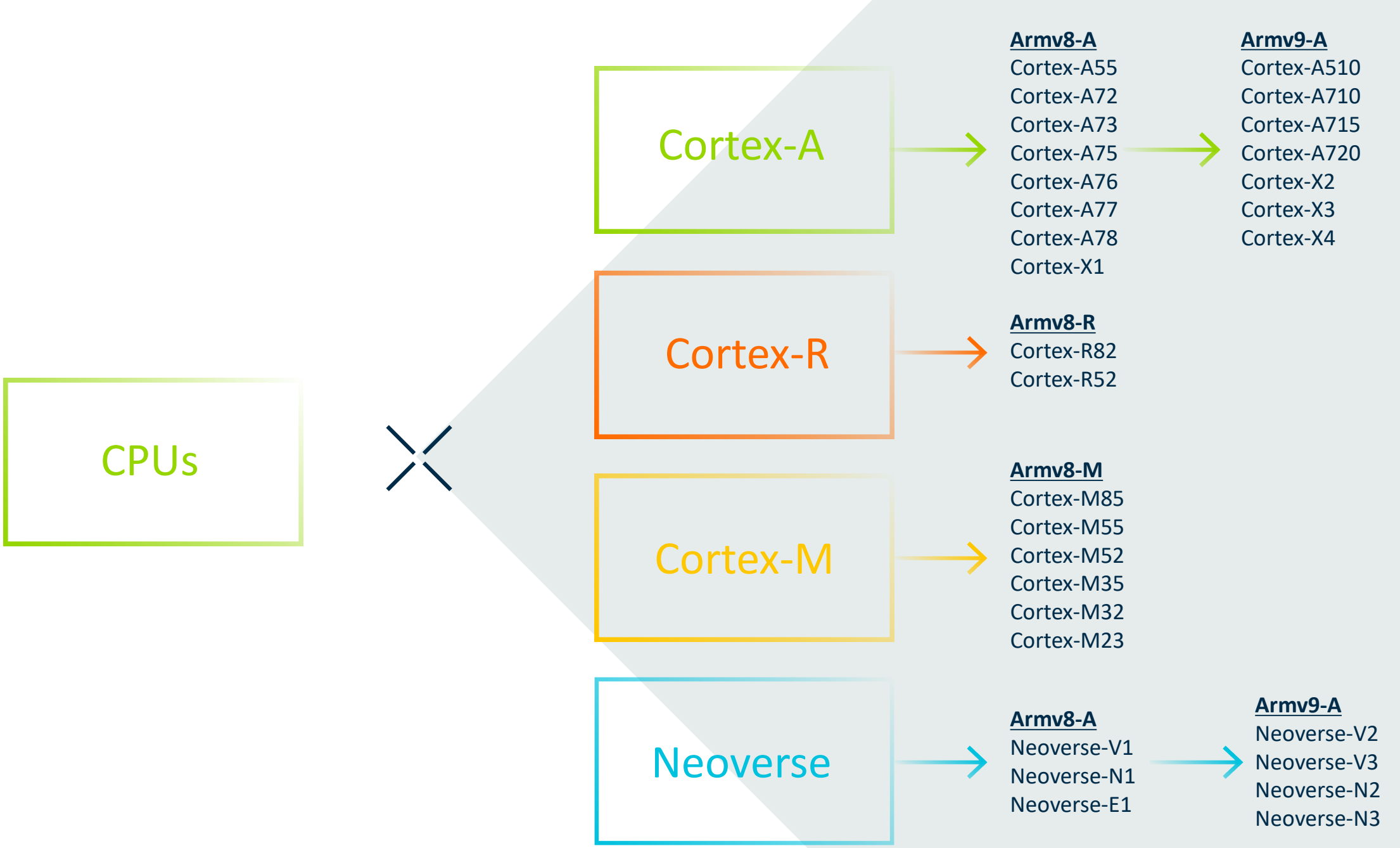
CPUs
Cortex-A
Armv8-A
Cortex-A55
Cortex-A72
Cortex-A73
Cortex-A75
Cortex-A76
Cortex-A77
Cortex-A78
Cortex-X1
Armv9-A
Cortex-A510
Cortex-A710
Cortex-A715
Cortex-A720
Cortex-X2
Cortex-X3
Cortex-X4
Cortex-R
Armv8-R
Cortex-R82
Cortex-R52
Cortex-M
Armv8-M
Cortex-M85
Cortex-M55
Cortex-M52
Cortex-M35
Cortex-M32
Cortex-M23
Neoverse
Armv8-A
Neoverse-V1
Neoverse-N1
Neoverse-E1
Armv9-A
Neoverse-V2
Neoverse-V3
Neoverse-N2
Neoverse-N3

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Unparalleled Software Ecosystem

15M

Developers on Arm, for Arm

10M+

Developer hours 1st decade of Armv8

1.5Bn

Ecosystem hours

30M+

Developer hours 1st decade of Armv9

android iOS

Green Hills SOFTWARE Linux

Microsoft NVIDIA CUDA

Red Hat TensorFlow

vmware WNDRVR

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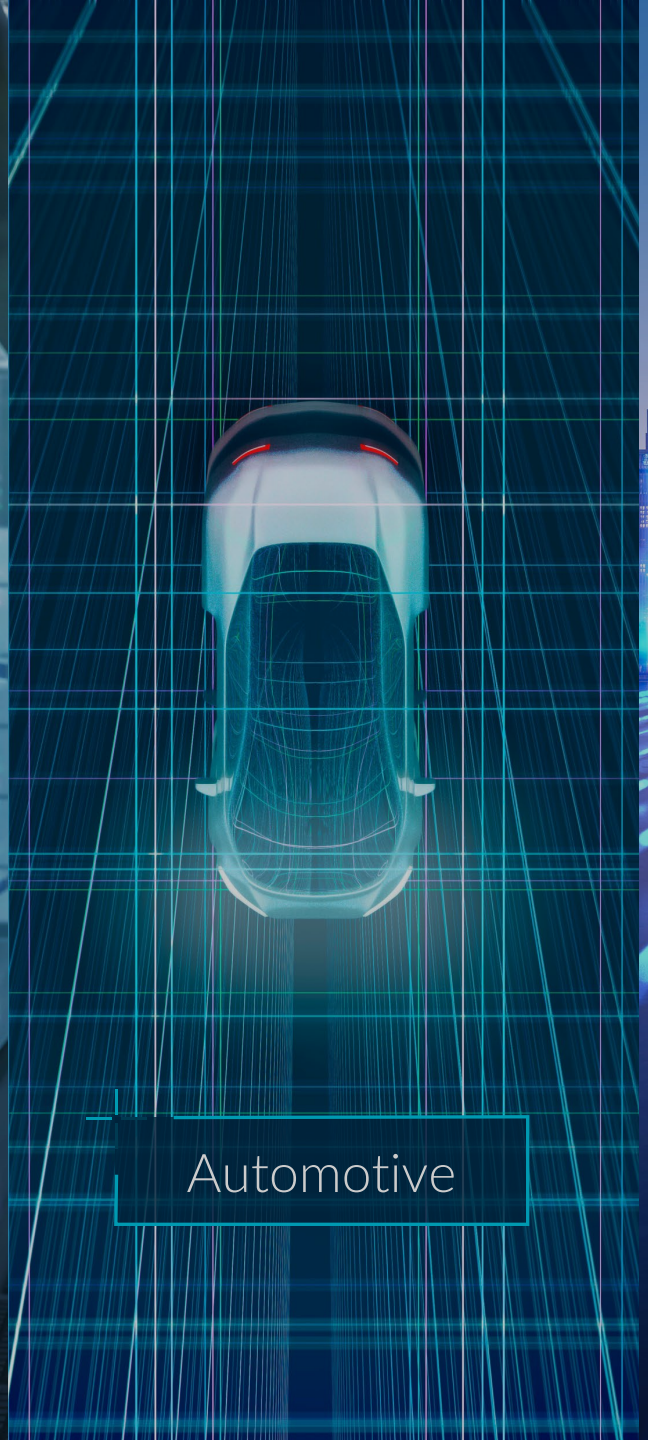
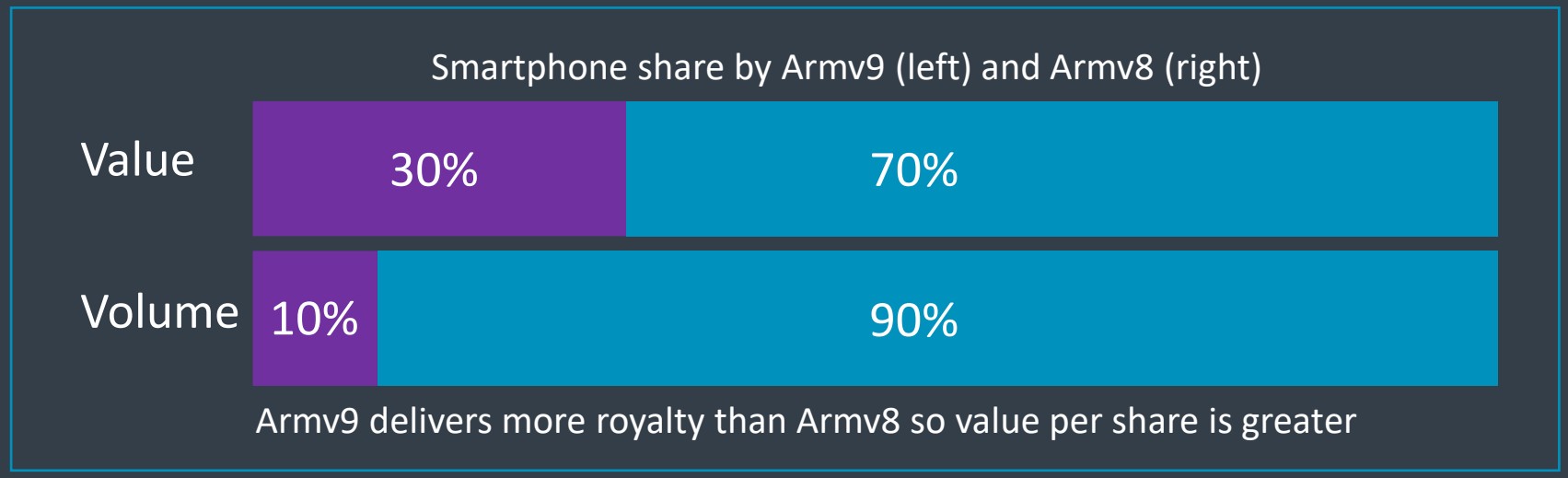
Mobile

Cloud Compute


Automotive

IoT

- Arm has >99% of main application processor in smartphone
- Arm CPUs based on Armv9 architecture are replacing Armv8



- Future AI smartphones will require more compute therefore more Arm CPUs and more royalty revenue

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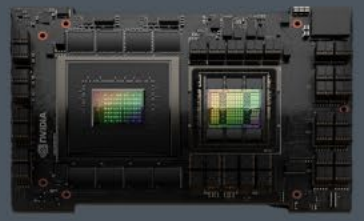
Cloud Compute

Arm is gaining market share in the cloud data center

NVIDIA

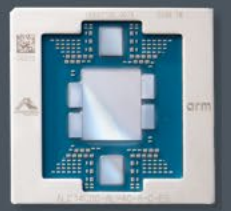
GRACE HOPPER



BLUEFIELD

aws

GRAVITON4



NITRO

Microsoft

COBALT 100

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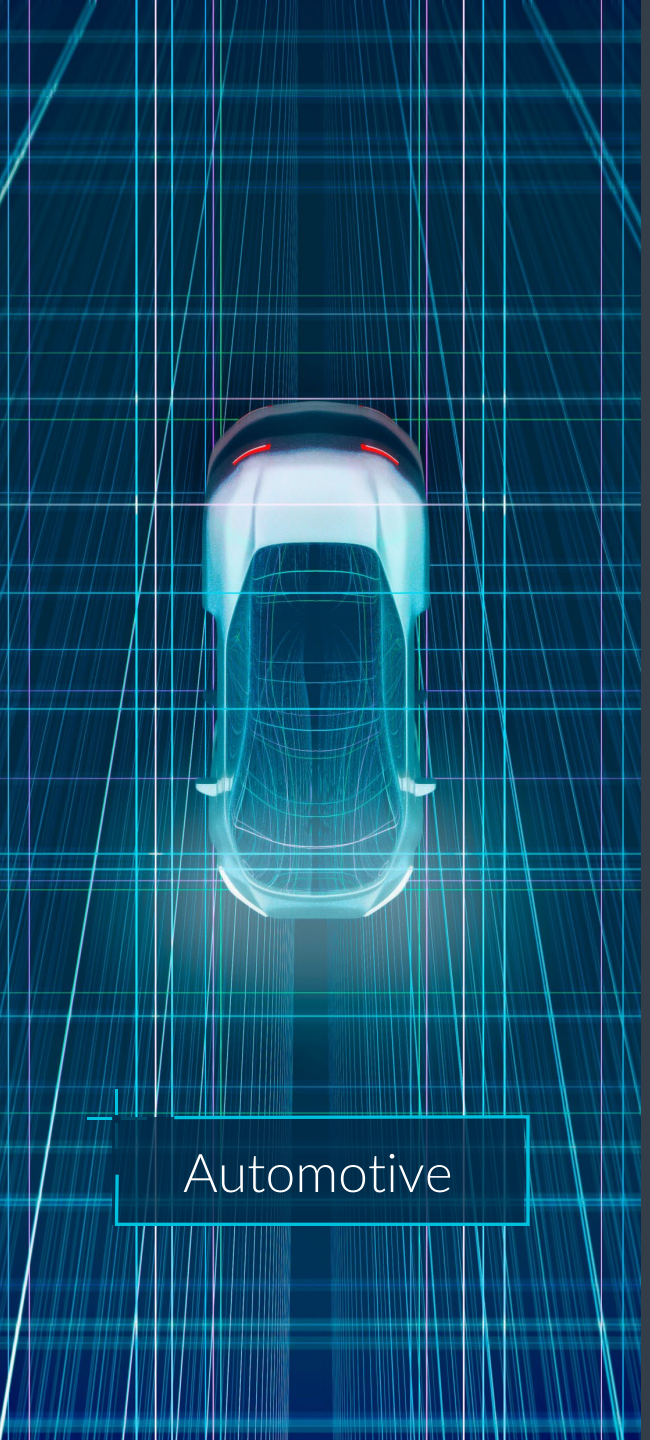
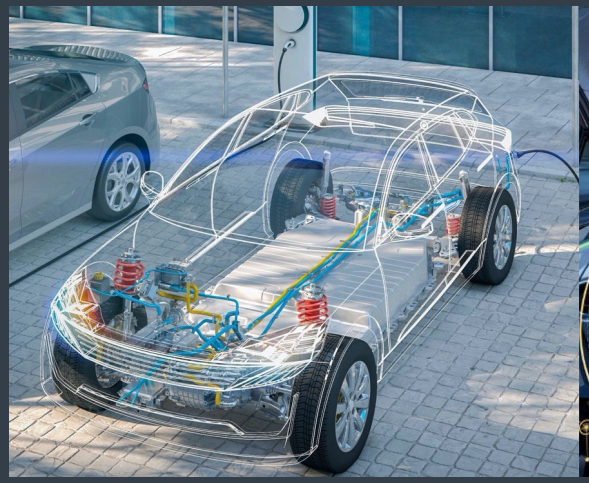


Automotive

- Arm is gaining market share in automotive electronics



From internal combustion engine to electric vehicles

From analog to digital cockpit

From Advanced Driver Assistance Systems (ADAS) to autonomy

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IoT

Arm is gaining market share in IoT devices

Smart Cameras

Storage

Industrial

Home Automation

MCU / MPU

Connectivity

Endpoint AI

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AI is Creating New Opportunities in All Markets

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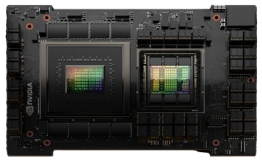
Cloud Compute	Mobile	Automotive	IoT & Embedded
NVIDIA, AMPERE	Pixel Phone by Google	cruise	Nest
				
Generative AI	Optimized for AI	AI for all applications	Autonomous Driving	Smart Home

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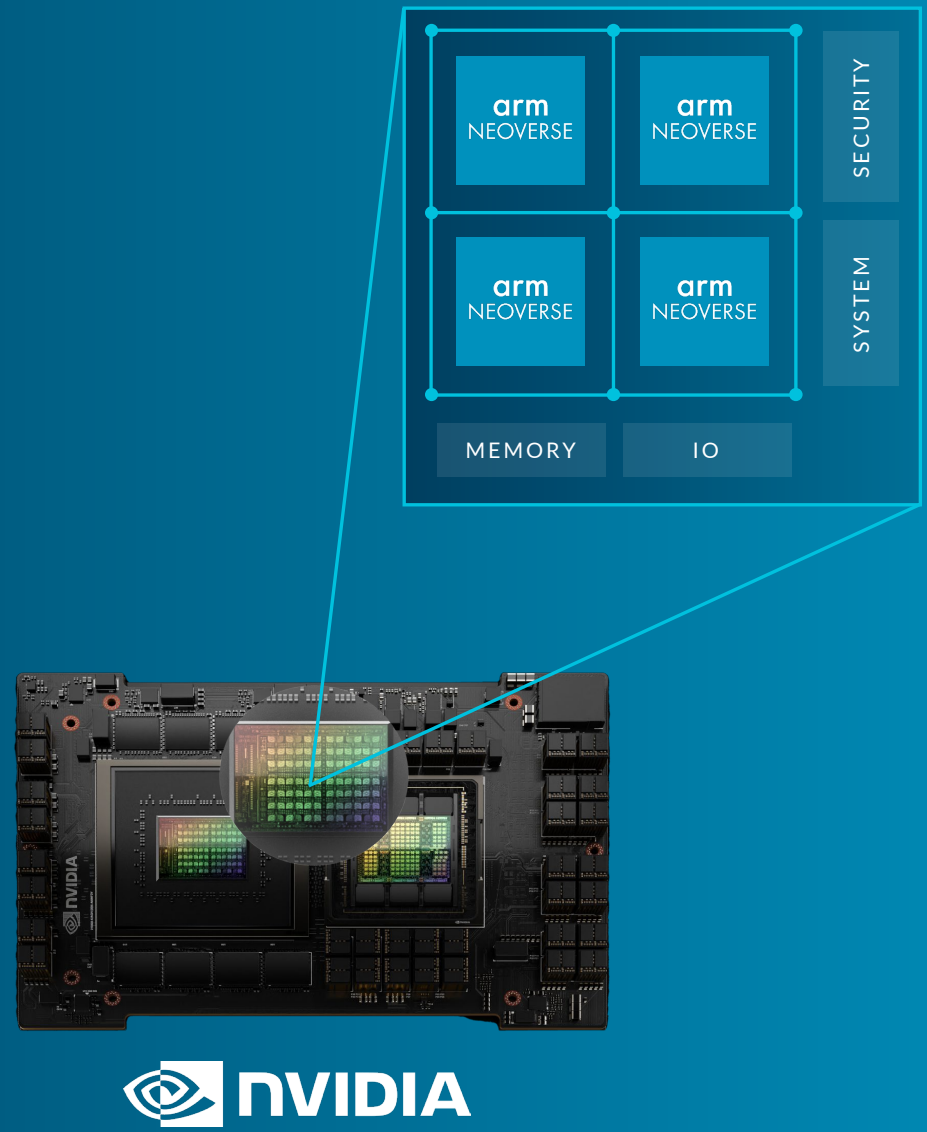
Arm-based NVIDIA GH200 Grace Hopper Superchip

72 Arm Neoverse V2 cores

10X faster AI performance than equivalent flagship x86

"Grace Hopper is a home run product."
Jensen Huang NVIDIA CEO



NVIDIA

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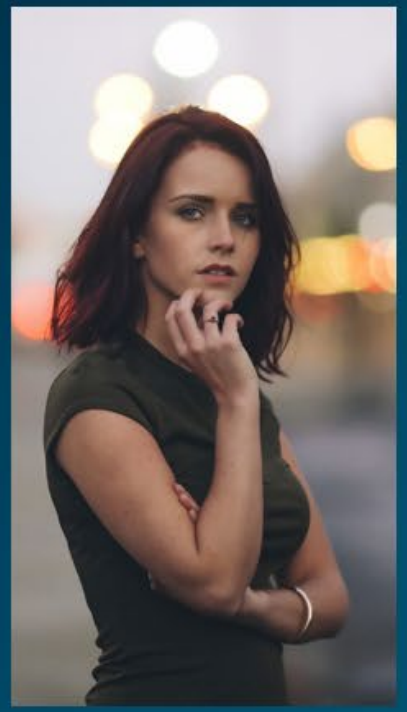
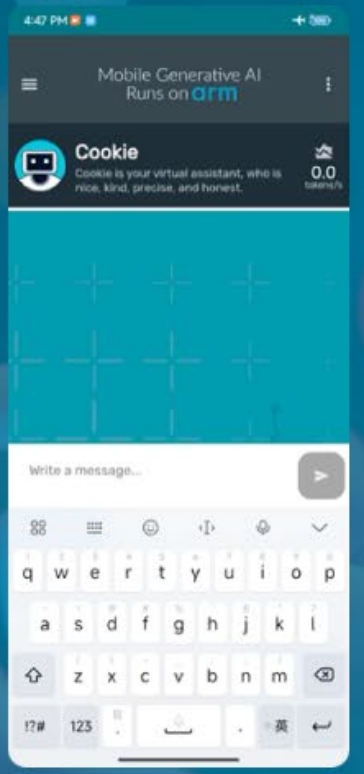
Smartphone: AI is already in your pocket



Computational Photography*

Circle to Search

Live Translation



Local Chatbot

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* Use of digital computation to enhance or transform images

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Revenue Opportunity: A Massive and Growing Market

	Market Share[1] (2020 to 2022)	2025E TAM	TAM CAGR (2022 to 2025)
MOBILE	>99% → >99%	$36B	6%
CLOUD COMPUTE	7% → 10%	$28B	17%
AUTOMOTIVE	33% → 41%	$29B	16%
IoT & EMBEDDED	58% → 65%	$50B	7%
TOTAL OPPORTUNITY[2]	42% → 49%	$247B	7%

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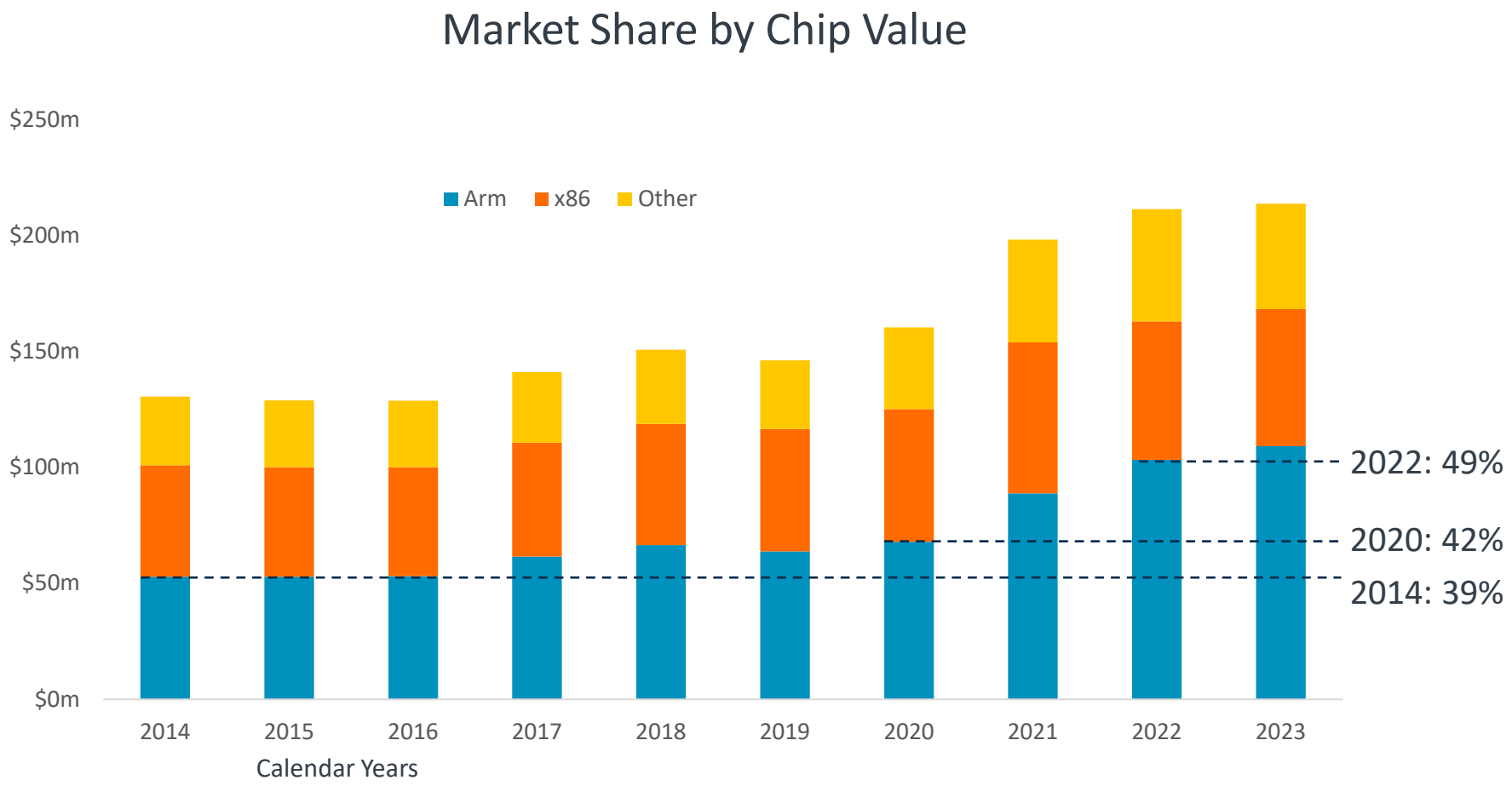
[1] Based on Arm value share

[2] Total Opportunity includes Consumer Electronics, Networking and Other Mobile not broken out in above chart.

Royalty Revenue: Arm is Gaining Share



Other includes legacy and niche architectures such as:
* Proprietary architectures (68000, 80x51, AVR, Coldfire, PIC, PowerPC, RH850, etc.)
* Licensable and open-source architectures (Arc, Andes, Leon, MIPS, OpenPower, OpenRISC, RISC-V, Sparc, Tensilica, etc.)

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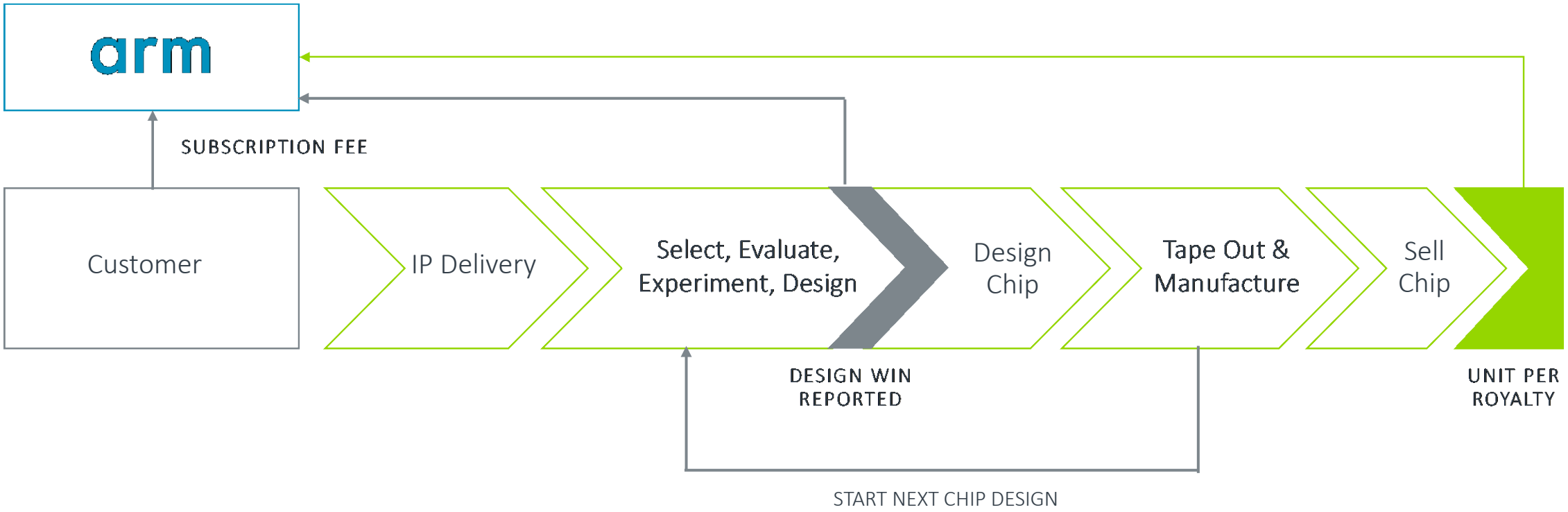
Arm Business Model – License fee plus Royalty per chip

Arm's business model is optimized to maximize future royalty revenue streams.



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All major technology companies are Arm's customers

- Most have been Arm's customers for over 20 years

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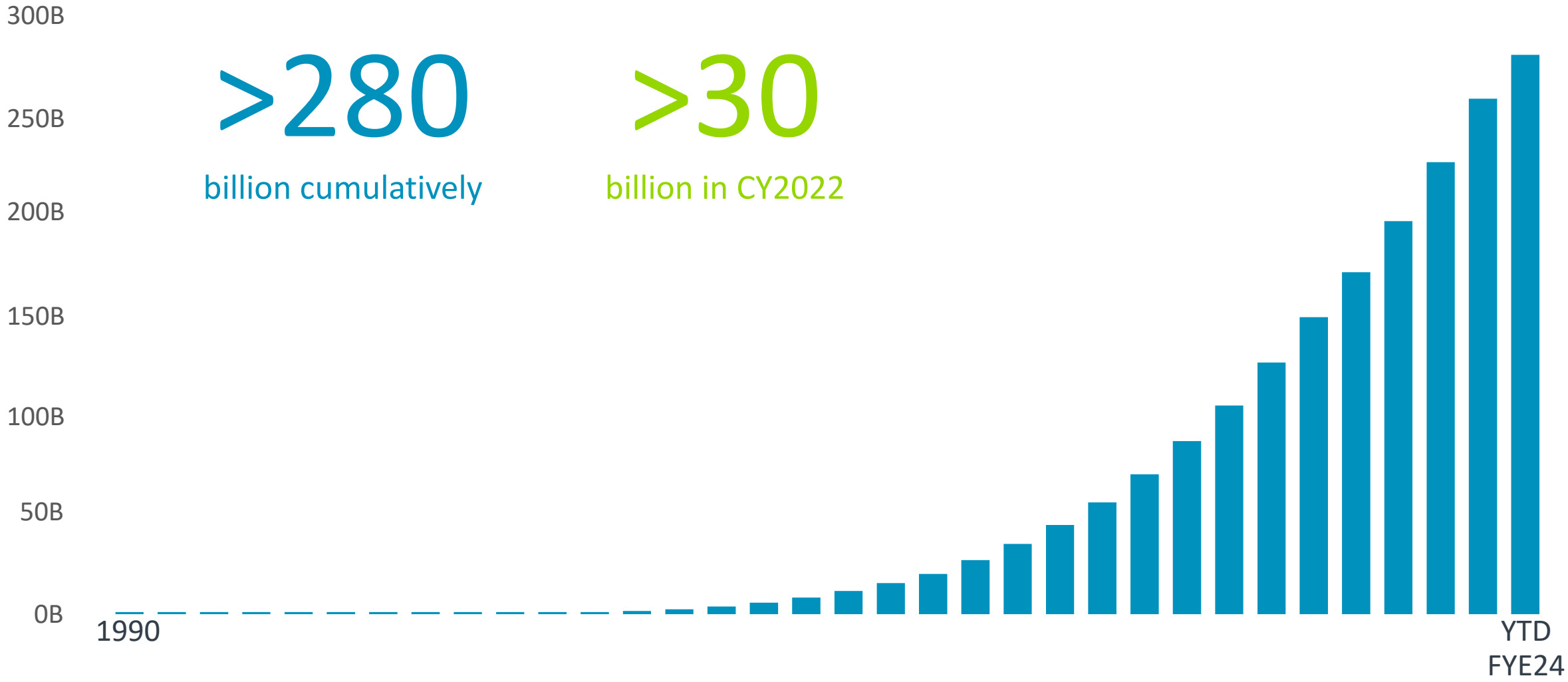
Increasing number of Arm-based chips deployed



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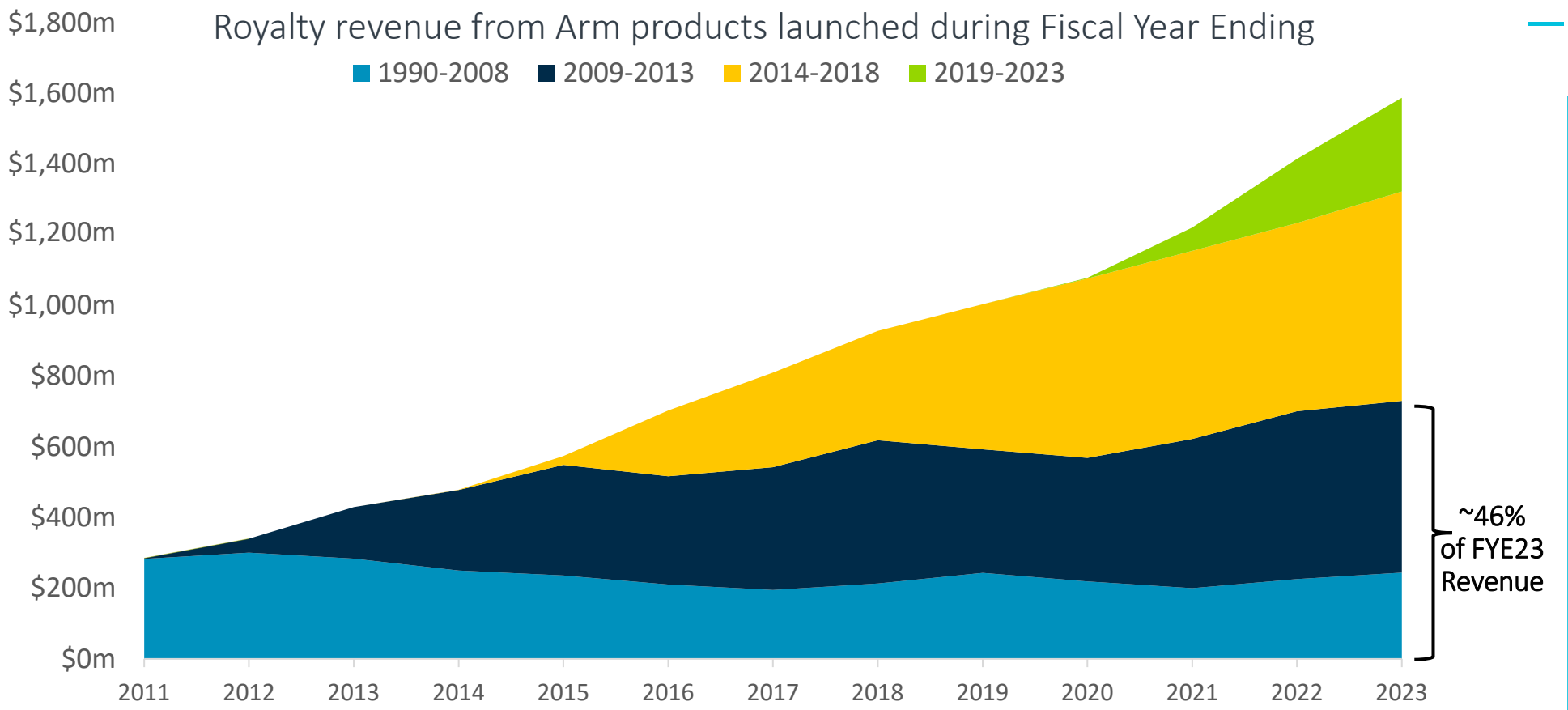
Royalty Revenue Provides a Platform for Long-Term Growth

Royalty revenue can continue for many years or decades



Still collecting royalties on products developed in the early 1990's

Long term visibility, near term predictability

Based on data derived from royalty reports provided by Arm's customers.

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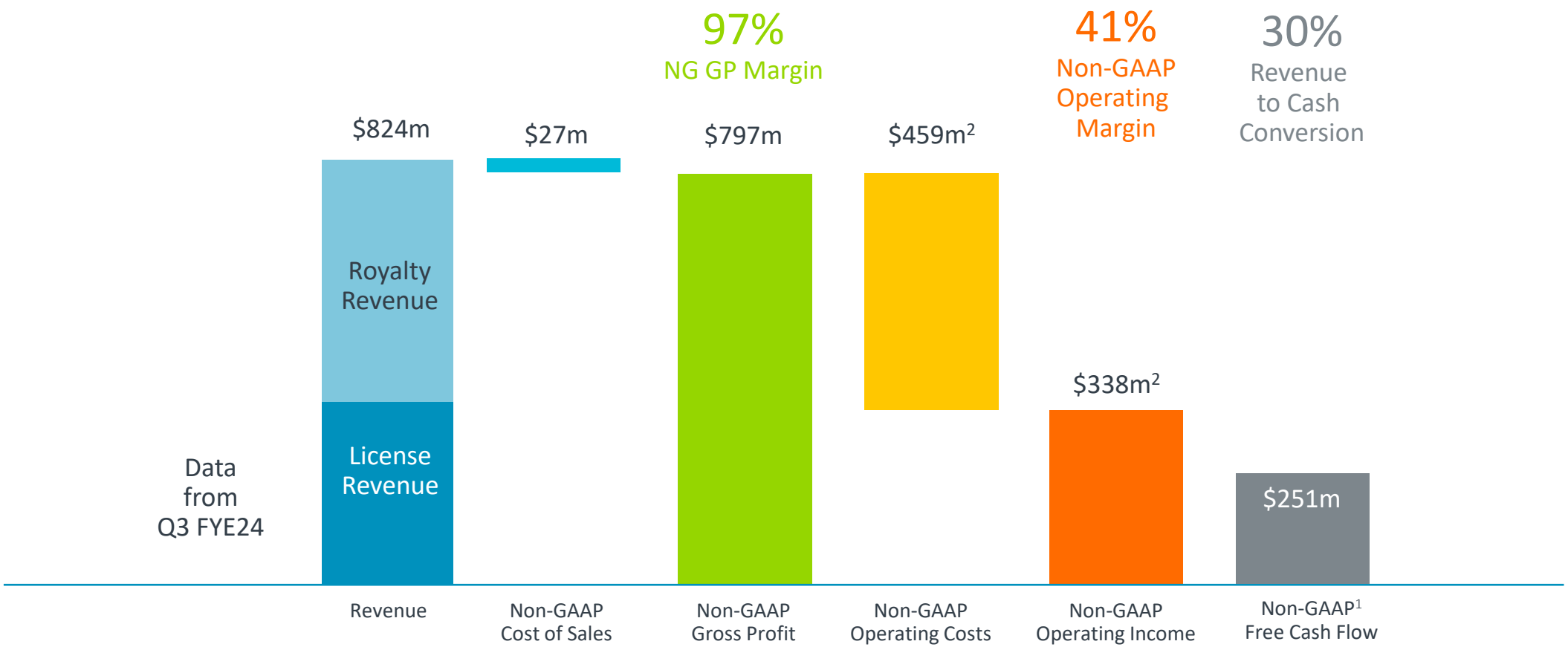
From Revenues to Profits to Cash



1. Non-GAAP Operating Income and Free Cash Flow are non-GAAP metrics. Please see Arm's investor relations website for a reconciliation of each to the most directly comparable GAAP metric
2. Q3 FYE24 Non-GAAP operating income of $338m includes $23m of employer taxes related to equity-classified awards vesting within the quarter, net of the research and development tax credit associated with these taxes. From Q4 FYE24, we will be excluding these taxes from our Non-GAAP presentation. Excluding this effect, Q3 FYE24 Non-GAAP operating income results would have been $361m, up 25% yoy, and Non-GAAP operating margin would have been 44%.

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Why Arm Continues to Grow

More Complexity Per Chip

More Chips

More Markets

12 Smartphone

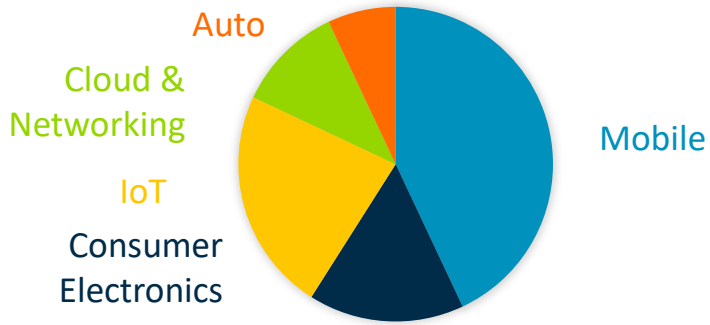
Number of cores per “high end” Arm-based smartphone chip

192 Server

Number of cores per “high end” Arm-based server chip

280 billion

Number of Arm-based chips shipped to date



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The future is built on Arm

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