**ARM Introduction**

- Global leader in the development of licensable technology
  - R&D outsourcing for semiconductor companies

- Innovative business model yields high margins
  - Upfront licence fee – flexible licensing models
  - Ongoing royalties – typically based on a percentage of chip price
  - Technology reused across multiple applications

- Long-term, secular growth markets

>1,440 licences
Growing by >100 every year

17.7 bn ARM-based chips in FY2016

~15% CAGR over previous 5 years

>460 potential royalty payers
Industry leaders and high-growth start-ups; chip companies and OEMs
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
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
ARM-based chip shipments

ARM-based chips shipped to date: 100bn
Market share in 2016: 34%

ARM-powered SoCs shipped (billions)

Financial Years

1991

© ARM 2017
ARM 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
## From Revenue to Profits

### FY 2016 Revenues

<table>
<thead>
<tr>
<th>Category</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**

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

**Strong revenue growth has driven operating margins and profits**

**Includes expenses incurred by ARM during acquisition by SoftBank. Excludes SoftBank’s acquisition related expenses. Excludes amortisation of intangibles related to the acquisition.**

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Financial numbers aligned with SoftBank reporting periods (01 April 2016 to 31 March 2017)
ARM’s opportunity continues to broaden

- Semiconductor industry continues to grow – 4% by volume, 1% by value over past 5 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
ARM’s main growth markets

**Application Processors**
- Smartphones, tablets and laptops
- Apps processor, modem, connectivity, touchscreen and image sensors
- Apps processor: Increasing proportion using ARM technology with higher royalty per chip from ARMv8-A, octa-cores, graphics and physical IP

**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
ARM’s expanding opportunity

<table>
<thead>
<tr>
<th>Mobile Application Processors</th>
<th>Share 2016*</th>
<th>TAM 2016</th>
<th>TAM 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90%</td>
<td>$20bn</td>
<td>$30bn</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Networking Infrastructure</th>
<th>17%</th>
<th>$13bn</th>
<th>$18bn</th>
</tr>
</thead>
<tbody>
<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>

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

<table>
<thead>
<tr>
<th></th>
<th>Share 2016*</th>
<th>TAM 2016</th>
<th>TAM 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive</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)
Licensing enables future royalties

- ARM signed 113 licences in FY2016
- ARM’s current royalty revenues are derived from licences signed many years ago
- Growing base yields royalty revenues over long period
## Licensing drives market share

ARM gains share by winning designs at leading semiconductor companies

<table>
<thead>
<tr>
<th>Market</th>
<th>Shipping mainly ARM-based chips</th>
<th>Shipping some ARM-based chips</th>
<th>Public ARM design wins, but not yet shipping</th>
<th>No ARM design win or not yet public</th>
<th>2016* Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Applications Processors **</td>
<td>🟢</td>
<td>🟡</td>
<td>🟡</td>
<td>🟥</td>
<td>90%</td>
</tr>
<tr>
<td>Networking Infrastructure</td>
<td>🟢</td>
<td>🟡</td>
<td>🟡</td>
<td>🟥</td>
<td>17%</td>
</tr>
<tr>
<td>Servers (ARMv8-A based)</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟥</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Embedded Intelligence</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟥</td>
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<td>🟢</td>
<td>🟥</td>
<td>40%</td>
</tr>
<tr>
<td>3D Graphics</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟥</td>
<td>50%</td>
</tr>
</tbody>
</table>

* Financial year
** Includes smartphones, tablets and laptops

**Change in three quarters**

- 🟢 ➡️ 11 companies re-equipped
- 🟢 ➡️ 3 companies re-equipped
- 🟡 ➡️ 1 company acquired ARM shipper

Based on current market shares and ARM’s view of how these markets may develop. ARM will update the chart on the left only when design wins become public.
2025 opportunity in smartphones

Overall Smartphone Device CAGR: 3%

Smartphone penetrations in FY2016
- ARMv8-A technology: 70%
- Mali graphics: 50%
- High core count: 35%

Additional opportunities to grow royalty percentage
- Mali video, imaging and display technology
- Computer vision
- Virtual/augmented reality
- Physical IP
- Machine learning inference
- Increased connectivity

ARM’s advanced technology commands a higher royalty percentage per chip

2020 Smartphone Chips

Applications Processor $15-$20
Connectivity Sensors $5-$10

Applications Processor $5-$15
Connectivity Sensors $2-$3

Applications Processor < $5
Connectivity $1-$2

Source: Gartner and ARM

Smartphone Shipments (m, units)
- Premium Smartphones
- Mid-range Smartphones
- Entry-level Smartphones

ARMv8-A technology: 70%
Mali graphics: 50%
High core count: 35%
2025 opportunity in smartphones

Advanced consumer products are incorporating more and more ARM technology

Applications Processor chips can contain multiple ARM technologies
- ARM Processor
- Multimedia processors: Graphics, video, display, camera, etc.
- Physical IP

New functionality creates opportunity for new IP

• Bluetooth
• Cellular Modem
• WiFi
• SIM
• GPS
• Power Mgmt
• Touchscreen & Sensor Hub
• Multiple cameras, front and rear
• Sensor Hub
• Flash Controller
• Apps Processor Chip
• ARM CPU

Advanced consumer products are incorporating more and more ARM technology
Networking infrastructure opportunity for ARM

- 5G networks will provide
  - High-speed, low latency connectivity consumers
  - High-volume low-data rate connectivity for IoT

- 5G will need heterogeneous network equipment for macro- to femto-cells

- Distributed virtualised functions enables efficient use of the network

- ARM is working with software community to expand availability of virtualised network functions

Major networking chip manufacturers have licensed ARM technology

Network functions are being optimised for ARM-based SOCs

- OpenStack
- OpenDaylight
- Linux
- Hypervisors
- Open vSwitch
- OpenDataPlane
Server opportunity for ARM

- Web/cloud scale companies can reduce costs with servers optimised for specific workloads
- ARM business model enables increased innovation and differentiation
- Increasing design wins in HPC, webhosting, machine learning and analytics
- New workloads (i.e. containers and microservers) are ideal for ARM multicore approach
Internet of Things opportunity

Over 1 trillion IoT devices
(accumulated in 2016-2035)

Every Internet of Things device needs:
- Sensor
- MCU
- Radio
- Security

ARM has high share of technology components needed to create a smart, secure connected device

- >75% market share
- >60% market share
- >90% market share

advanced* microcontrollers © ARM 2017
wireless connectivity
advanced* smartcards

ARM-based technology is the platform for many Internet of Things devices

- >90% market share
- >90% market share
- >50% market share

wearables
drones
connectivity in cars

* Advanced 32-bit devices
ARM’s automotive opportunity

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

- Autonomous driving, ADAS, Cluster, Connectivity
- Powertrain, chassis
- Body electronics, sensors, actuators, communications

Front radar  Driver alert  eCall  Cellular  Headrest displays  Head-up display  Rear camera
Front camera  ADAS processor  Telematics  Navigation  Bluetooth  Cluster display  Cluster processor
Side cameras  Vehicle stability  Fuel pump  Battery manager

- Engine control  Eco start/stop
- Steering wheel  Airbags
- V2X  IVI processor  Navigation  MirrorLink  Cluster display
- Front radar  Front camera  Side cameras  Rear camera
- Front radar  Driver alert  eCall  Cellular  Headrest displays  Head-up display  Rear camera
- Front camera  ADAS processor  Telematics  Navigation  Bluetooth  Cluster display  Cluster processor
- Side cameras  Vehicle stability  Fuel pump  Battery manager

- Beam steering  Anti dazzle rear view  Wipers washers  Sun-roof  Interior lights  HVAC
- Engine control  Eco start/stop
- Steering wheel  Airbags
- V2X  IVI processor  Navigation  MirrorLink  Cluster display
- Front radar  Front camera  Side cameras  Rear camera
- Front radar  Driver alert  eCall  Cellular  Headrest displays  Head-up display  Rear camera
- Front camera  ADAS processor  Telematics  Navigation  Bluetooth  Cluster display  Cluster processor
- Side cameras  Vehicle stability  Fuel pump  Battery manager

- Engine sensors  Gearbox control  Steering motor  Braking  Wheel sensors  Tyre sensors
- Beam steering  Anti dazzle rear view  Wipers washers  Sun-roof  Interior lights  HVAC
- Engine control  Eco start/stop
- Steering wheel  Airbags
- V2X  IVI processor  Navigation  MirrorLink  Cluster display
- Front radar  Front camera  Side cameras  Rear camera
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- Front camera  ADAS processor  Telematics  Navigation  Bluetooth  Cluster display  Cluster processor
- Side cameras  Vehicle stability  Fuel pump  Battery manager

© ARM 2017
Virtual reality and augmented reality

Mali graphics processor is used in around 50% of all VR head-mounted displays including some:

- Samsung Gear VR
- Google Cardboard VR and
- Other all-in-one VR HMDs

**Requirements for smooth mobile AR/VR**

- High resolution: 2k to 4k per eye
- High performance: 60fps (120fps with asynchronous “Timewarp”)
- Responsive rotation & position tracking; Increases immersion & experience
- Mobile power envelope: ~4W TDP
Virtual reality and augmented reality

Asynchronous timewarp

- Decouple rotation from graphics pipeline
- Draw larger scene than needed and determine scene to display at the last moment

Gaze Tracking and Foveated Rendering

ARM’s Frame Buffer Compression for low power

Post processing step/barrel distortion doubles fragment bandwidth

Render in full resolution quality where gaze is directed

ARM
Machine learning in client devices

1970 to 1995
Personal Computers

1995 to 2020
Connected Computers

2020 to 2045+
Learning Systems

The speech recognition process

Speech

Feature Extraction

Features

Acoustics

Phonemes

Word formation

Words

Language Model

Text

ARM's computer vision processor IP

Adapted from: https://www.danieldune.com/2018/05/10/arm-computer-vision-processor-ip.html
Computer Vision Algorithms

One size doesn’t fit all

- Need multiple types of processors
- Fixed function works for some algorithms
  - Requirements known in advance, algorithm well understood, high performance needed
- But programmable cores are essential

Whole-system optimisation

Application

Optimise

Compile

Load-Balance

CPU

GPU

DSP

Accelerators

Vision API Interface

Graph Builder

Build nodes into dependency graphs

Merge / recompile

Create GPU binaries

Scheduling Framework

Vision Middleware

Repository of CV algorithms
Qtr ending Mar. 2017 – Financial summary

<table>
<thead>
<tr>
<th>Revenues ($m)</th>
<th>Q4 2015</th>
<th>Q4 2016</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensing</td>
<td>148</td>
<td>122</td>
<td>-18%</td>
</tr>
<tr>
<td>Royalty</td>
<td>197</td>
<td>258</td>
<td>31%</td>
</tr>
<tr>
<td>Software and Services</td>
<td>34</td>
<td>29</td>
<td>-15%</td>
</tr>
<tr>
<td>Total ($m)</td>
<td>379</td>
<td>409</td>
<td>8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revenues (£m)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensing</td>
<td>101</td>
<td>93</td>
<td>-8%</td>
</tr>
<tr>
<td>Royalty</td>
<td>137</td>
<td>208</td>
<td>53%</td>
</tr>
<tr>
<td>Software and Services</td>
<td>23</td>
<td>22</td>
<td>-4%</td>
</tr>
<tr>
<td>Total (£m)</td>
<td>261</td>
<td>323</td>
<td>24%</td>
</tr>
</tbody>
</table>

| COGS, R&D, SG&A (£m) | 130 | 190 | 46% |
| Adjusted EBITDA (£m) | 131 | 133 | 2% |
| Other operating expenses (£m) | 22 | (19) |
| Depreciation & amortisation | 9 | 20 | 44% |
| IFRS EBIT (£m) | 100 | 132 | 32% |

Licensing can fluctuate between quarters
Q4 licensing within expected range

Very strong royalty revenue growth ahead of long-term historic growth rates

Sterling revenues benefitted from a 13% fall in value of Sterling vs US Dollar

19% increase in total headcount
Currency impact of US-based employees
New long-term remuneration scheme

Excluding amortisation of intangibles relating to acquisition of ARM by SoftBank
Qtr ending Mar. 2017* – Progress against strategy

Licences signed for broad range of end markets

- 15 Cortex-M for automotive and IoT
- 6 Cortex-A for Mobile, and Enterprise
- 2 Mali IP for Mobile and Consumer

Reported Royalty Units Growing

- FY2015: 5.1bn
- FY2016: +24%

Key market performance (growth in reported royalty units)

- Mobile
  - Q4 2015: +10%
  - Q4 2016: +10%
- Microcontrollers and Smartcards
  - Q4 2015: +10%
  - Q4 2016: +10%
- Enterprise infrastructure
  - Q4 2015: +25%
  - Q4 2016: +25%

Investing in Future Technology

- Technical Headcount
  - Q4 2015: 4,852
  - Q4 2016: +21%
- Total Headcount
  - Q3 2015: 892 other employees
  - Q3 2016: +19%

- 3,960 Technical

© ARM 2017

* SoftBank’s financial year runs from April 01 to March 31.
Contact information

<table>
<thead>
<tr>
<th>Contact</th>
<th>Title</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ian Thornton</td>
<td>Head of Investor Relations</td>
<td>+44 1223 400796&lt;br&gt;<a href="mailto:ian.thornton@arm.com">ian.thornton@arm.com</a></td>
</tr>
<tr>
<td>Philip Sparks</td>
<td>Senior Manager of Investor Relations</td>
<td>+44 1223 400566&lt;br&gt;<a href="mailto:philip.sparks@arm.com">philip.sparks@arm.com</a></td>
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More content available on our website

- Most quarters ARM hosts a series of investor events. Recordings of these events are available on the ARM investor website at www.arm.com/ir
- Currently available:
  - Intelligent buildings whitepaper by Ani Deodhar, Segment marketing manager for IoT Solutions
  - Machine learning in client devices presentation by Jem Davies, General Manager of ARM’s Media Products Group
  - Route to 10nm by Ron Moore, VP Marketing for ARM’s Physical IP Group
  - Accelerating artificial intelligence with Nandan Nayampally, General Manager of ARM’s Compute Products Group
# Meeting ARM in May and June 2017

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Date</th>
<th>Broker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Conference</td>
<td>Hong Kong</td>
<td>22-23 May</td>
<td>Exane</td>
</tr>
<tr>
<td>Roadshow</td>
<td>Tokyo</td>
<td>24-25 May</td>
<td>SoftBank organised</td>
</tr>
<tr>
<td>Reverse roadshow</td>
<td>Cambridge</td>
<td>26 May</td>
<td>Goldman Sachs</td>
</tr>
<tr>
<td>Computex</td>
<td>Taipei</td>
<td>31 May</td>
<td>ARM organised</td>
</tr>
<tr>
<td>Roadshow</td>
<td>Hong Kong</td>
<td>1-2 June</td>
<td>UBS</td>
</tr>
<tr>
<td>Technology Conference</td>
<td>San Francisco</td>
<td>5-6 June</td>
<td>Stifel</td>
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<tr>
<td>TMT Conference</td>
<td>London</td>
<td>6-7 June</td>
<td>BAML</td>
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<tr>
<td>Roadshow</td>
<td>Chicago</td>
<td>7 June</td>
<td>Canaccord</td>
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<td>Roadshow</td>
<td>Toronto</td>
<td>8 June</td>
<td>Canaccord</td>
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<td>Roadshow</td>
<td>New York</td>
<td>9 June</td>
<td>Credit Suisse</td>
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<tr>
<td>Roadshow</td>
<td>Madrid</td>
<td>14 June</td>
<td>Santander</td>
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<td>Paris</td>
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<tr>
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ARM IR Updates

- The ARM IR team sends out regular updates on news and technology trends
- To register for these emails, visit: www.arm.com/ir-emails