Arm Holdings 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

<table>
<thead>
<tr>
<th>Artificial Intelligence in every device</th>
<th>Mobile and Consumer</th>
<th>Networking and Servers</th>
<th>Automotive and Robotics</th>
<th>Internet of Things</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
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<tr>
<td>Autonomous machines</td>
<td>✓</td>
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<tr>
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<td>✓</td>
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<td>Hyperscale cloud and connectivity</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Security and Privacy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tbody>
</table>
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

>1,550 licences
Growing by >100 every year
>500 potential royalty payers

>20 bn Arm-based chips shipped in past year
~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

Business Development

1) Arm licenses technology to chip Partners

2) Partners develop chips and ship them to OEMs

3) OEMs sell products containing Arm-based chips
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

**Application Processors**
- 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**
- 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**
- Automotive, white-goods, wearables, smart devices in industrial and utilities
- Microcontrollers, smartcards, embedded connectivity chips
- 200 companies have licenced Arm processors for use in embedded intelligent devices

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$55bn TAM 2025

$38bn TAM 2025

$85bn TAM 2025
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

120bn
Arm-based chips shipped to date

34%
Market share in 2016

17.7bn
Arm-based chips shipped in 2016

15.1bn
Arm-based chips shipped to date
Arm's opportunity continues to broaden

Semiconductor industry continues to grow:
4% by volume, 1% by value over past five years

Proportion of chips with processors is increasing:
70% in 2016

Arm is gaining share within the “chips with processors” segment of the industry:
34% in 2016

* Data source: WSTS, March 2017 and Arm, Industry volume excluding analog and memory
** Arm estimates
From revenue to profits

<table>
<thead>
<tr>
<th>FY 2016 Revenues</th>
<th>$m</th>
<th>£m</th>
<th>%revs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensing</td>
<td>601</td>
<td>437</td>
<td>34%</td>
</tr>
<tr>
<td>Royalty</td>
<td>974</td>
<td>751</td>
<td>59%</td>
</tr>
<tr>
<td>Software and Services</td>
<td>114</td>
<td>83</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,689</td>
<td>1,271</td>
<td>100%</td>
</tr>
</tbody>
</table>

| Costs (£m)             | 667 |
| **Adjusted EBITDA (£m)** | 604 |

| Operating Margin       | 48% |
| Other expenses (£m)    | 292 |
| IFRS EBIT (£m)         | 312 |

- 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 are lower than in recent periods as investments grow faster than costs
- Excludes amortisation of intangibles related to the acquisition of Arm by SoftBank

Financial numbers aligned with SoftBank reporting periods (01 April 2016 to 31 March 2017)
### Qtr. ending December 2017 – Financial summary

<table>
<thead>
<tr>
<th>Revenues ($m)</th>
<th>Q3 2016</th>
<th>Q3 2017</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensing</td>
<td>229</td>
<td>190</td>
<td>-17%</td>
</tr>
<tr>
<td>Royalty</td>
<td>248</td>
<td>297</td>
<td>20%</td>
</tr>
<tr>
<td>Software and Services</td>
<td>31</td>
<td>33</td>
<td>6%</td>
</tr>
<tr>
<td>Total ($m)</td>
<td>508</td>
<td>520</td>
<td>2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revenues (£m)</th>
<th>Q3 2016</th>
<th>Q3 2017</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (£m)</td>
<td>392</td>
<td>390</td>
<td>-1%</td>
</tr>
</tbody>
</table>

- COGS (£m): 12 → 21, 75%
- R&D (£m): 92 → 154, 67%
- SG&A (£m): 72 → 122, 69%
- Costs (£m): 176 → 297, 69%
- Adjusted EBITDA (£m): 216 → 93, -57%
- Depreciation & amortisation: 13 → 17, 31%
- Other operating expenses (£m): -11 → 34, -
- IFRS EBIT (£m): 214 → 42, -80%

License can fluctuate quarter to quarter.
- Q1 up 22%; Q2 down 17%; Q3 up 54% seq.

Royalty revenue growth driven by market share gains and increasing royalty per chip.

Nearly 100% of Arm’s revenues are in USD.
- 40% of costs are in USD and 40% in GBP.

25% increase in total headcount.

New remuneration schemes post acquisition.

Currency fluctuations lead to mark-to-market revaluation of long-term contracts.

YTD IFRS EBIT margin 16% excluding impact of exchange rate fluctuations.
Licensing enables future royalties

Arm signed 115 licences YTD 2017

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

Growing base yields royalty revenues over long period

Significant Royalty Potential from Recent Licences

~430 licences

~50% of Arm’s most recent licences are drivers of future royalty revenue

~430 licences signed since Q1 2013

~670 licences signed since Q1 2013
Qtr. ending December 2017* – Progress against strategy

Licences signed for broad range of end markets

- 17 Cortex-M: Motor control, IoT and security
- 19 Cortex-A: for AI, consumer, automotive
- 7 Mali IP: for mobile and consumer

Reported Royalty Units Growing

- +16% in Q3 2017
- 5.7bn

Key market performance (growth in reported royalty units)

- Mobile: Q3 2017 +5%
- Microcontrollers and Smartcards: Q3 2017 +35%
- Enterprise Networking: Q3 2017 +30%

Investing in Future Technology

- Technical Headcount: Q3 2017 +25%
- Total Headcount: Q3 2017 +25%
- 1,031 other employees
- 4,677 Technical

* SoftBank’s financial year runs from April 01 to March 31.
### Arm’s expanding opportunity

<table>
<thead>
<tr>
<th>Segment</th>
<th>Share 2016</th>
<th>TAM 2016</th>
<th>TAM 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Application Processors</td>
<td>90%</td>
<td>$20bn</td>
<td>$30bn</td>
</tr>
<tr>
<td>Networking Infrastructure</td>
<td>17%</td>
<td>$13bn</td>
<td>$18bn</td>
</tr>
<tr>
<td>Servers</td>
<td>&lt;1%</td>
<td>$15bn</td>
<td>$20bn</td>
</tr>
<tr>
<td>Embedded Intelligence</td>
<td>30%</td>
<td>$23bn</td>
<td>$40bn</td>
</tr>
</tbody>
</table>

* Including smartphones, tablets and laptops.
† Including microcontrollers, smartcards and non-mobile connectivity. Excludes automotive.

* 2016 Arm Market Share by Volume
† Total Available Market (TAM)
Arm’s expanding opportunity

<table>
<thead>
<tr>
<th>Automotive Application Processors and Automotive Controllers</th>
<th>Share 2016*</th>
<th>TAM 2016</th>
<th>TAM 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10%</td>
<td>$11bn</td>
<td>$17bn</td>
</tr>
<tr>
<td>Other Mobile Chips</td>
<td>45%</td>
<td>$14bn</td>
<td>$18bn</td>
</tr>
<tr>
<td>Consumer Electronics</td>
<td>35%</td>
<td>$20bn</td>
<td>$25bn</td>
</tr>
<tr>
<td>Chips into Other Markets</td>
<td>40%</td>
<td>$7bn</td>
<td>$10bn</td>
</tr>
</tbody>
</table>

* 2016 Arm Market Share by Volume
† Total Available Market (TAM)
Arm’s opportunity in mobile and consumer
Continued growth from advanced technology and new form factors

Growth has been driven by advanced Arm technologies

Consumers pay a premium for performance and features

Investment in smartphones has led to new form factors

Arm v7-A
Arm v8-A
Mali graphics
High core count

$60 of Arm-addressable chips in the latest high-end smartphones
Arm’s opportunity in automotive

Functional safety, consolidation, partitioning, performance, power, cost

- Autonomous driving, ADAS, Cluster, Connectivity
- Powertrain, chassis
- Body electronics, sensors, actuators, communications
Arm’s opportunity in servers
Targeting 25% share (~1% share today)

Arm processors are suitable for >50% of data centre workloads

- Search and Indexing
- High-performance storage
- Machine learning and big data
- Web servers, database servers
- Email, PaaS services

Arm v8-A selected for High Performance Computing

- Barcelona Supercomputer Centre selects Arm v8-A for Mare Nostrum 4
- Fujitsu and RIKEN select Arm v8-A for the Post-K supercomputer

Now shipping into enterprise applications

- Arm v8-A server chips are shipping in volume into storage appliances.

Microsoft has ported the core components of Windows Server onto Arm
Arm’s opportunity in networking
Targeting >50% share of chips in next-generation networks

Future networks will be based on open source collaboration

Networking software is being optimised for Arm-based chips

Accelerating data comms from server to server

“When you offload to hardware, you run roughly a tenth the latency, a tenth the power, a tenth the cost. Here’s some great news: we’re in the semiconductor business!”

James Hamilton, VP and Distinguished Engineer, AWS
Arm’s opportunity in IoT – silicon IP
The architecture of choice for IoT developers

Cortex-M processors enable secure, low-cost IoT devices

High-value tech is now available at consumer price points

Every thing will be connected

Annual production of IoT modules

1 trillion cumulative
Arm’s opportunity in IoT – software and services
Investing to create new revenue streams

Arm forecasts a $1 trillion TAM for IoT technology in 2035

- Electronic components
- Assembly
- Distribution
- Installation
- Financial services
- Telecoms services

IT services

The TAM refers to IoT technology (electronics, software, services) only, it excludes the value of the ‘things’ that contain the IoT modules

Arm’s IoT platform is being integrated into OEM lifetime management services
Artificial intelligence in every device

Learning in the cloud, inference at the edge

Mobile

Automotive

Robotics

Drones

IoT

Home, surveillance & analytics

VR/MR

Shipping & logistics
Machine learning and computer vision
The key workloads for intelligent computers

Widely-available software tools give developers access to ML

Optimise for performance, cost and programmability

Stable algorithms can be hardwired into accelerators

The latest Arm v8-A CPUs implement new instructions for ML calculations, and increase the memory bandwidth between CPUs and accelerators.

Arm’s silicon IP for computer vision identifies objects in moving images. It is smaller and more power efficient than equivalent software implementations.
Autonomous machines
Advanced compute is moving to the physical domain

Robots and autonomous cars will operate alongside people

The physical domain requires stringent safety standards

Vehicle electrification will force the pace of change

- All future models from Volvo will have electric or hybrid engines
- UK and France have announced plans to phase out petrol vehicles by 2040

Arm DynamIQ supports ASIL D for safety critical automotive and industrial systems
Augmented reality
New experiences and new user interfaces

Seamless interactions between humans, machines and data

Augmented reality (AR) overlays digital information onto the user’s view of their immediate surroundings.

AR relies on advanced display technologies and new techniques for reading user input, such as 3D sensors.

A demanding roadmap for mobile GPU performance

Latency: <16ms
to avoid motion sickness

Frame-rate: >60 Hz
for a smooth viewing experience

Resolution: 2K minimum
for realistic images

Driving innovation in displays, 3D sensors and computer vision

Source: Sony
Hyperscale cloud and connectivity
Infrastructure for the information revolution

Enterprise compute is moving to the cloud

Insatiable demand for data is driving new standards

Performance targets for 5G networks

- 1000x data volume per km2
- 1000x connections per km2
- 100x user data rate
- 80% reduction in latency
- 80% reduction in opex
- 90% reduction in energy
- 99% reduction in time to deploy

Workloads will be shared across devices, base stations and servers

Autonomous vehicles will be controlled by computers in the car, in neighbouring cars, in nearby base stations and in remote datacentres
Information security
The fundamental component of all connected systems

Secure systems are built on a hardware root of trust

Devices must be kept secure with regular software updates

Good security is inexpensive to implement and costly to crack

Secure, scalable, efficient device management services

Arm mbed Cloud takes care of complex security tasks in large-scale IoT networks. This allows Arm’s OEM customers to concentrate their development on features that differentiate their product offering.

Chinese OEM to recall up to 10,000 webcams after hack
Mirai Botnet attack, October 2016
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

Investing to create new revenue streams

- mbed Cloud SaaS business
- Early-stage investment but many years in research
- Securely connect any device into your network, using any communications technology, supporting any cloud platform
  - Cloud provision: secure device identification, on-boarding and configuring
  - Cloud connect: manage your IoT networking using standard-based comms
  - Cloud update: remotely update firmware across all your devices

Generating $600m annualised free cash flow

mbed Cloud Partners
Revenues, profits and profitability

Over the past 10 years Arm's revenues grew faster than costs.

Profits grew and profitability edged over 40%.

At the start of the next phase of investment Arm expects costs to grow faster than revenues.

This should yield even greater profits in the future.

Note: Excludes certain one-offs
- 2013: Write down of MIPS patents (£100m)
- 2016: Execution costs associated with SoftBank acquisition
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 £1.2bn of net cash and no debt

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Cash (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>£0</td>
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<tr>
<td>2007</td>
<td>£200m</td>
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<td>2008</td>
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<tr>
<td>2014</td>
<td>£1,600m</td>
</tr>
<tr>
<td>2015</td>
<td>£1,800m</td>
</tr>
<tr>
<td>2016</td>
<td>£2,000m</td>
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</tbody>
</table>
Return on Investments – Arm v8-A case study

Arm incurs R&D costs many years before revenue starts

Research into 64-bit computing started in 2000

Arm v8-A Development starts

Architecture development and processor design

First generation of processors

Multiple processors in development

Investment strategy
Return on Investments – General case

Arm incurs R&D costs many years before revenue starts

- Research started many years ago
- New technology development starts
- Initial development phase
- Investment ramps
- New technology announced
- First technology agreements
- Technology delivery
- Recurring 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 2017 as Arm expands R&D capability

Future cost increases are expected to be consistent with increases in headcount

- £477m (YTD 2016 Costs)
- £118m (25% increase in headcount)
- £53m (Increased IT, facilities and other investments)
- £69m (Reclass of share-based comp*)
- £75m (Bonus and replacement comp scheme)
- £6m (Impact of weaker sterling)
- (£8m) (Bad debt provision)
- £790m (YTD 2017 Costs)

*Share-based compensation was previously included in IFRS “other costs”
Recent investor webinars and papers:

- **The route to a trillion devices** white paper and a series of three webinars on the economics of IoT. Featuring Diya Soubra, Product Manager, IoT and Michael Horne, Deputy GM, IoT
- **Accelerating artificial intelligence** with Nandan Nayampally, General Manager of Arm's Compute Products Group
- **The route to 10nm** by Ron Moore, VP Marketing for Arm's Physical IP Group
- **Machine learning in client devices** by Jem Davies, General Manager of Arm's Media Products Group
- **Intelligent buildings** white paper by Ani Deodhar, Segment marketing manager for IoT Solutions
Arm IR Updates

The Arm IR team sends out regular updates on news and technology trends

To register for these emails, visit:

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