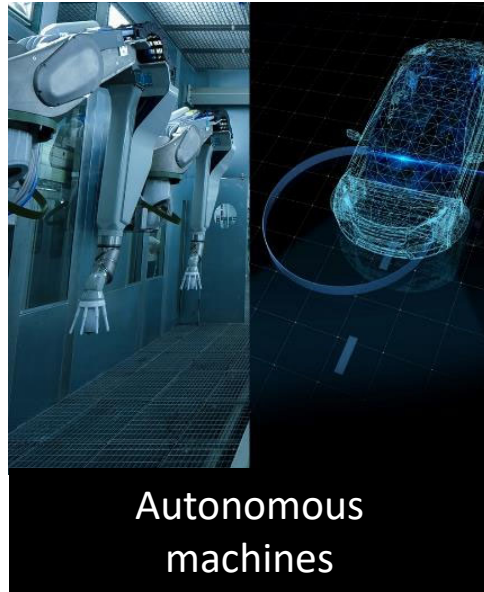# Arm Limited

Q2 2018 Roadshow Slides

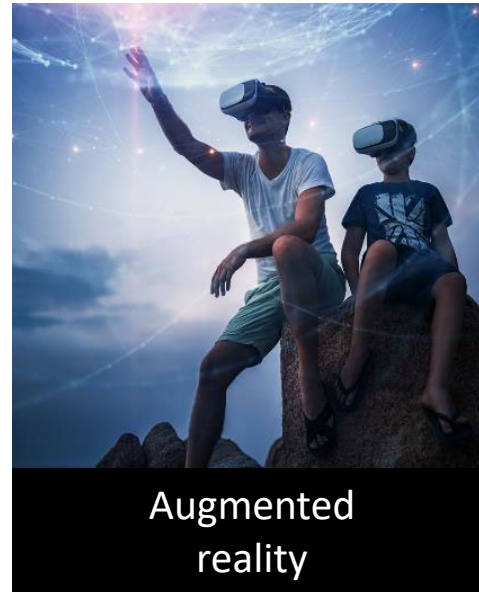Arm Limited is a subsidiary of SoftBank

arm

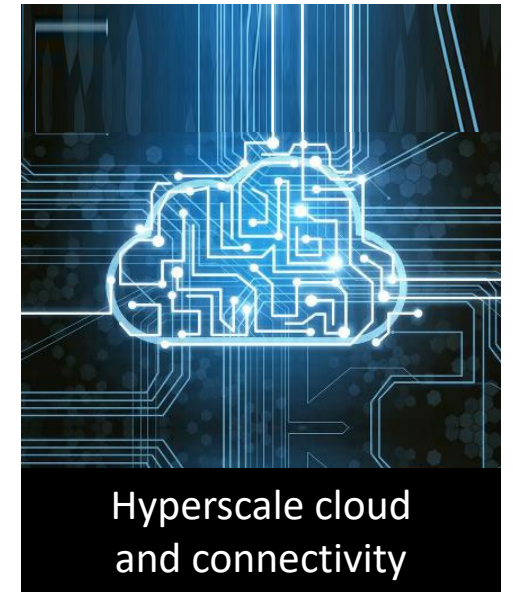# Technology trends that will redefine all industries

Artificial Intelligence in
every device
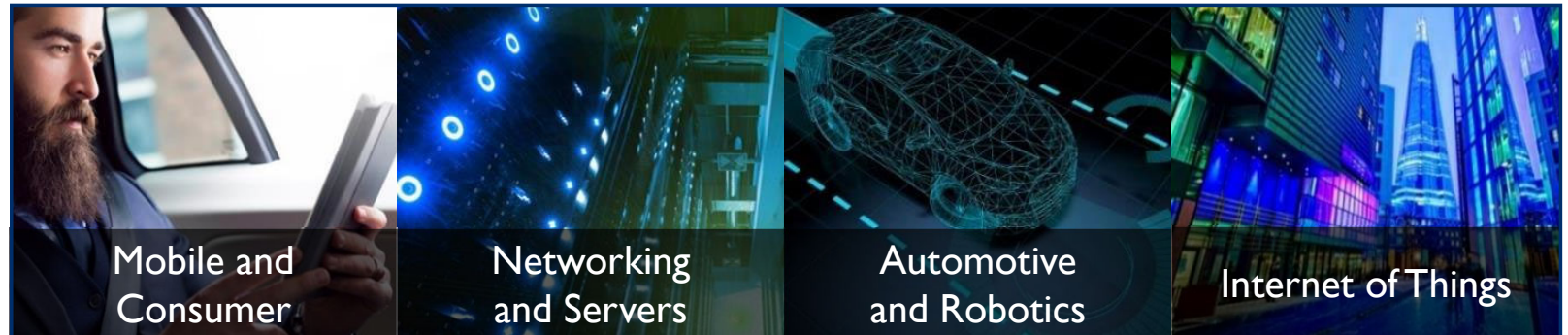
Autonomous
machines

Augmented
reality

Hyperscale cloud
and connectivity

🔒 Security and Privacy

arm

Arm defines the technology that will redefine all industries

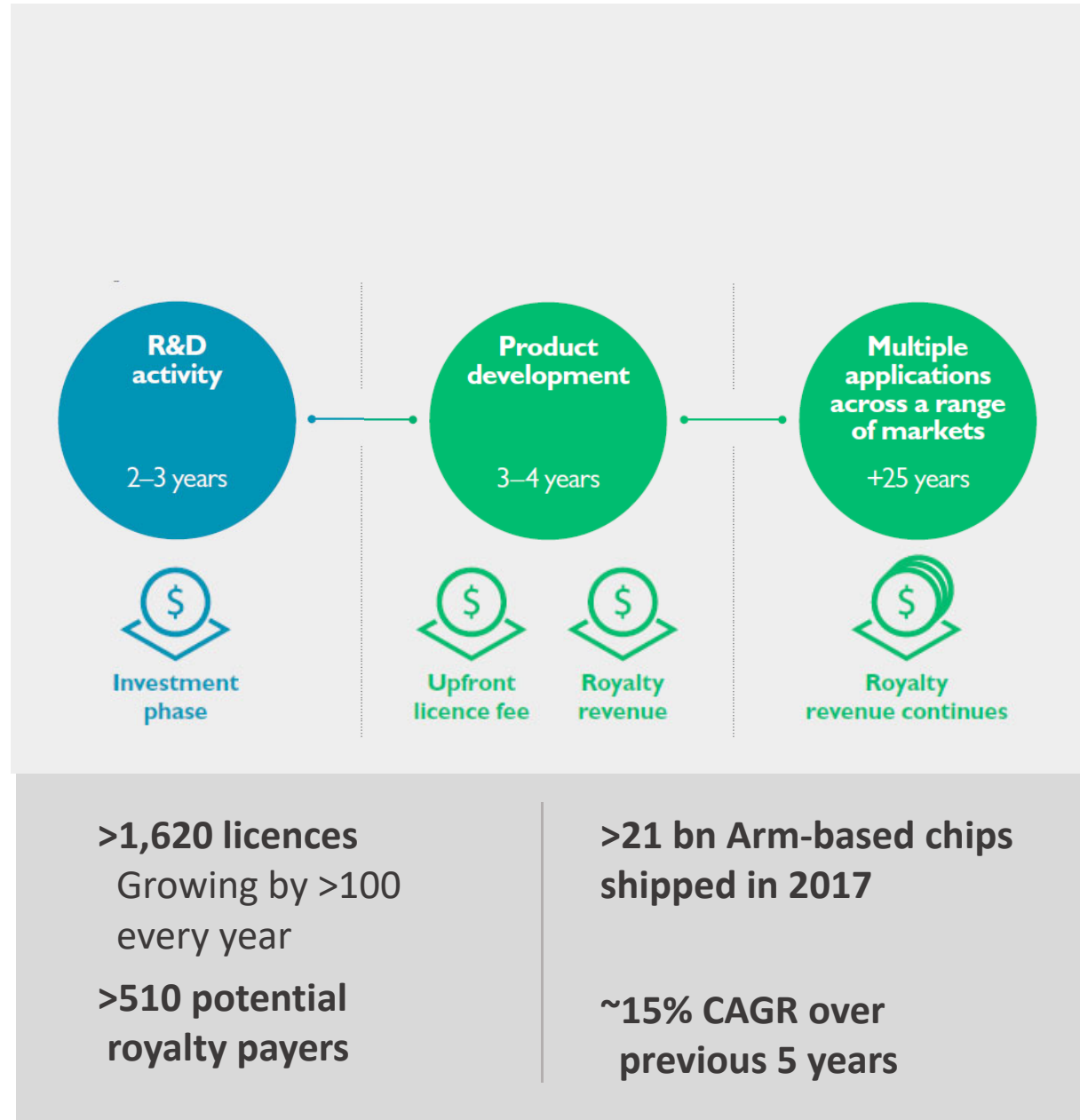|	Mobile and Consumer	Networking and Servers	Automotive and Robotics	Internet of Things
Artificial Intelligence in every device	✔	✔	✔	✔
Autonomous machines			✔	✔
Augmented reality	✔		✔	
Hyperscale cloud and connectivity		✔		✔
Security and Privacy	✔	✔	✔	✔

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

R&D activity
2–3 years

Product development
3–4 years

Multiple applications across a range of markets
+25 years

Investment phase

Upfront licence fee

Royalty revenue

Royalty revenue continues

>1,620 licences Growing by >100 every year

>510 potential royalty payers

>21 bn Arm-based chips shipped in 2017

~15% CAGR over previous 5 years
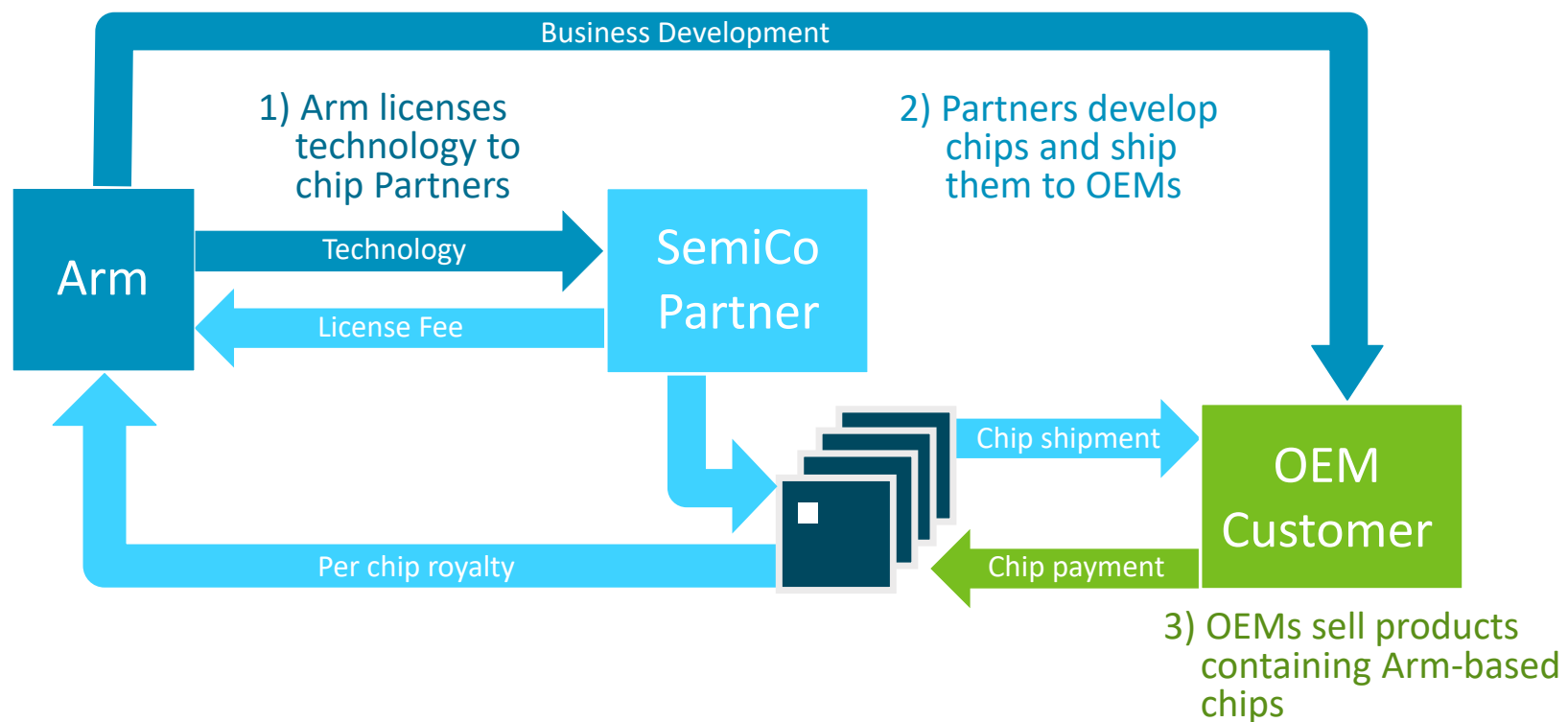
Arm's business model

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

$77bn
TAM 2026

- 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

$41bn
TAM 2026

- 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

$85bn
TAM 2026

- 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

arm

History of Arm

Joint venture between
Acorn Computers and Apple

Designed into first mobile
phones and then smartphones

Now all electronic devices can
use smart Arm technology

1990
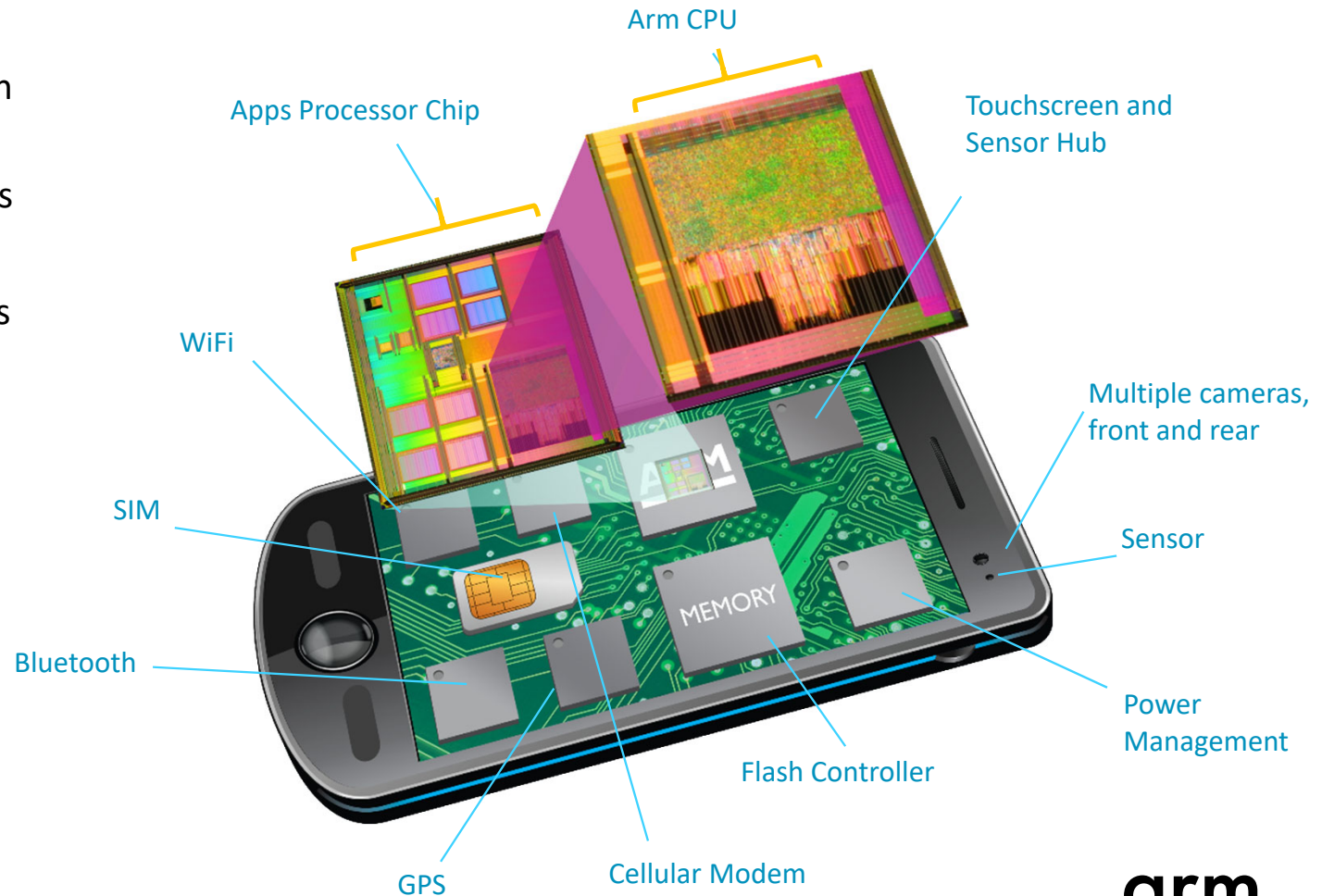
1993 onwards

Today

arm

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

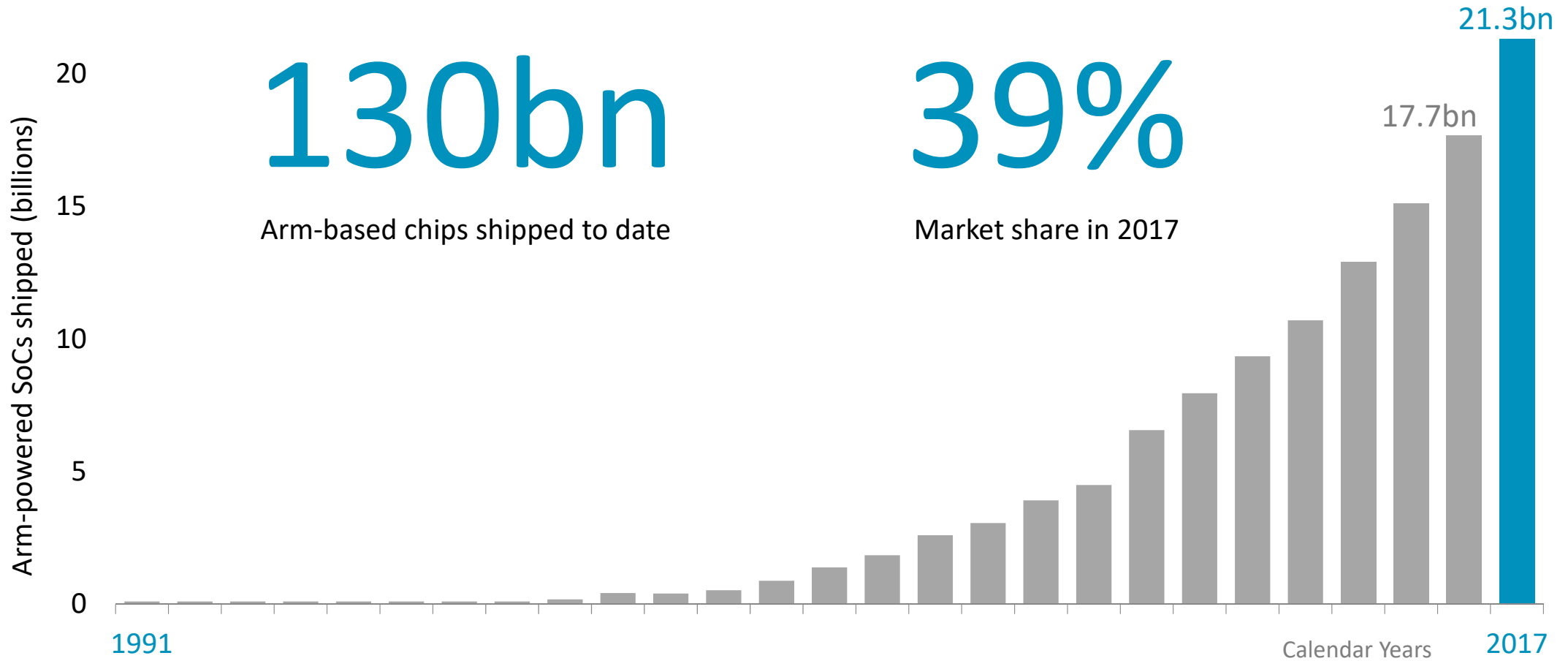When new functions are added to smartphones it creates opportunity for new Arm IP

Arm CPU

Apps Processor Chip

Touchscreen and Sensor Hub

WiFi

Multiple cameras, front and rear

SIM

Sensor

Bluetooth

Power Management

MEMORY

Flash Controller

GPS

Cellular Modem

arm

Arm-based chip shipments

130bn

Arm-based chips shipped to date

39%

Market share in 2017

21.3bn

17.7bn

Arm-powered SoCs shipped (billions)

20

15

10

5

0

1991

Calendar Years

2017

arm

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: 65% in 2017

Arm is gaining share within the "chips with processors" segment of the industry:
39% in 2017

Legend:
- Total industry*
- Chips with processors**
- ARM shipments

Y-axis: 0bn to 100bn; X-axis: 2007 to 2017
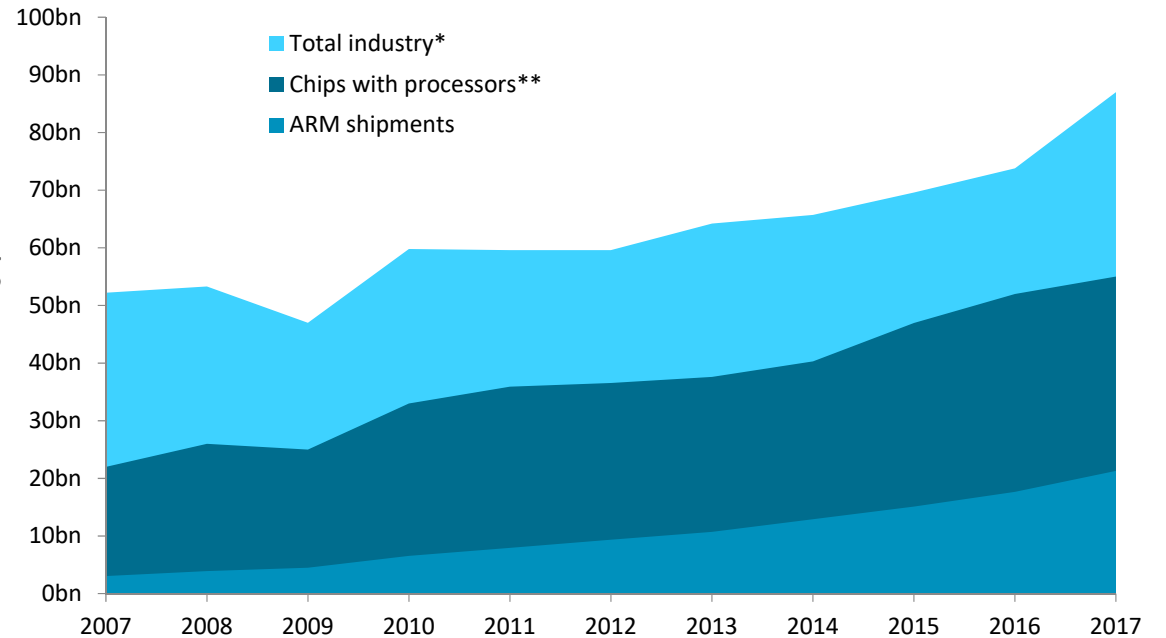
* Data source: WSTS, April 2018 and Arm,
  Industry volume excluding analog and memory

** Arm estimates

Calendar years

arm

From revenue to profits

FY 2017 Revenues	$m	£m	%revs
Licensing	618	455	33%
Royalty	1,087	819	60%
Software and Services	126	94	7%
Total	1,831	1,368	**100%**
Costs (£m)		1,043	
Adjusted EBITDA (£m)		**325**	
Operating Margin		24%	
Other expenses (£m)		180	
IFRS EBIT (£m)		**145**	

Over 95% of revenues earned in US dollars

Royalties are a growing proportion of revenues

Cost increase as Arm accelerates investment in R&D for future product developments

10% move in $/£ impacts profits by ~15% (forex impacts £ revenues *and* costs)

Operating margins will be lower than in recent periods as investments grow faster than revenues

Excludes amortisation of intangibles related to the acquisition of Arm by SoftBank

Financial numbers aligned with SoftBank reporting periods (01 April 2017 to 31 March 2018)

arm

Qtr. ending Sept. 2018 – Financial summary

Revenues ($m)	Q2 2017	Q2 2018	Growth
Licensing	123	124	1%
Royalty	271	285	5%
Software and Services	28	47	68%
Total ($m)	422	456	8%
Revenues (£m)	319	345	8%
COGS (£m)	21	27	26%
R&D (£m)	130	167	28%
SG&A (£m)	95	133	40%
Costs (£m)	246	327	33%
Adjusted EBITDA (£m)	73	18	-75%
Depreciation & amortisation	16	20	25%
Other operating (income) expenses (£m)	22	(87)	-
IFRS EBIT (£m)	35	85	146%

Licensing can fluctuate quarter to quarter. In Q2, lower revenues are primarily due to contract delays as Arm China was established.
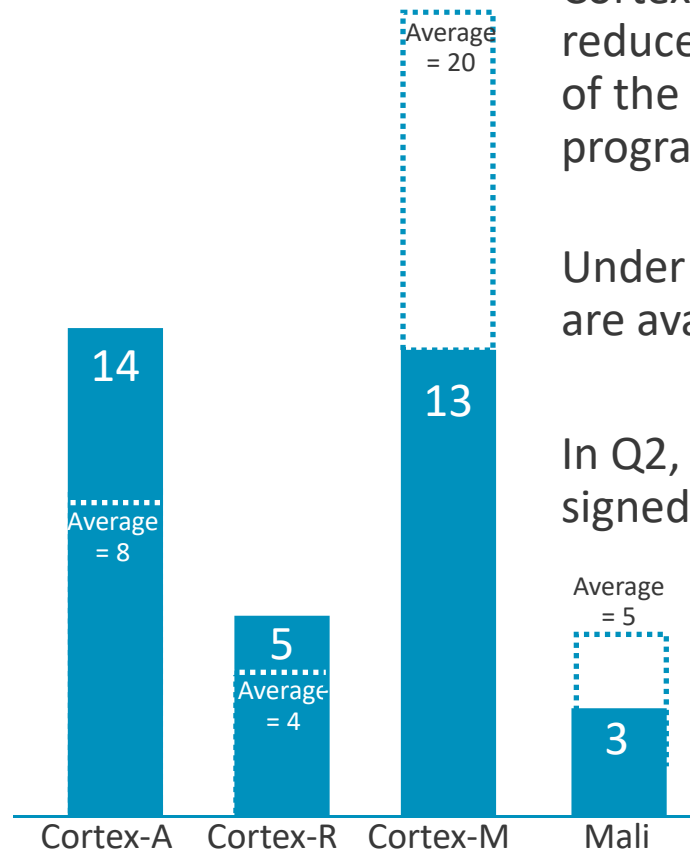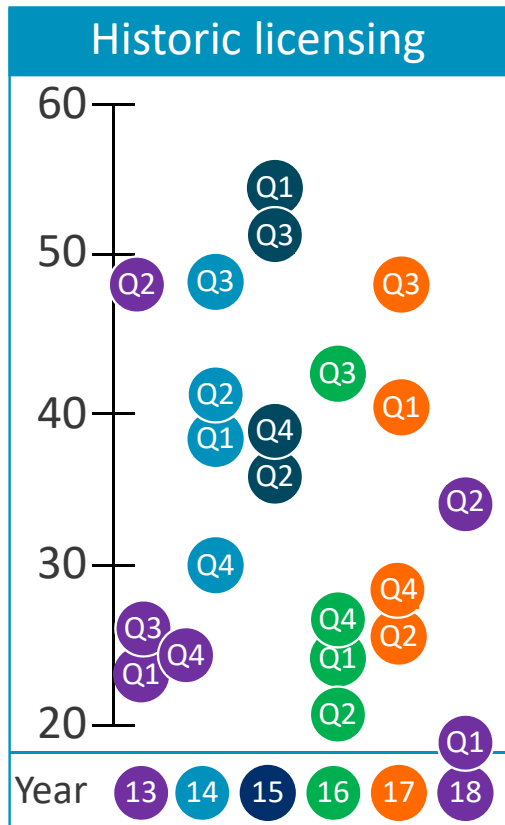
Royalty revenue growth driven by market share gains and increasing royalty per chip

Includes $12m from recent acquisitions of Treasure Data and Stream Technologies

Includes FlexPot which previously fell into Q3

Additional consideration related to Arm China JV

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Q2 Licensing: 35 is in the normal range

Historic licensing

The number of licenses for Cortex-M processors has been reduced since the introduction of the DesignStart Pro (DS Pro) program in June 2017.

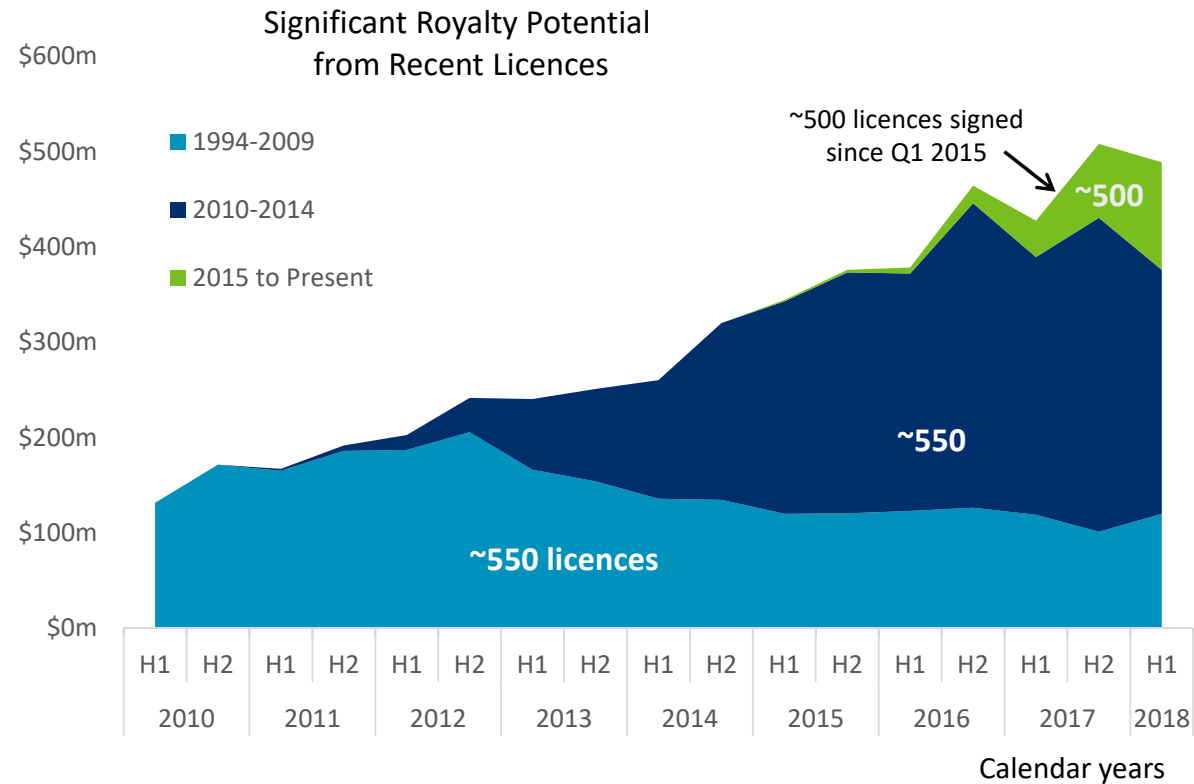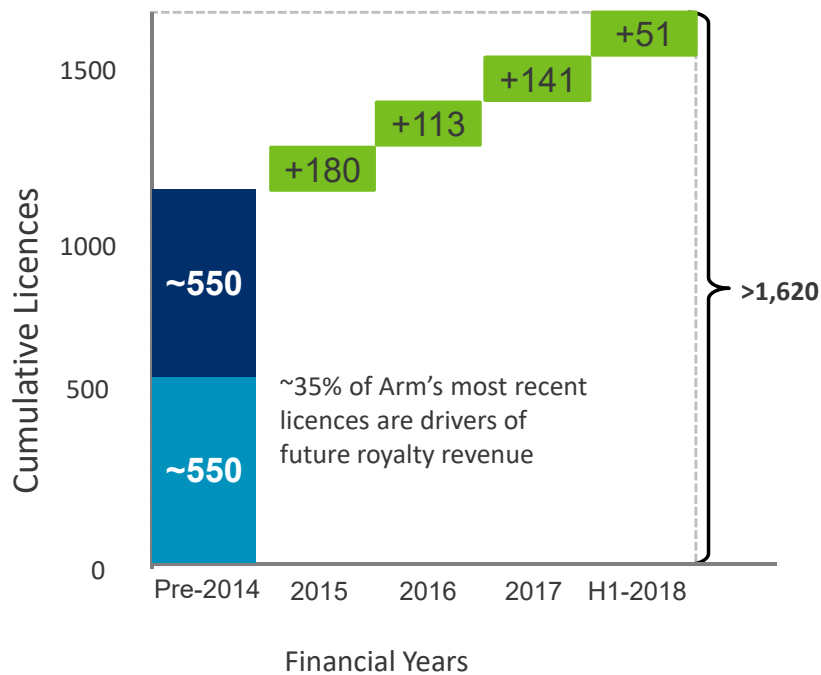Under DS Pro Cortex-M processors are available for no upfront fee.

In Q2, 65 DS pro licenses were signed for Cortex-M processors
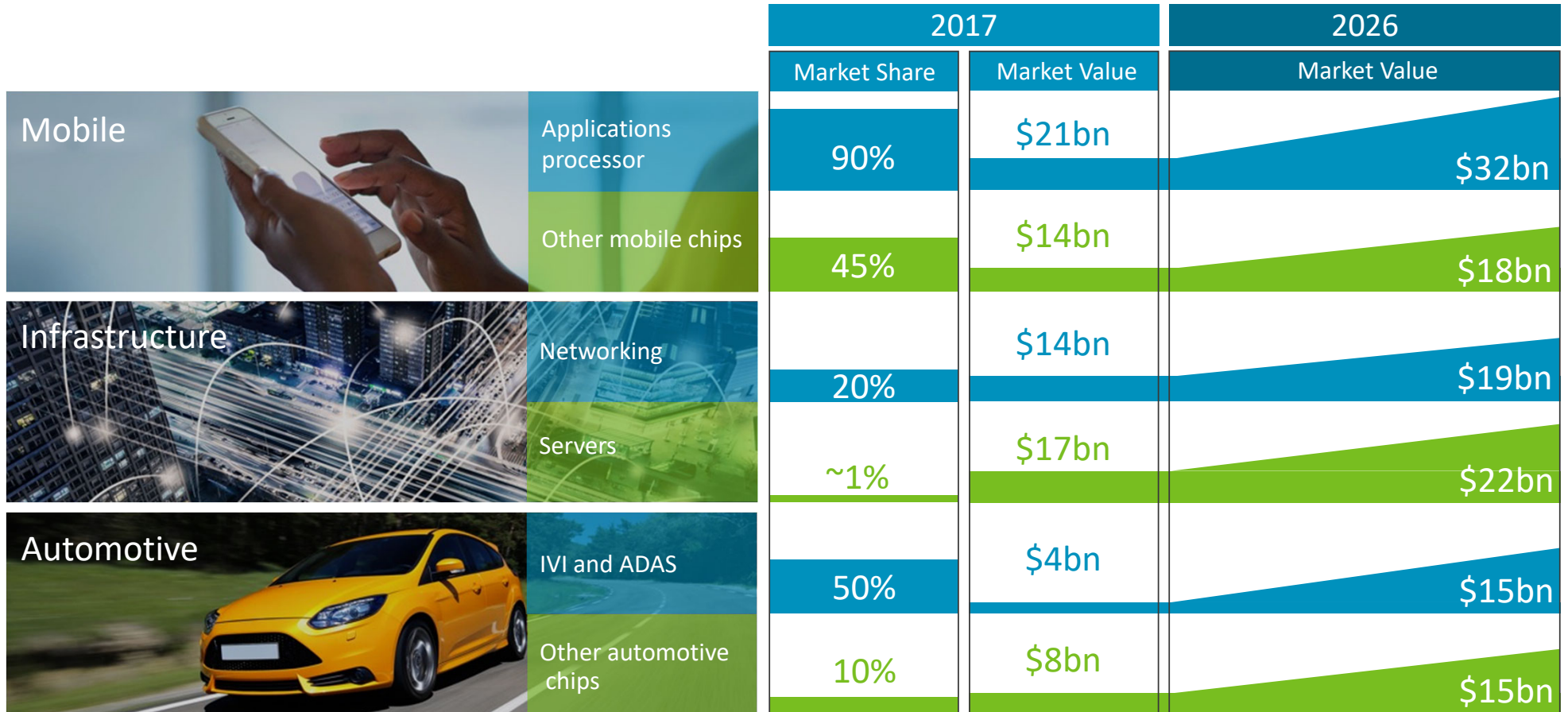
arm

Licensing enables future royalties

Arm signed 51 licences H1 2018

Arm's current royalty revenues are derived from licences signed many years ago
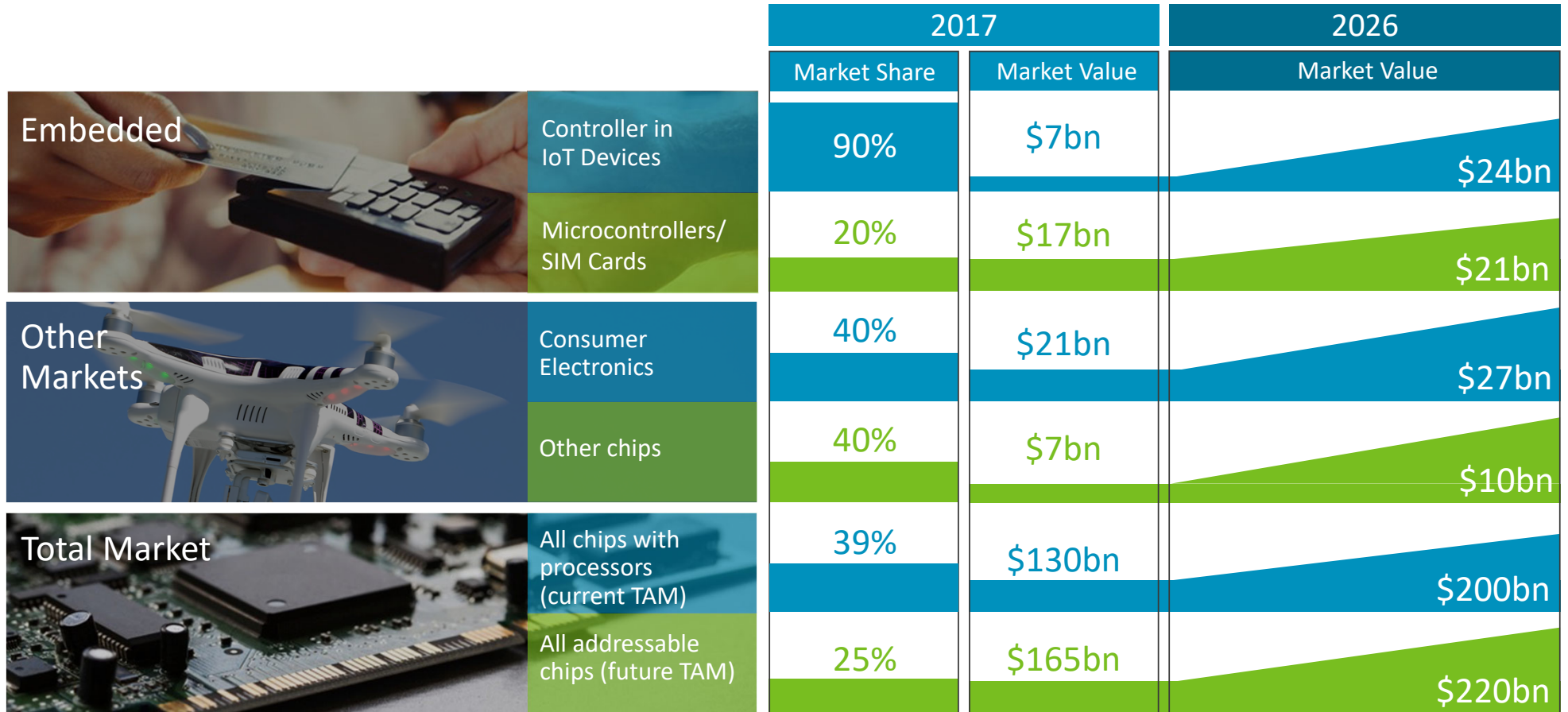
Growing base yields royalty revenues over long period

~35% of Arm's most recent licences are drivers of future royalty revenue

>1,620

Significant Royalty Potential from Recent Licences

~500 licences signed since Q1 2015

Calendar years

Arm's expanding opportunity

		2017		2026
		Market Share	Market Value	Market Value
Mobile	Applications processor	90%	$21bn	$32bn
	Other mobile chips	45%	$14bn	$18bn
Infrastructure	Networking	20%	$14bn	$19bn
	Servers	~1%	$17bn	$22bn
Automotive	IVI and ADAS	50%	$4bn	$15bn
	Other automotive chips	10%	$8bn	$15bn

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Arm's expanding opportunity

		2017		2026
		Market Share	Market Value	Market Value
Embedded	Controller in IoT Devices	90%	$7bn	$24bn
	Microcontrollers/ SIM Cards	20%	$17bn	$21bn
Other Markets	Consumer Electronics	40%	$21bn	$27bn
	Other chips	40%	$7bn	$10bn
Total Market	All chips with processors (current TAM)	39%	$130bn	$200bn
	All addressable chips (future TAM)	25%	$165bn	$220bn

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Establishing Arm China JV in Fiscal Q1 2018

Building a bigger business; built on strong foundations

>150
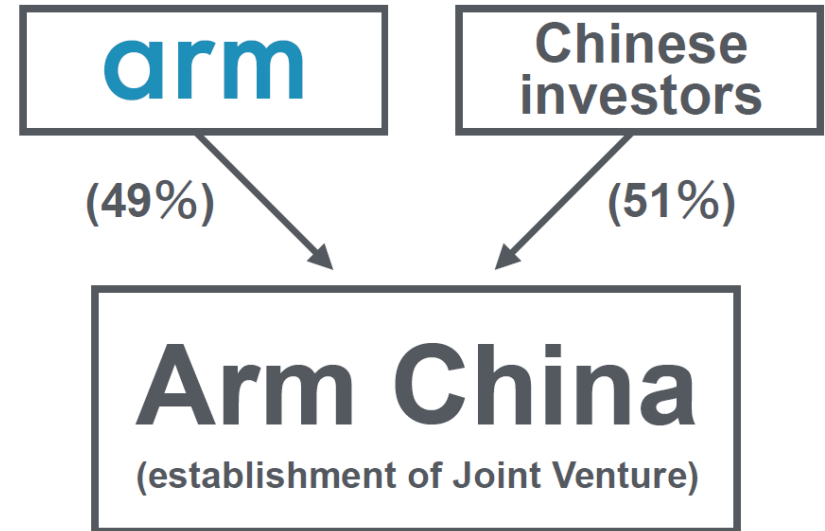
Licensees

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 — Chinese investors

(49%)   (51%)

Arm China
(establishment of Joint Venture)

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

arm

Establishing Arm China JV in Fiscal Q1 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

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

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 or historical contracts resulted in a delay to contract signing in the H1 2018

As expected, licensing started to recover in Q2 and expected to get back to BAU by year end

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Arm's current business
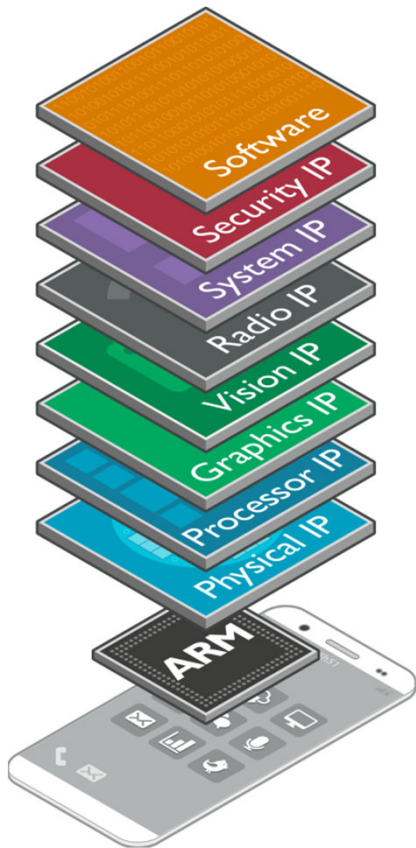
Arm develops **intellectual property** (IP) blocks which are used in silicon chips

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**

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Accelerating investment to increase share gains
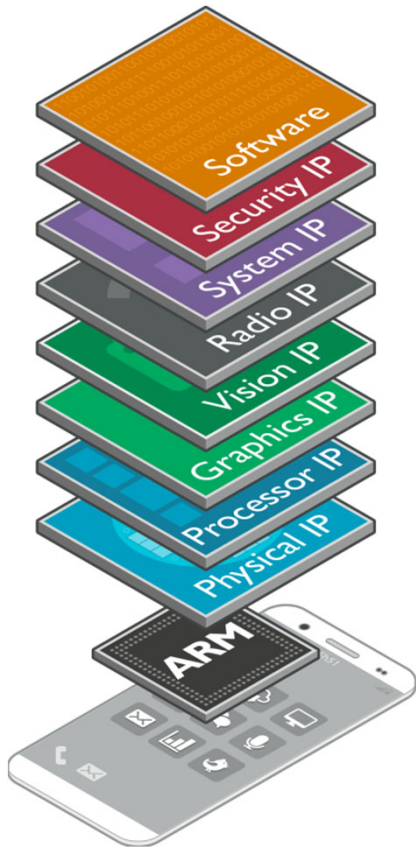
Generating profits and cash to be reinvested

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

Arm Pelion Partners

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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 KEPKO, the largest electric power utility in South Korea

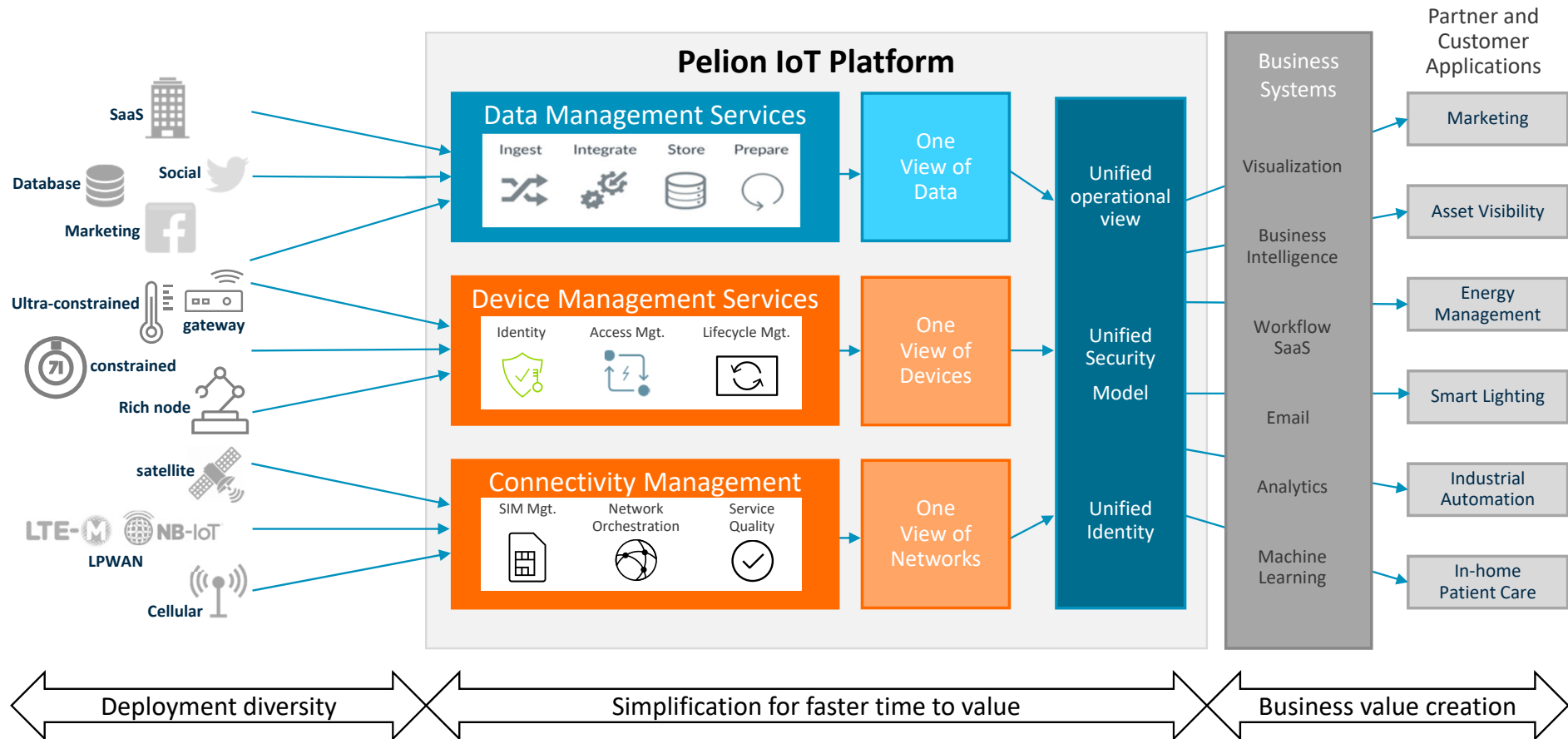- ✦ China Unicom partnership for China based services

800+
customers

140+
Ecosystem partners

350k+
Developers

arm

Pelion IoT Platform Overview

Partner and Customer Applications

Pelion IoT Platform

SaaS
Database · Social
Marketing

Ultra-constrained · gateway
constrained
Rich node

satellite
LTE-M · NB-IoT
LPWAN
Cellular

Data Management Services
Ingest · Integrate · Store · Prepare

Device Management Services
Identity · Access Mgt. · Lifecycle Mgt.

Connectivity Management
SIM Mgt. · Network Orchestration · Service Quality

One View of Data
One View of Devices
One View of Networks

Unified operational view
Unified Security Model
Unified Identity

Business Systems
Visualization
Business Intelligence
Workflow SaaS
Email
Analytics
Machine Learning

Marketing
Asset Visibility
Energy Management
Smart Lighting
Industrial Automation
In-home Patient Care

Deployment diversity — Simplification for faster time to value — Business value creation

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Pelion Connectivity Management

Single pane of glass for easy connectivity management

One simple bill for global connectivity usage

Zero-touch onboarding of devices

Support for any network - LoRa, cellular, satellite

Built-in security, network resilience

GSMA eUICC compliant

Choice of networks

Network security

Unified view
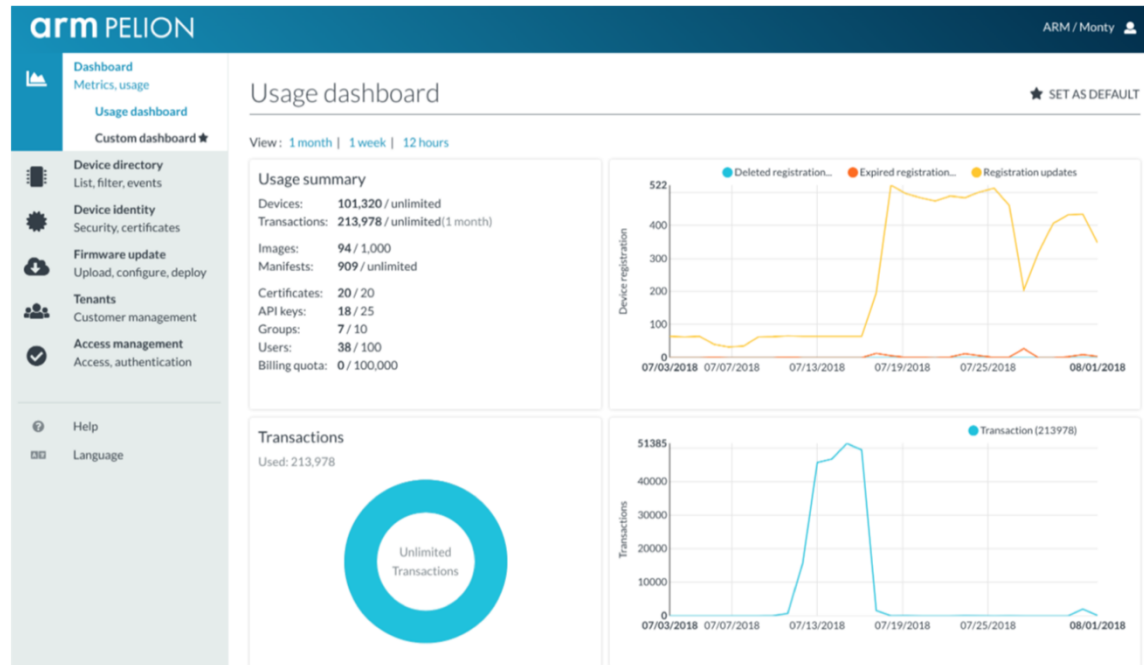
API availability

Granular billing

Pelion Device Management

Secure identity on-boarding, connection and lifecycle management services for all IoT devices

One simple portal interface for all IoT device management services

Support for any device, any vendor, and any cloud

Built-in security from device to cloud
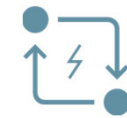

Secure asset and identity provisioning

Energy efficient connectivity

Endpoint and gateway device management

Firmware deployment and update campaigns

Endpoint / Gateway compute and access management

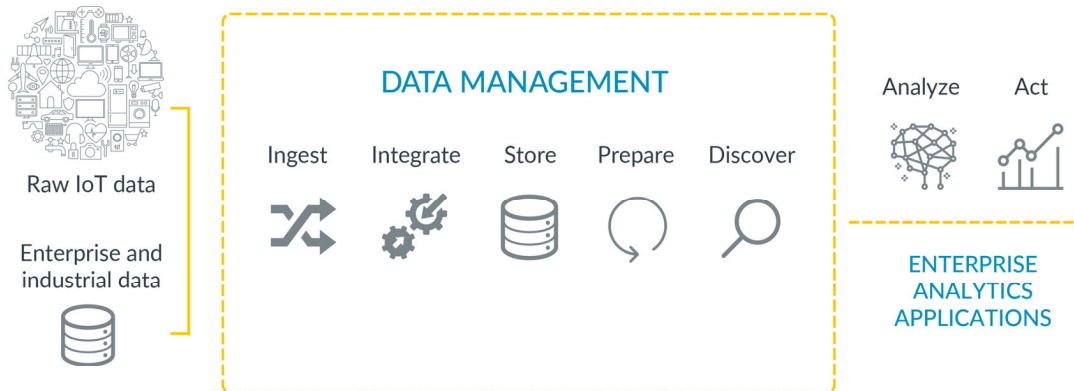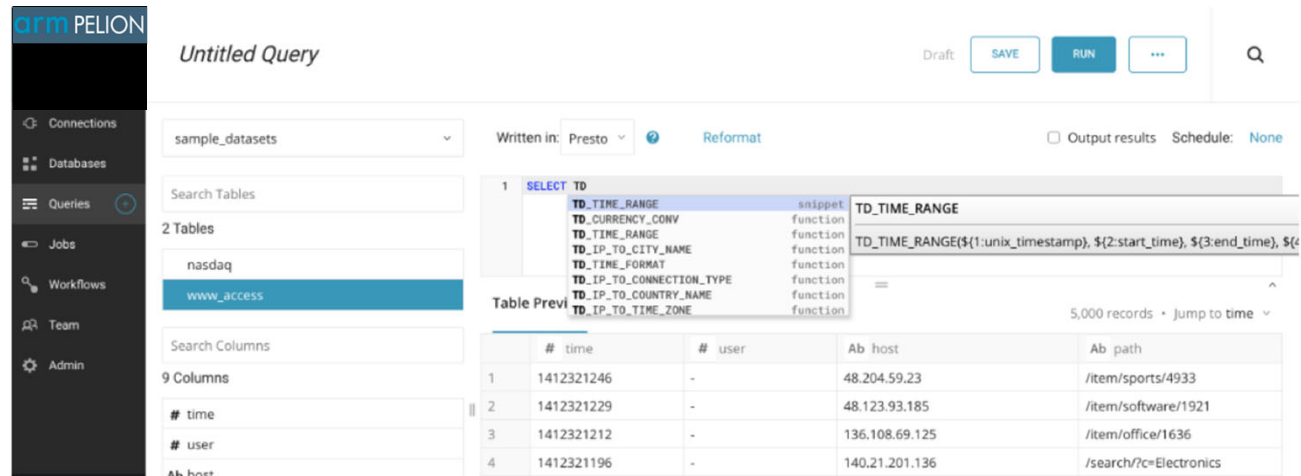**arm**

Pelion Data Management

Collect and unify diverse data from heterogeneous devices, enterprise data and 3rd party sources

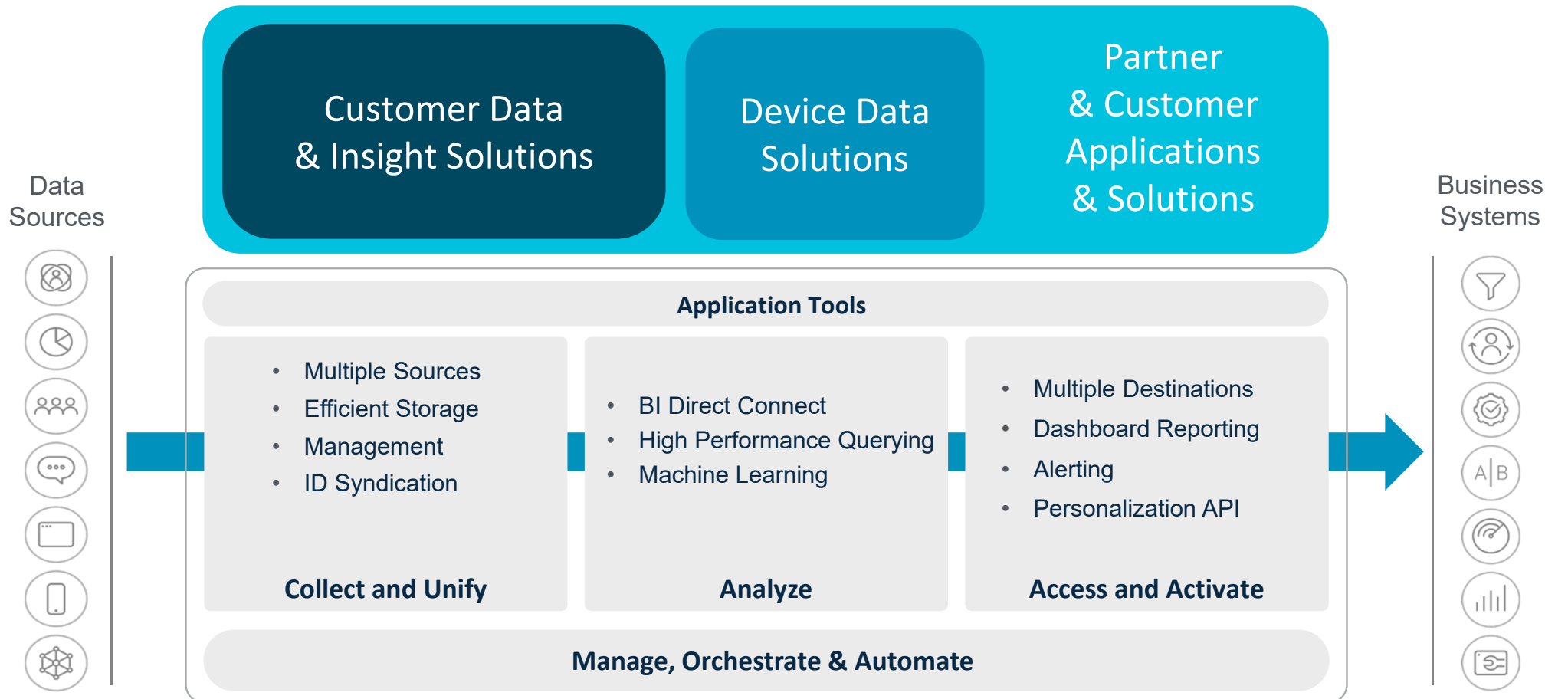Security in trusted data - encryption in transition and at rest, control permissions

Rich ecosystem of data integrations

Fully managed solution that processes over 30 trillion records/day

Reduces the complexity with iteration and exploration of data

Pelion Data Management

Data Sources

Business Systems

Customer Data & Insight Solutions	Device Data Solutions	Partner & Customer Applications & Solutions

Application Tools

- Multiple Sources
- Efficient Storage
- Management
- ID Syndication

Collect and Unify

- BI Direct Connect
- High Performance Querying
- Machine Learning

Analyze

- Multiple Destinations
- Dashboard Reporting
- Alerting
- Personalization API

Access and Activate

Manage, Orchestrate & Automate

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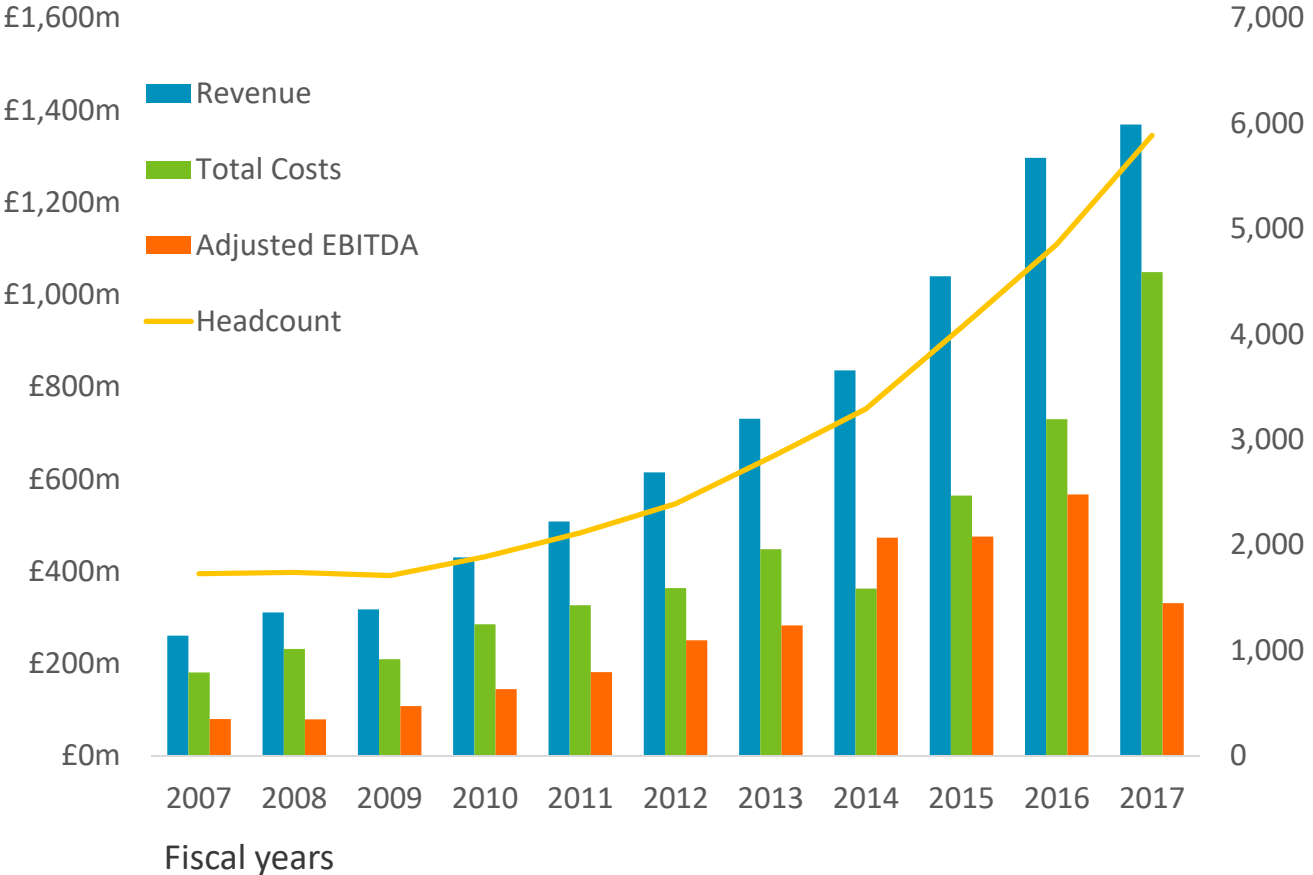
Until 2016 revenues grew faster than costs as Arm constrained investment in R&D to enable increasing profits

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

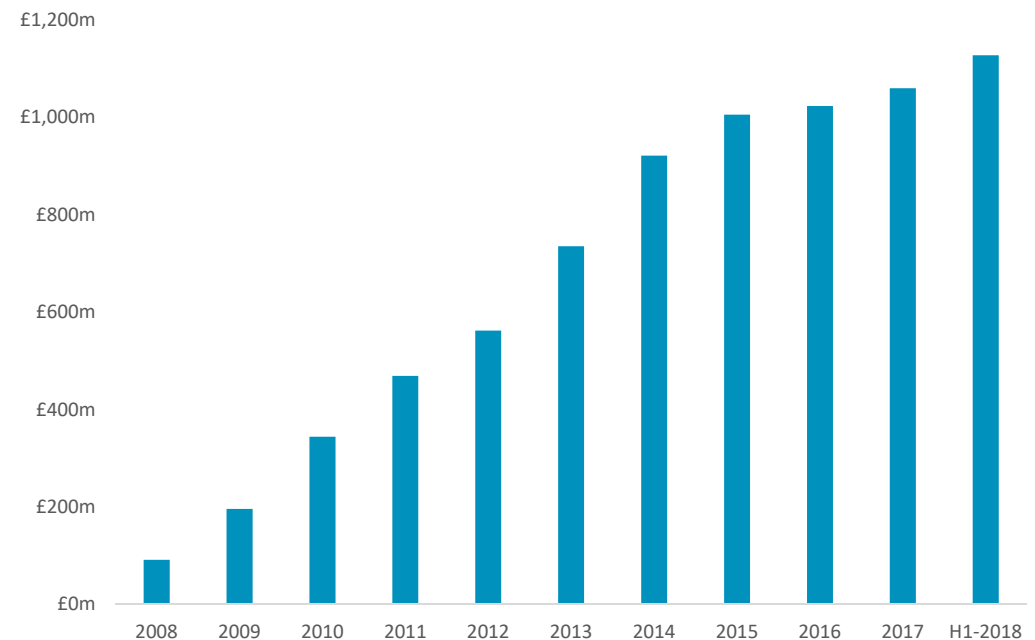This should yield even greater profits in the future

arm

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
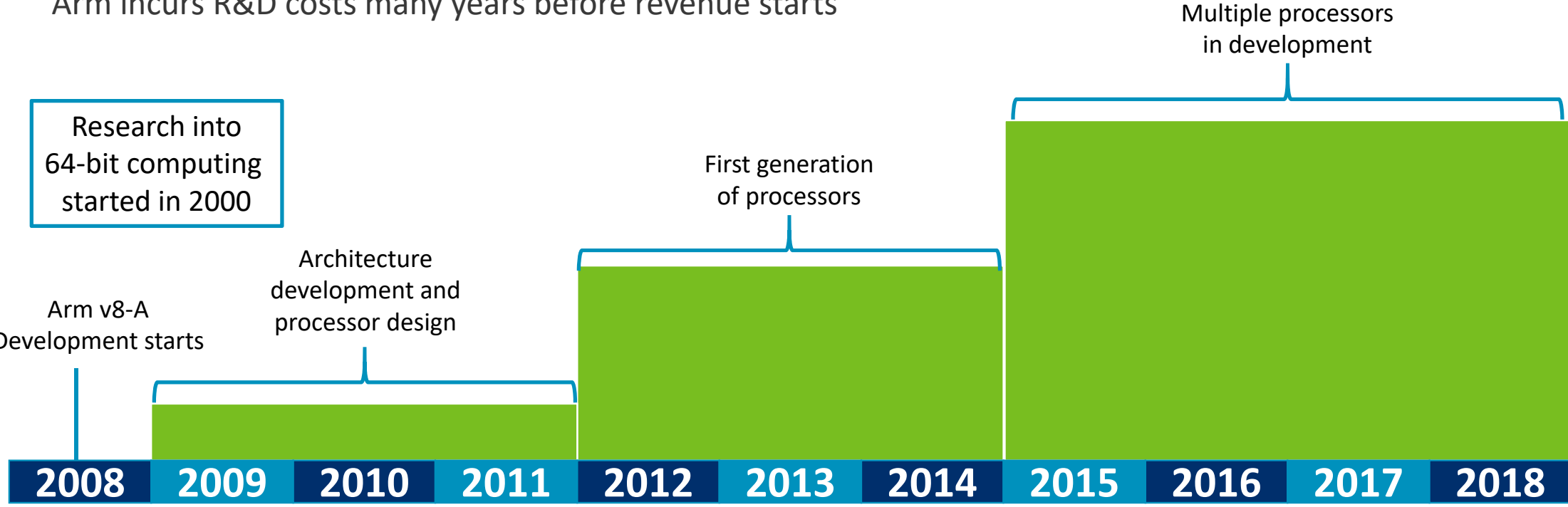
Arm has over £1.1bn of net cash and no debt

Increase in H1 2018 is due to sale of Arm's stake in the Arm China Joint Venture, net of the acquisition of Treasure Data Inc. and Stream Technologies Ltd.

© Arm 2018

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Return on Investments – Arm v8-A case study

Arm incurs R&D costs many years before revenue starts

Multiple processors
in development

Research into
64-bit computing
started in 2000

First generation
of processors

Architecture
development and
processor design

Arm v8-A
Development starts

| 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |

arm

Return on Investments – General case

Arm incurs R&D costs many years before revenue starts

Research into 64-bit computing started in 2000

New technology announced

Technology delivery

Recurring revenue starts

First technology agreements

New technology development starts

Initial development phase

Investment ramps

New technology development starts

Initial development phase

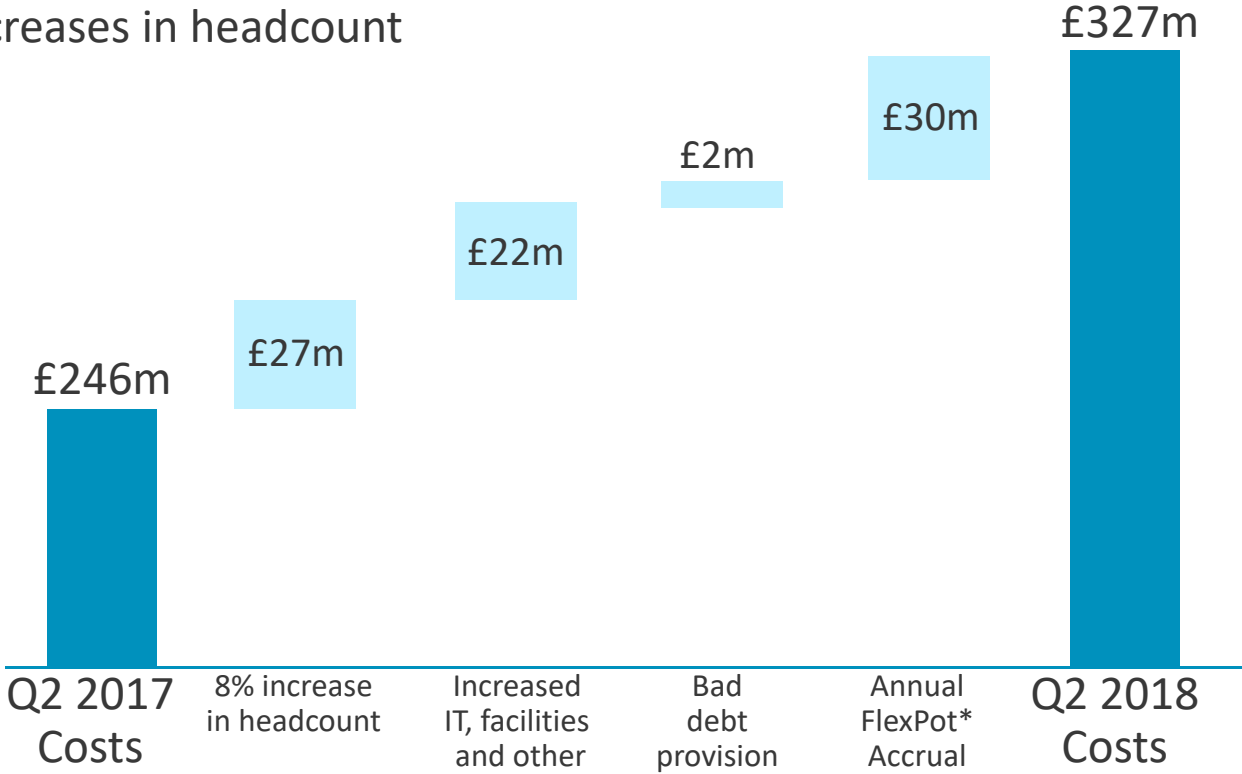| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
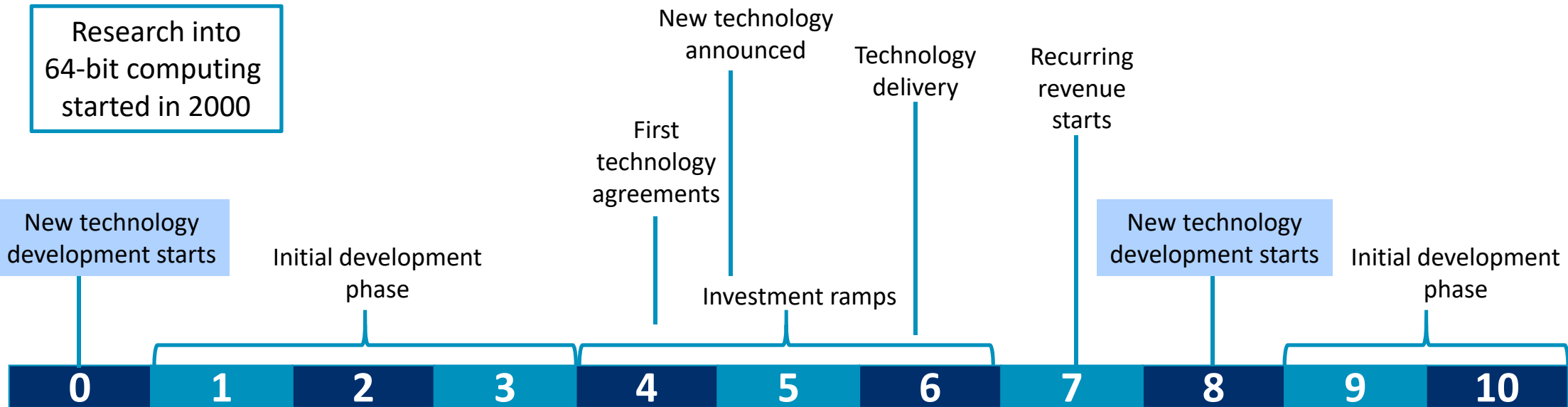
Revenue continues for many years after the investment phase, yielding high profits over time

arm

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

£327m

£30m

£2m

£22m

£27m

£246m

Q2 2017
Costs

8% increase
in headcount

Increased
IT, facilities
and other
investments

Bad
debt
provision

Annual
FlexPot*
Accrual

Q2 2018
Costs

*Part of Arm employee remuneration (for individual development)
In 2017 this accrual was in Q3.

arm

Arm Investor Relations Contact

Contact	Title	Contact
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More content available on
- Arm's website: https://www.arm.com/company/investors
- SoftBank Group's website: https://group.softbank/en/corp/irinfo/

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