



# Arm Limited

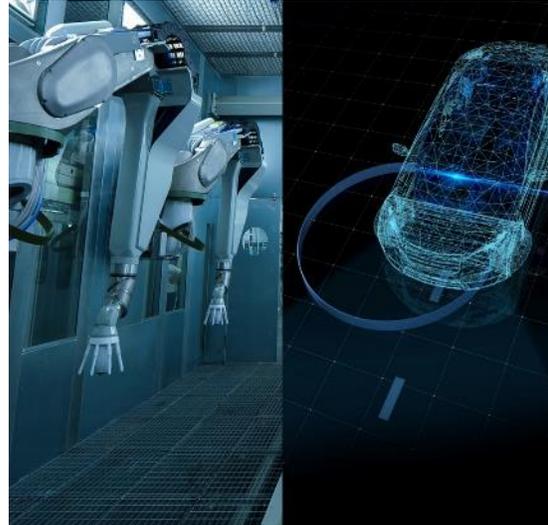
## Q4 2018 Roadshow Slides

Arm Limited is a subsidiary of  SoftBank

# Technology trends that will redefine all industries



Artificial Intelligence in every device



Autonomous machines



Augmented reality



Hyperscale cloud and connectivity



Security and Privacy

# Arm defines the technology that will redefine all industries



	Mobile and Consumer	Networking and Servers	Automotive and Robotics	Internet of Things
Artificial Intelligence in every device	✓	✓	✓	✓
Autonomous machines			✓	✓
Augmented reality	✓		✓	
Hyperscale cloud and connectivity		✓		✓
Security and Privacy	✓	✓	✓	✓

# Arm introduction

## Global leader in technology licensing

- R&D outsourcing for semiconductor companies

## Innovative business model

- Upfront licence fee – flexible licensing models
- Ongoing royalties on partner sales
- Technology reused across multiple applications

## Long-term, secular growth markets



**>1,650 licences**  
Growing by >100  
every year

**>525 potential  
royalty payers**

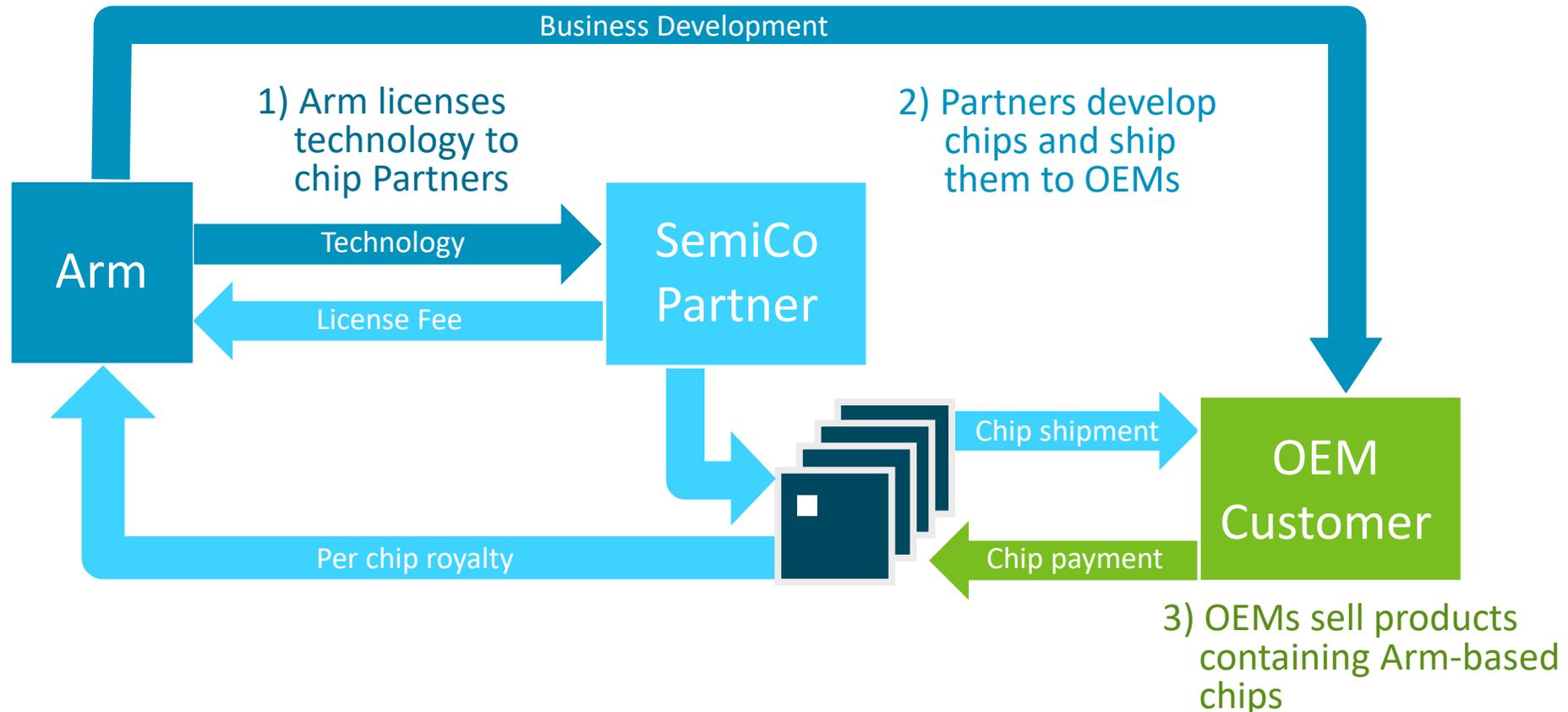
**23 bn Arm-based chips  
shipped in 2018**

**~15% CAGR over  
previous 5 years**

# Arm's business model

Arm develops technology that is licensed to semiconductor companies

Arm receives an upfront license fee and a royalty on every chip that contains its technology



# Arm's strategy

Maintain or gain share in long-term growth markets

- From mobile phones to networking infrastructure and servers to embedded smart devices and automotive

Increase value of Arm technology per smart device

- Invest in developing more advanced processors with higher royalty rates
- Physical IP and multimedia IP further increase Arm's value per chip

Explore and exploit new opportunities in emerging applications created by the Internet of Things

Invest to create a sustainable business, fit for the long term

- Create superior returns by developing new technology that will deliver increased profits and cash generation in the future



# Arm's main growth markets

## Mobile and Consumer Devices



\$108bn  
TAM 2028

- Smartphones, tablets and laptops
- Apps processor, modem, connectivity, touchscreen and image sensors
- Growth coming from higher-value Arm technology such as Arm v8-A, octa core, multimedia

## Networking & Servers



\$48bn  
TAM 2028

- Base stations, routers, switches, and servers for cloud and data centres
- Networks evolve to cope with increased data at lower latency: virtualisation, integration and programmability
- Most major chip vendors have announced Arm-based products

## Embedded Markets



\$94bn  
TAM 2028

- Automotive, white-goods, wearables, smart devices in industrial and utilities
- Microcontrollers, smartcards, embedded connectivity chips
- 300 companies have licenced Arm processors for use in embedded computing devices

# History of Arm

Joint venture between  
Acorn Computers and Apple



1990

Designed into first mobile  
phones and then smartphones



1993 onwards

Now all electronic devices can  
use smart Arm technology



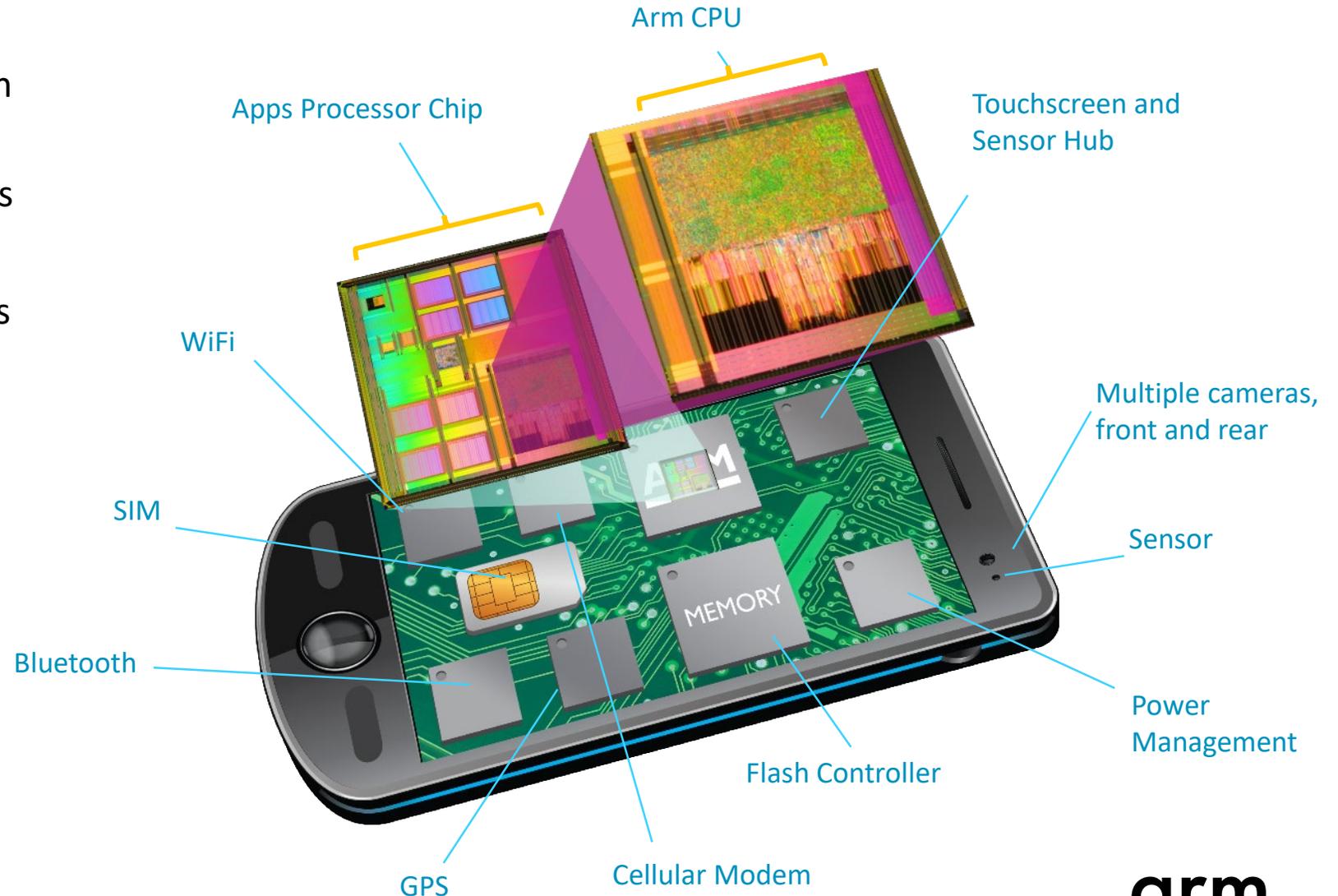
Today

# Smart devices contain many Arm processors

**Applications Processor** chips can contain multiple Arm technologies

- Arm v8-A processor for OS and apps
- Cortex-R controller for modem
- Cortex-M controllers for peripherals
- Arm Mali multimedia processors: GPU, video, display, camera, etc.
- Arm physical IP

When new functions are added to smartphones it creates opportunity for new Arm IP



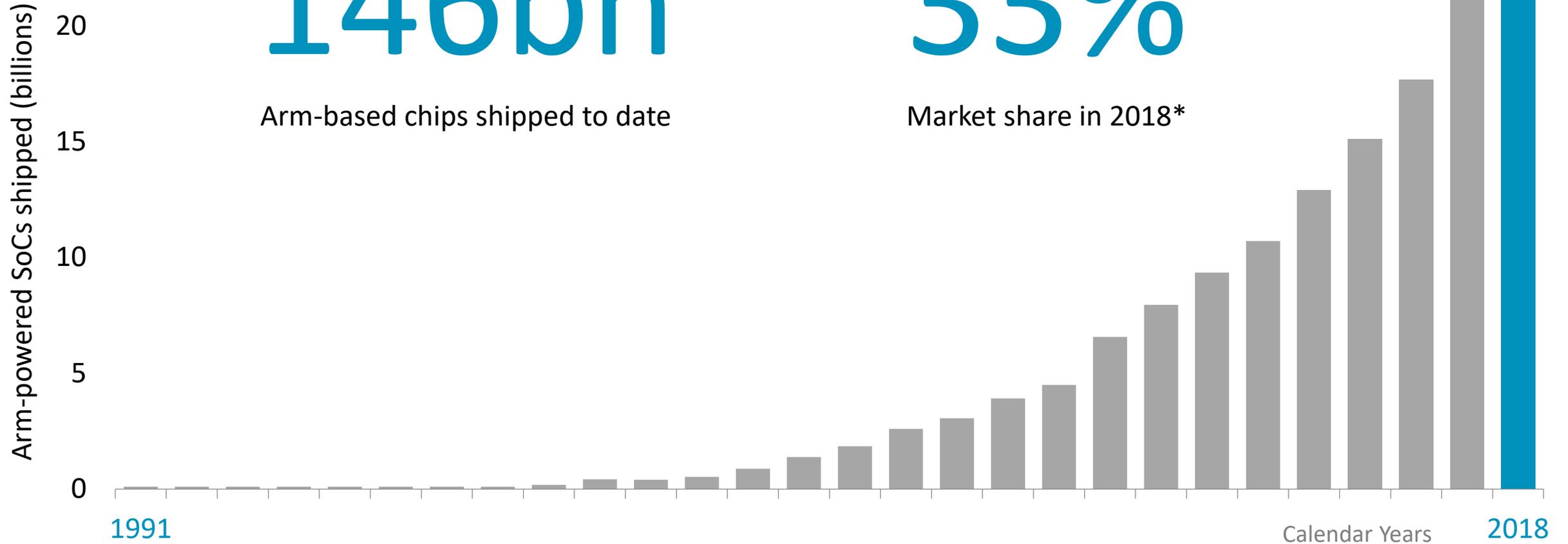
# Arm-based chip shipments

146bn

Arm-based chips shipped to date

33%

Market share in 2018\*



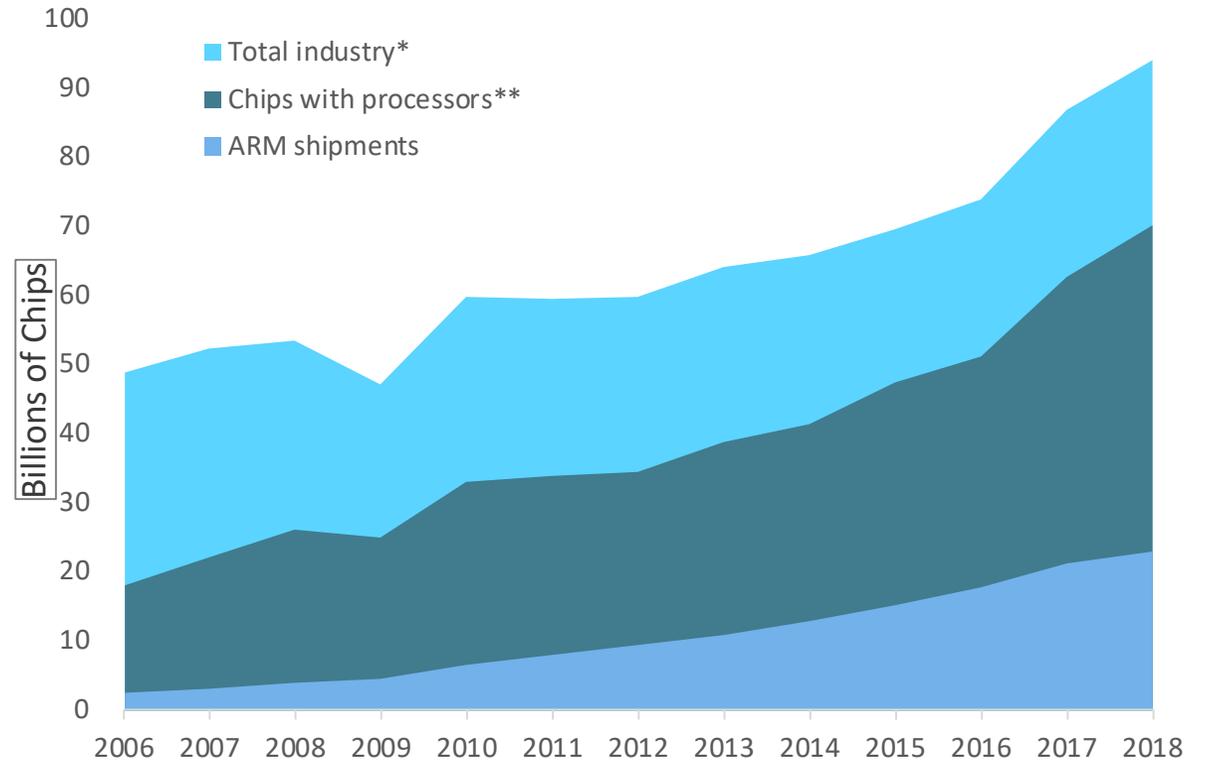
\* Note that market share is lower than previous shown as market definition has been expanded  
Previous years' market shares 2010-2017: 20%, 22%, 27%, 28%, 31%, 32%, 35% and 34%.

# Arm's opportunity continues to broaden

Semiconductor industry continues to grow:  
8% by volume, 3% by value over past five years

Proportion of chips with processors is increasing  
over the medium term: 75% in 2018

Over the medium term, Arm is gaining share  
within the “chips with processors” segment of  
the industry: 33% in 2018

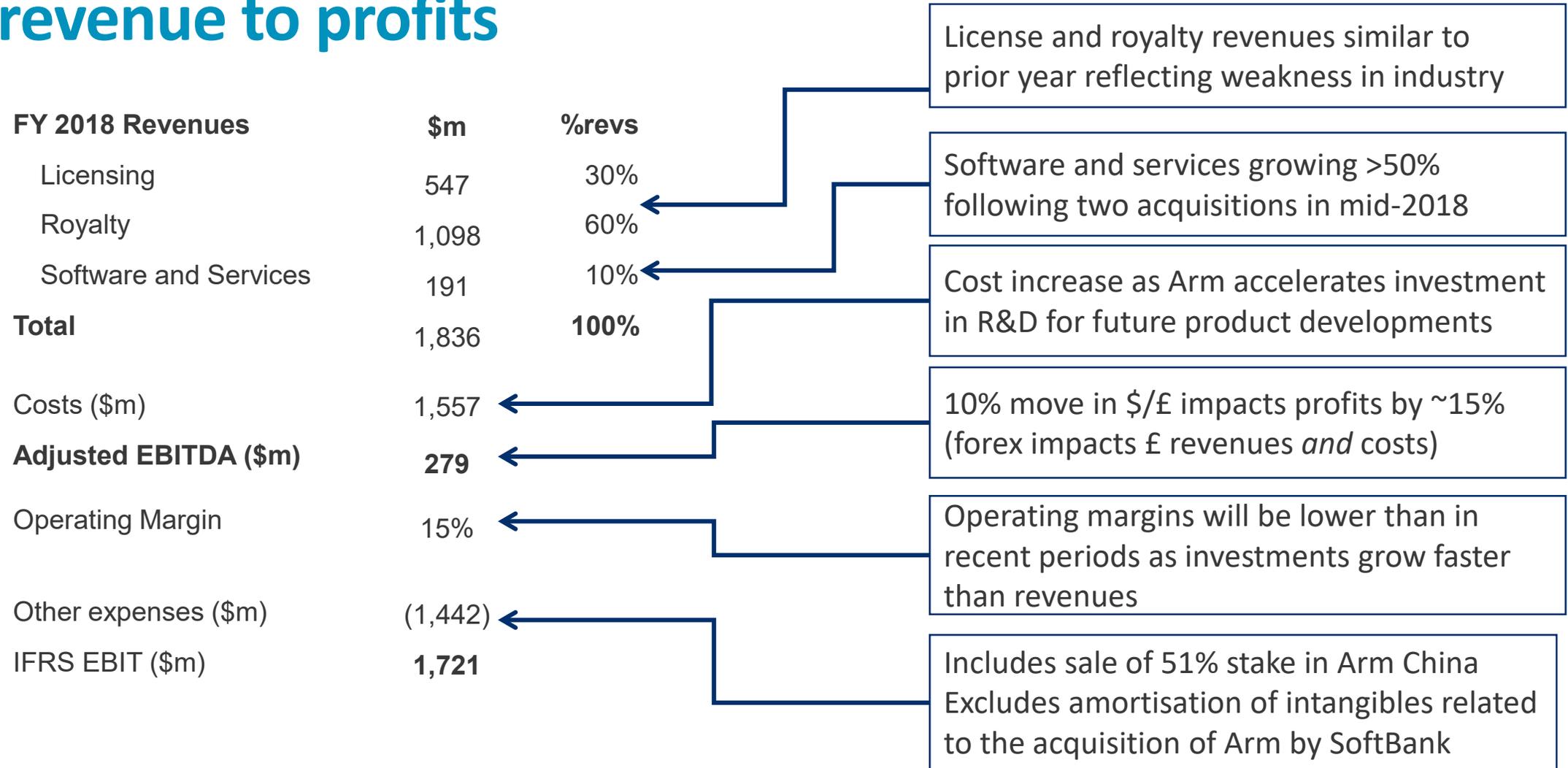


\* Data source: WSTS, April 2019 and Arm,  
Industry volume excluding analog and memory

\*\* Arm estimates

Calendar years

# From revenue to profits



# Qtr. ending Mar. 2019 – Financial summary

Revenues (\$m)	Q4 2017	Q4 2018	Growth
Licensing	156	213	37%
Royalty	269	247	-8%
Software and Services	36	53	47%
Total (\$m)	461	513	11%
<hr/>			
COGS (\$m)	32	28	-13%
R&D (\$m)	163	186	14%
SG&A (\$m)	160	175	9%
Costs (\$m)	355	389	10%
Adjusted EBITDA (\$m)	106	124	17%
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Depreciation & amortisation (\$m)	25	32	28%
Other operating expenses (\$m)	48	9	-82%
IFRS EBIT (\$m)	33	83	152%

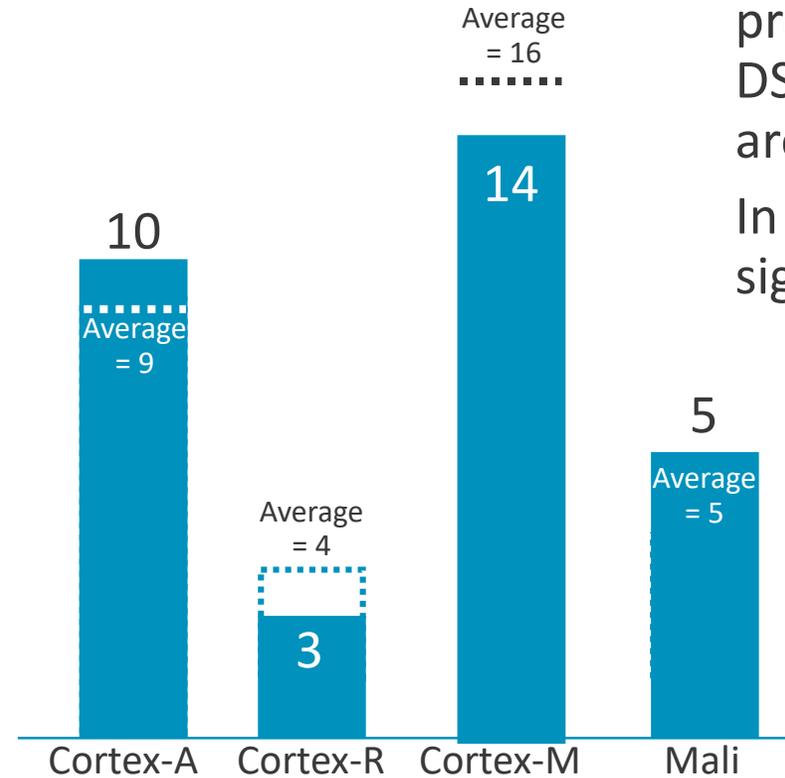
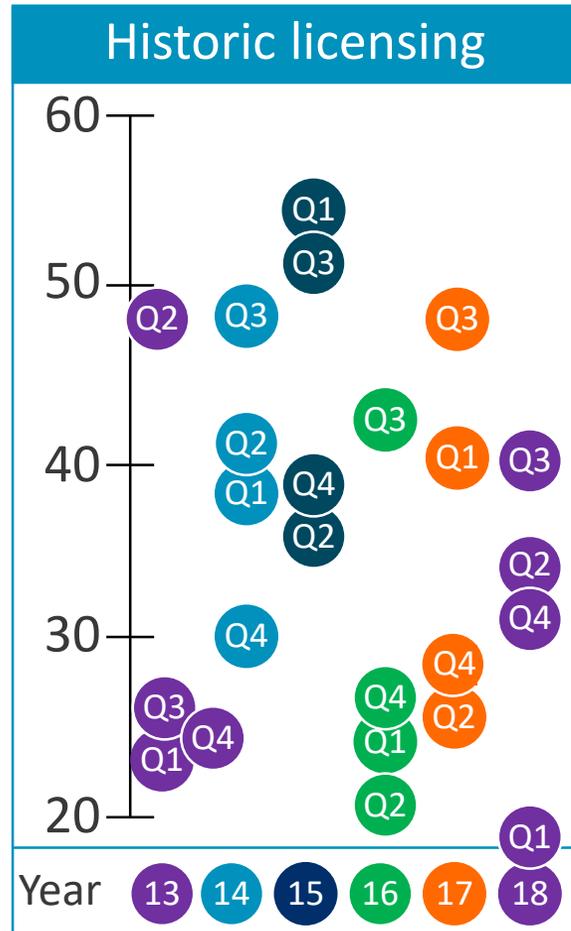
Licensing can fluctuate quarter to quarter. In Q4, Arm delivered a major new processor triggering a revenue recognition event

Royalty revenue growth declined, consistent with weakness in wider industry

Includes \$16m from recent acquisitions of Treasure Data and Stream Technologies

Arm is continue to increase investment in R&D capacity

# Q4 Licensing: 32 is within the normal range



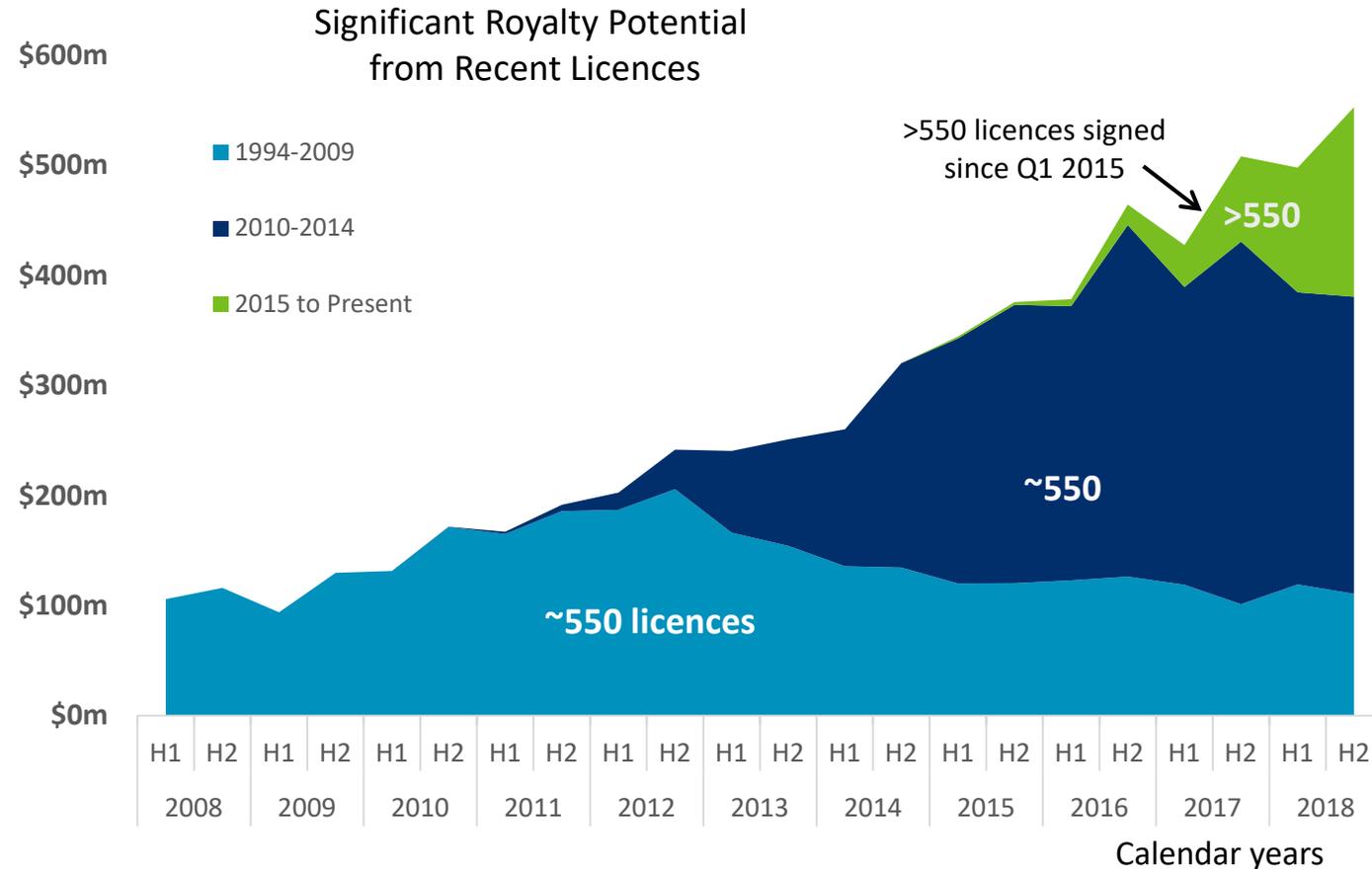
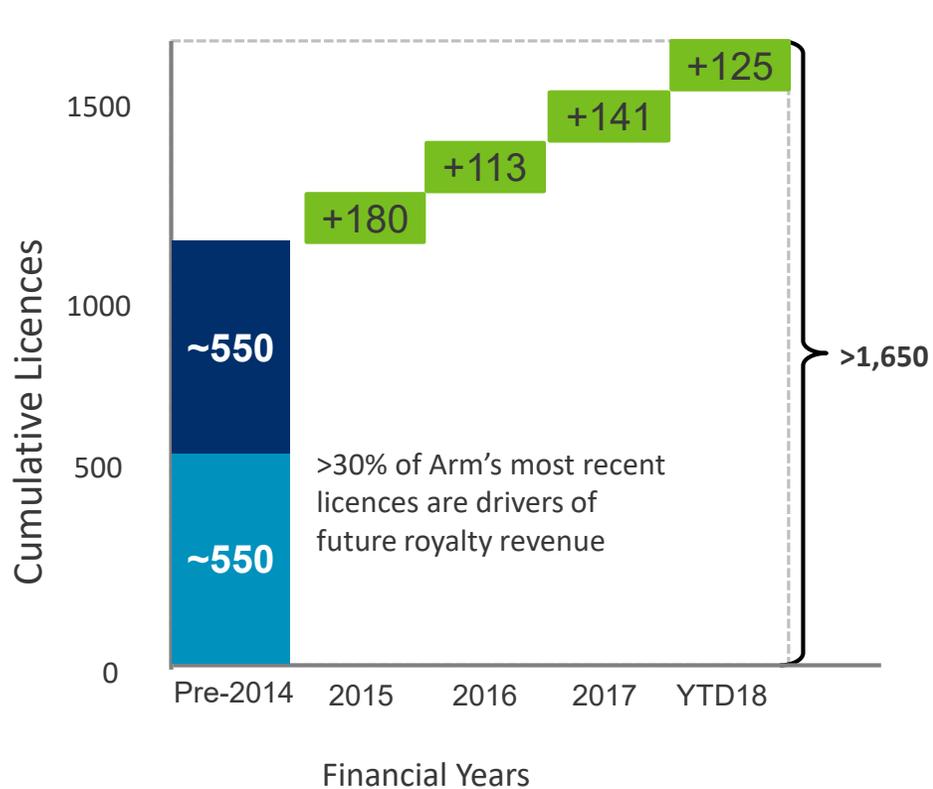
The number of licenses for Cortex-M processors has been reduced since the introduction of the DesignStart Pro (DS Pro) program in June 2017. DS Pro Cortex-M processors are available for no upfront fee. In Q4, 30 DS pro licenses were signed for Cortex-M processors

# Licensing enables future royalties

Arm signed 125 licences Q1 to Q4 2018

Arm's current royalty revenues are derived from licences signed many years ago

Growing base yields royalty revenues over long period



# Arm's expanding opportunity

**Mobile**



Applications processor

Other mobile chips

**Infrastructure**



Networking

Data Center/Cloud

**Automotive**



IVI and ADAS

Other automotive chips

2018		2028
Market Share	Market Value	Market Value
90%	\$34bn	\$47bn
40%	\$18bn	\$23bn
30%	\$15bn	\$20bn
4%	\$20bn	\$28bn
75%	\$7bn	\$19bn
10%	\$5bn	\$12bn

# Arm's expanding opportunity



**Embedded**

- Controller in IoT Devices
- Microcontrollers/SIM Cards



**Other Markets**

- Consumer Electronics
- Other chips



**Total Market**

- All chips with processors (current TAM)
- All addressable chips (future TAM)

2017		2026
Market Share	Market Value	Market Value
90%	\$7bn	\$20bn
25%	\$18bn	\$22bn
40%	\$12bn	\$37bn
35%	\$15bn	\$21bn
33%	\$150bn	\$250bn
25%	\$165bn	\$270bn

# Establishing Arm China JV in Fiscal Q1 2018

Building a bigger business; built on strong foundations

>150

Licensees

10bn

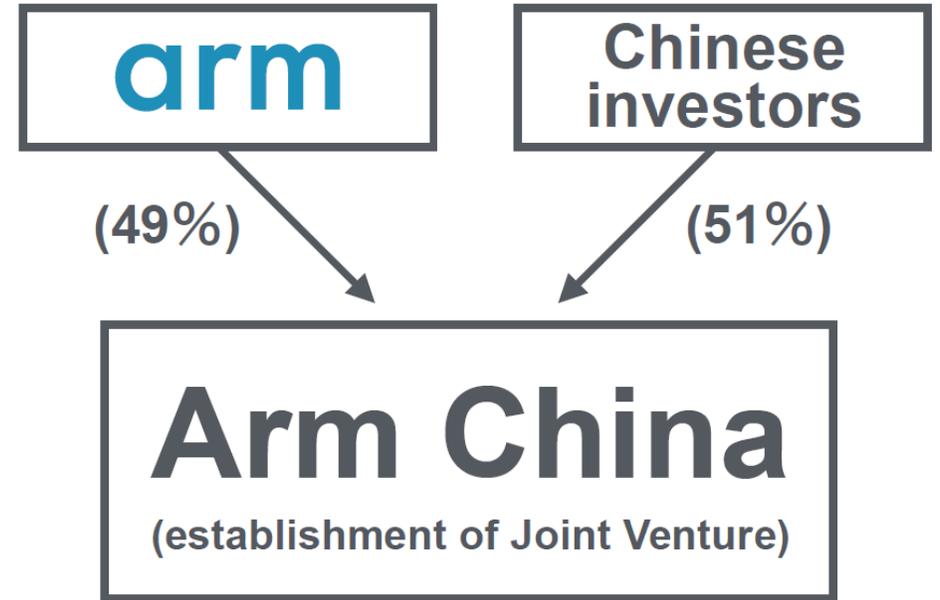
Chips shipped by Chinese partners using  
Arm processor technology

95%

Chinese designed SoC based on  
Arm processor technology

x140

Growth in volume shipment by Chinese  
partners 2006-2017



Arm China will be able to better access new local technology opportunities, especially in server, smart meter/grids and IoT

# Establishing Arm China JV in 2018

Building a bigger business; built on strong foundations

>150

Customers to novate from  
Arm Limited to Arm China

341

Employees transferred  
to Arm China in Q1

~20%

Arm's revenue came from  
China in 2017

10-20

Licenses signed in a typical  
quarter with Chinese customers

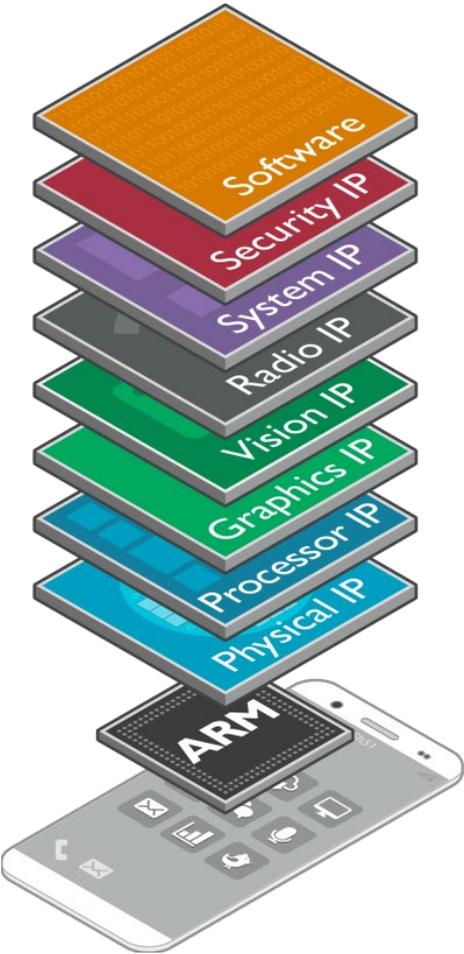
Arm China JV establishment was initiated in early Q1 2018 and completed at the end Q1

Novation (transfer) process of historical contracts resulted in a delay to contract signing in the H1 2018

As expected, licensing completely recovered in H2 2018, and finished ahead of target

Significant proportion of future revenues  
will be passed back to Arm Limited

# Arm's current business



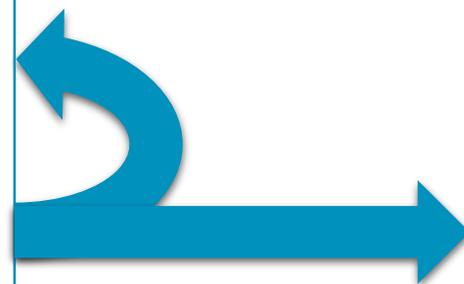
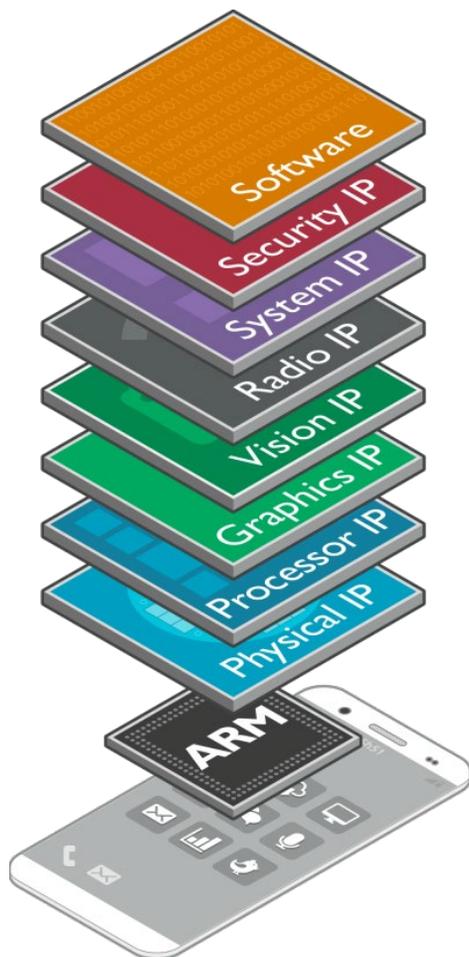
Arm develops **intellectual property** (IP) blocks which are used in silicon chips

Our partners combine Arm IP with their own IP to create complete chip designs

We earn **license fees** when we deliver Arm IP to our partners and **royalties** when our partners ship chips that contain Arm IP

Highly **profitable and cash generative**

## Accelerating investment to increase share gains



Generating profits and cash to be reinvested

## Investing to create new revenue streams

- Arm Pelion IoT Platform SaaS business
- Early-stage investment but many years in research
- Securely connect and manage any device, using any communications technology, supporting any cloud platform
  - Device Management: secure device identification, on-boarding and configuring
  - Connectivity Management: manage IoT networks using standard-based comms
  - Data Management: Ingestion and aggregation of data



Arm Pelion Partners



KEPCO

ADVANTECH

TOSHIBA



arm

# Arm IoT Services

Secure and scalable innovation from  
Device to Data

- + > 30 PB of customer data managed
- + > 2 million records per second ingested
- + > 300K queries per day
- + 55 TB network data flow per month
- + Smart grid technology partnership with KEPCO, the largest electric power utility in South Korea
- + China Unicom partnership for China based services



**~1,000**  
customers

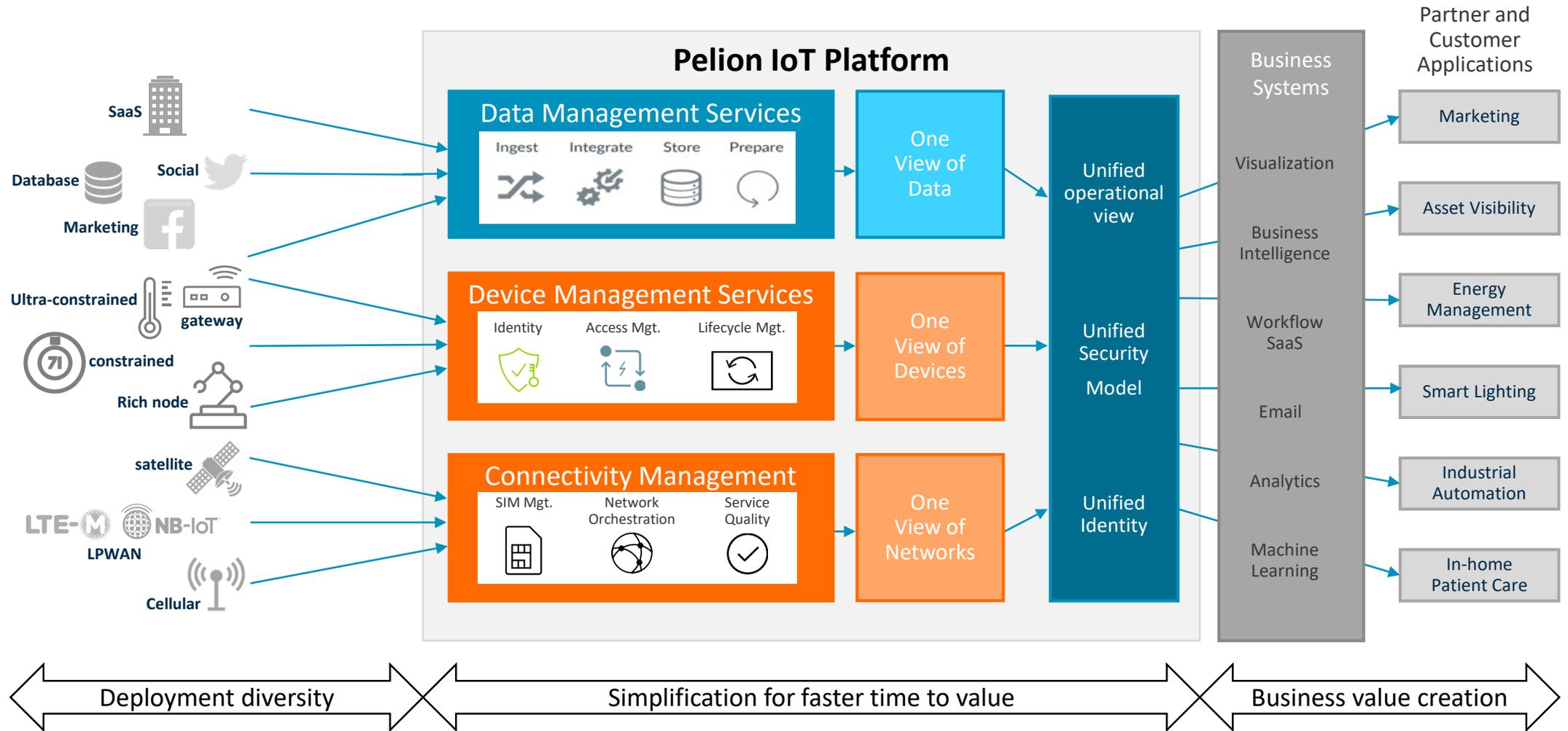


**140+**  
Ecosystem partners



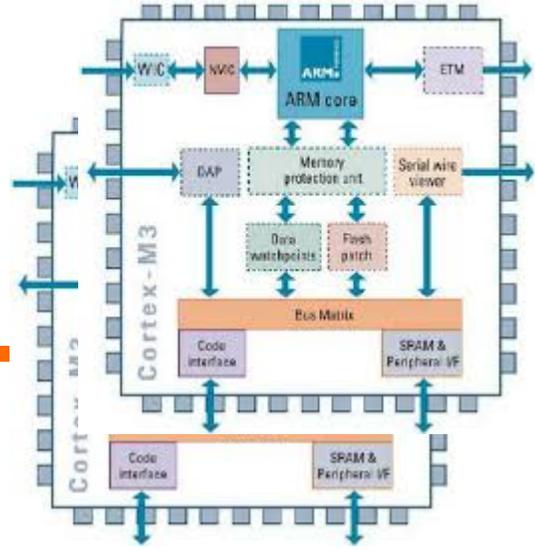
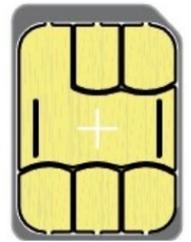
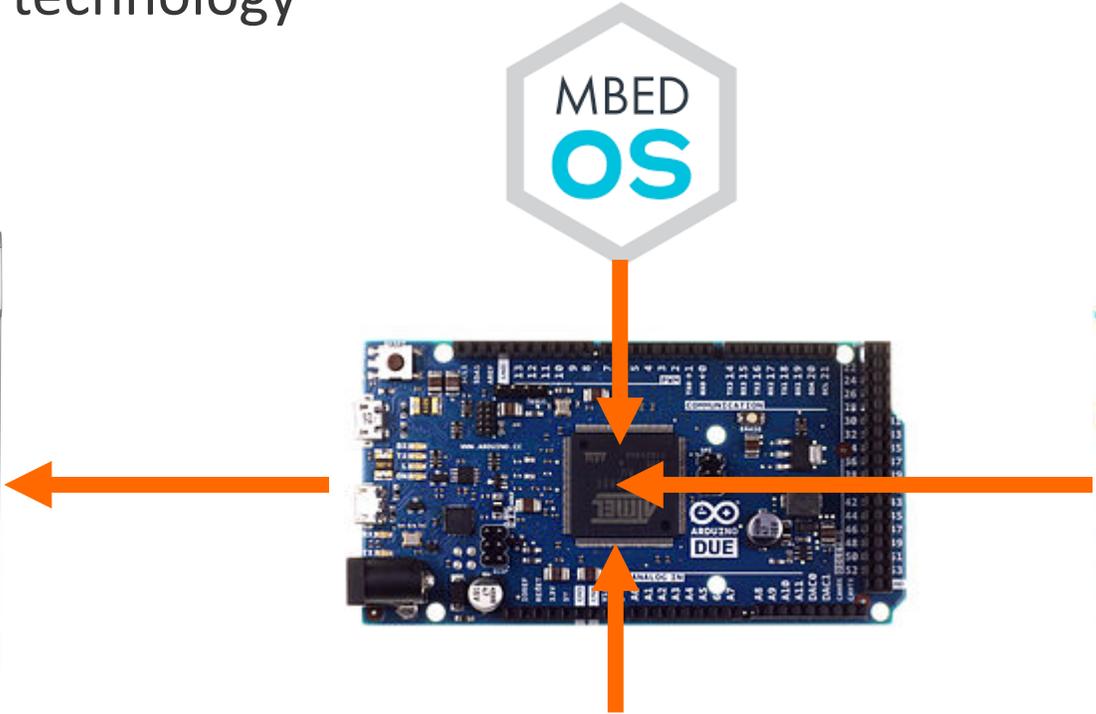
**350k+**  
Developers

# Pelion IoT Platform Overview



# How Arm makes money from IoT Devices

Semiconductor technology



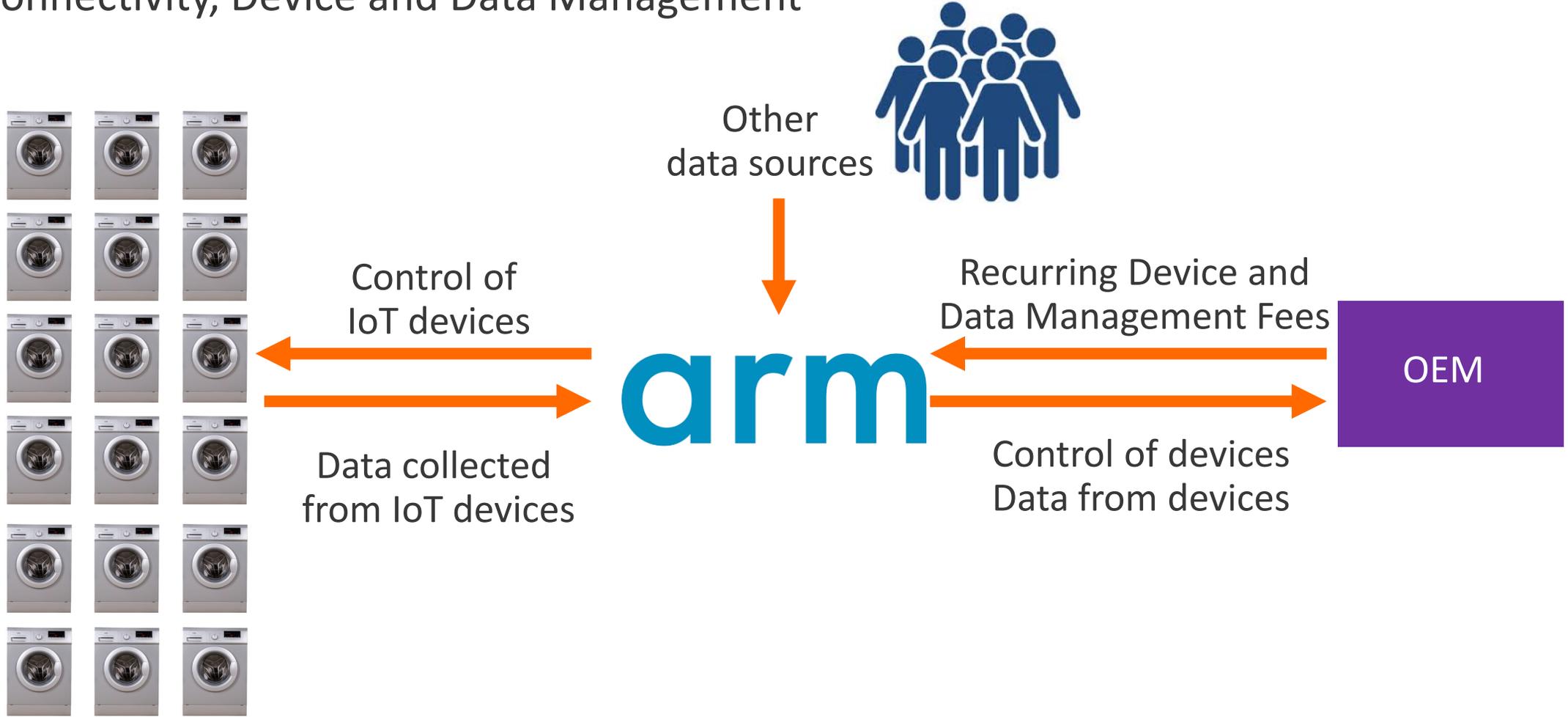
2x Arm Cortex-M3

Arm Integrated SIM technology (Arm iSIM)

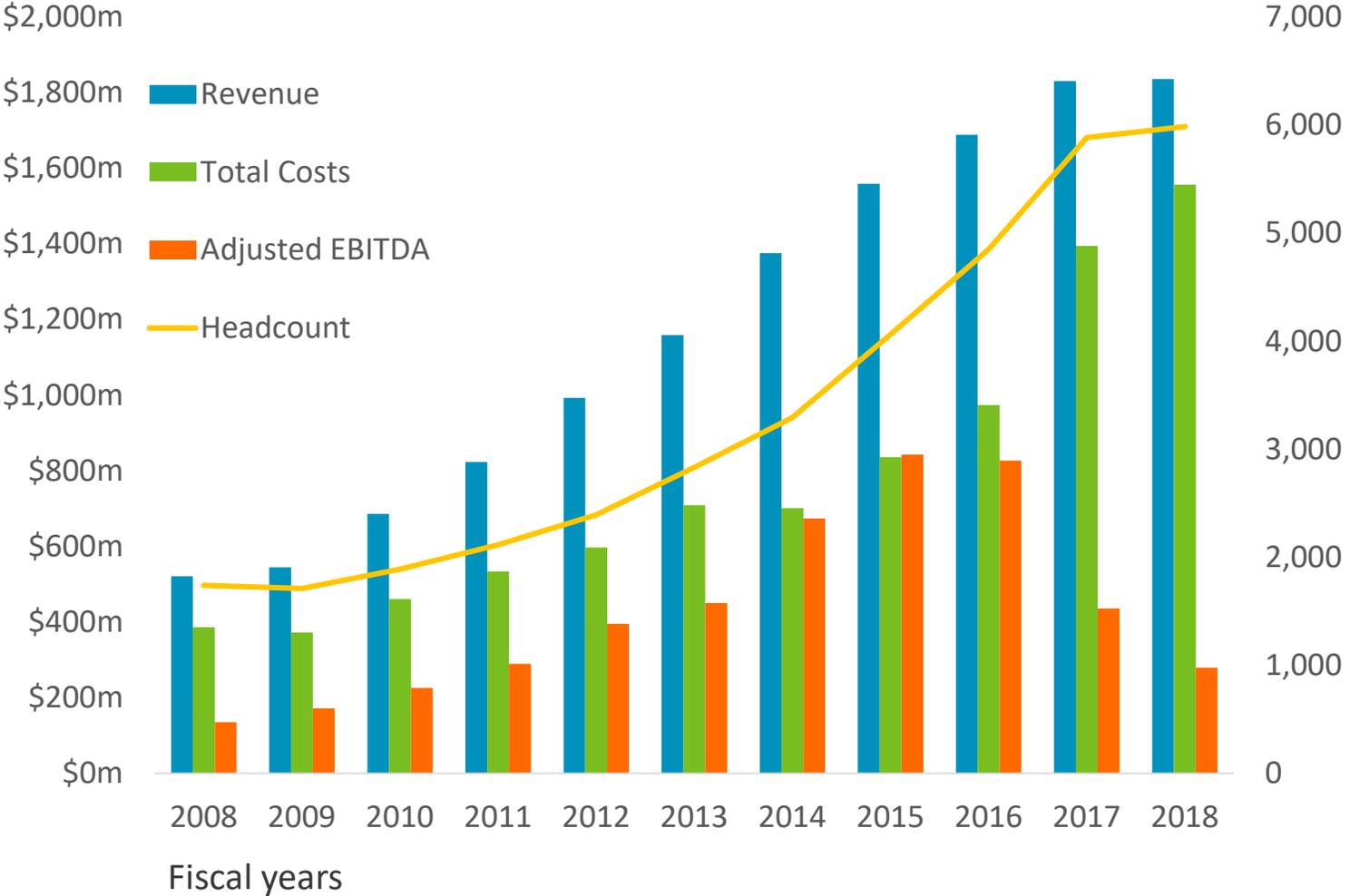


# How Arm makes money from IoT Services

Connectivity, Device and Data Management



# Revenues, investments and profits



Until 2016 revenues grew faster than costs as Arm constrained investment in R&D to enable increasing profits

For the current phase of investment Arm expects costs to grow faster than revenues

This should yield even greater profits in the future

Note: Headcount in 2018 excludes 341 employees transferred to Arm China Joint Venture in June. By the end of Fiscal 2018, Arm China had 439 employees



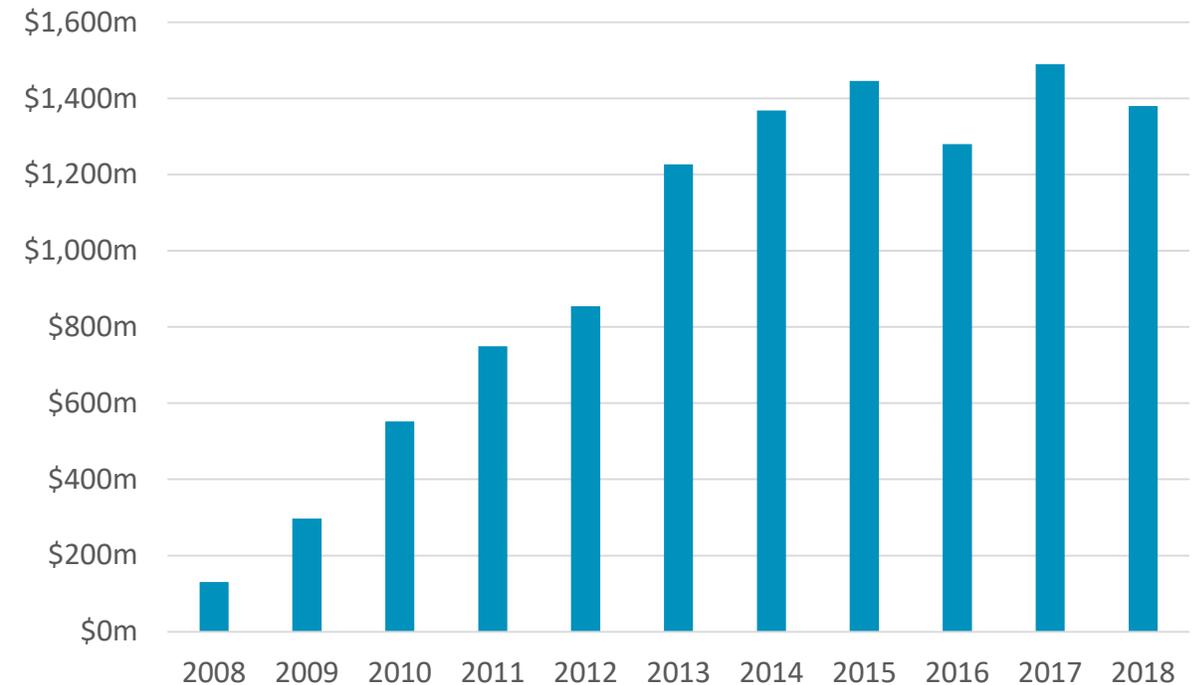
# Investment philosophy

## “Now is the time to be sowing, not harvesting”

- Rate of investment is discretionary and under Arm's control
- SoftBank has asked Arm to accelerate investments and to increase risk appetite
- All costs are expected to be financed from IP business' revenue streams
- During this accelerated investment phase, costs are expected to grow faster than revenues

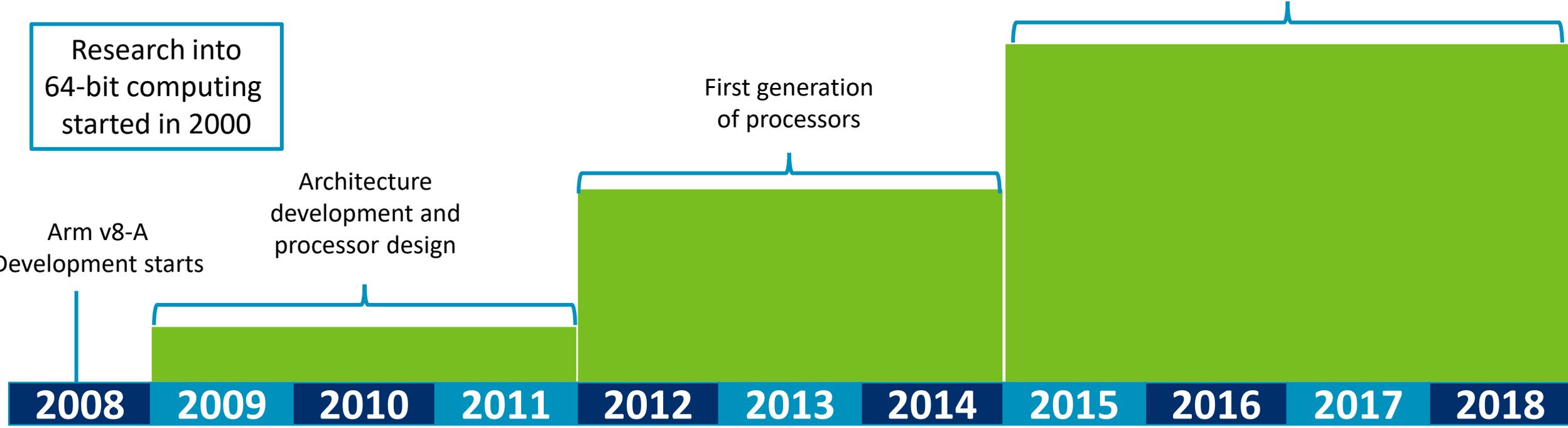
## Arm has \$1.4bn of net cash and no debt

Cash balance maintained as sale of Arm's stake in the Arm China Joint Venture was balanced with the acquisition of Treasure Data Inc. and Stream Technologies Ltd.



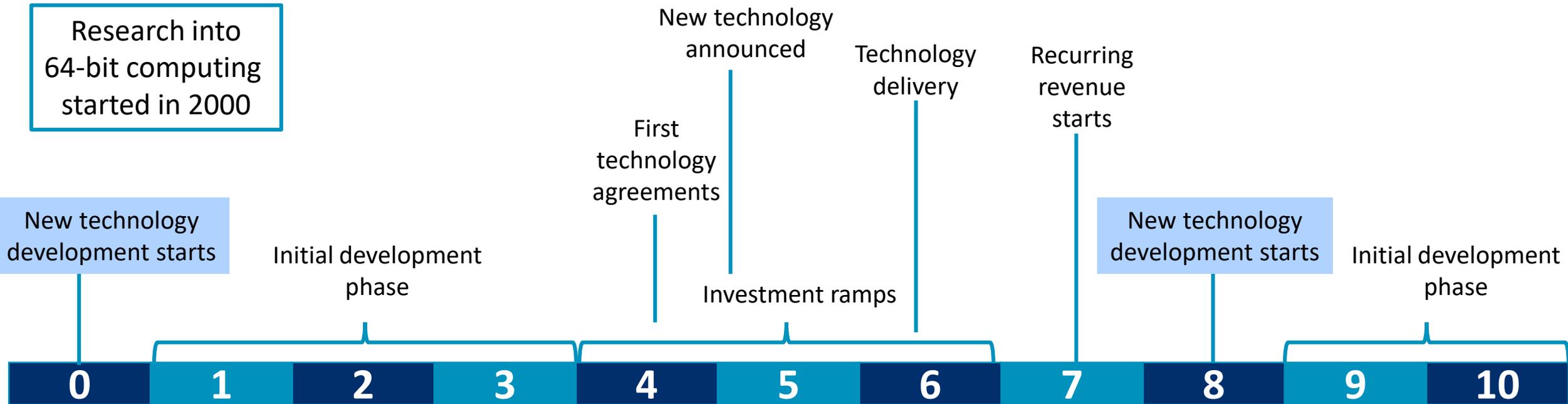
# Return on Investments – Arm v8-A case study

Arm incurs R&D costs many years before revenue starts



# Return on Investments – General case

Arm incurs R&D costs many years before revenue starts

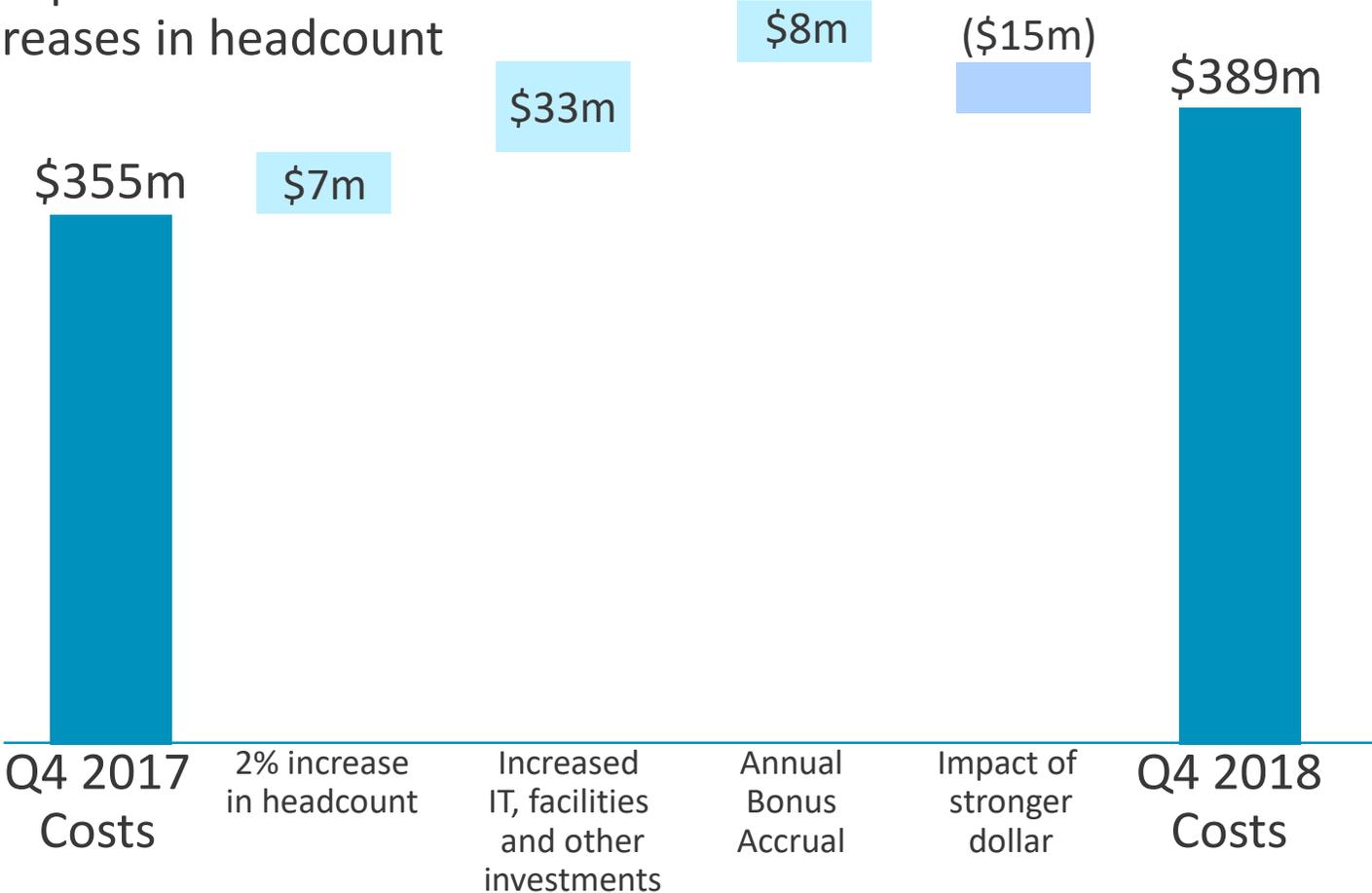


Revenue continues for many years after the investment phase, yielding high profits over time

# Investing in people, infrastructure to create new products

Costs are higher in 2018 as Arm expands R&D capability

Cost increases are expected to be consistent with increases in headcount



# Arm Investor Relations Contact

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## More content available on

- Arm's website: [arm.com/ir](https://arm.com/ir)
- SoftBank Group's website: [softbank.jp/en/corp/irinfo/](https://softbank.jp/en/corp/irinfo/)