A backward glance and a forward view

Ian Thornton, Head of Investor Relations
Arm update

A Backward Glance: Progress in 2017

• Financials
• Investments / hiring
• Meltdown / Spectre

A Forward View:

• Market forecasts
• Arm China JV
• New technology for smartphones and IoT
Licensing
2017 Licensing: Revenue

- 2005: $0m
- 2006: $100m
- 2007: $200m
- 2008: $300m
- 2009: $400m
- 2010: $500m
- 2011: $600m
- 2012: $700m
- 2013: $800m
- 2014: $900m
- 2015: $1,000m
- 2016: $1,100m
- 2017: $1,200m

Growth rates:
- 2005-2006: 4%
- 2006-2007: 2%
- 2007-2008: 20%
- 2008-2009: 2%
- 2009-2010: 3%
- 2010-2011: 2%
- 2011-2012: 2%
- 2012-2013: 2%
- 2013-2014: 2%
- 2014-2015: 2%
- 2015-2016: 2%
- 2016-2017: 2%

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2017 Licensing: Revenue

- Revenue trends from 2005 to 2017
- 10% growth rate
2017 Licensing: 141 is the mid-point of normal range

Historic licensing

Year 13 14 15 16 17

Classical 45 Average = 39
Withdrawn from licensing

Cortex-A 16 Av.=15

Cortex-R

Cortex-M 58 Average = 70

Cortex-M 22 Av.=22

Mali

Cortex-M
DesignStart Pro – Launched June 2017

- Arm’s most popular processors have no up-front fee
- First 5,000 chips also royalty free
- Click-to-accept licensing agreement
- Targeted at academia, start-ups and small business units in large companies
DesignStart – Enabling the entire industry to build chips

244
Cortex-M licenses in
284
days in Fiscal 2017

DesignStart Pro
Launched 20 June 2017
License-fee free; royalty bearing

>2600
Cortex-M downloads to date

DesignStart Eval
Launched end June 2017
No fees. Evaluation only.
Optimised for FPGA
2017 Licensing: 385 licenses signed

Historic licensing

Year 13 14 15 16 17

- Classic: 0 licenses
- Cortex-A: 45 licenses, average = 39
- Cortex-R: 16 licenses, average = 15
- Cortex-M: 302 licenses, average = 70
- Mali: 22 licenses, average = 22

Withdrawn from licensing: none
Royalties
2017: Industry growth vs Arm growth

$410bn

Overall Semiconductor Industry

Value ($) +22%

Volume # chips +14%

Strong growth in memory and graphics for data centre

$165bn

Relevant Semiconductor Industry

Value ($) +9%

Volume # chips +17%

Strong growth in MCUs; slower growth in apps for mobile

$1.1bn

Arm Royalty Revenue

Value ($) +12%

Volume # chips +20%

Arm gaining share in embedded Royalty rate increasing
Arm-based chip shipments

120bn

Arm-based chips shipped to date

39%

Market share in 2017

Arm-based chip shipments (billions)

Calendar Years

1991

2017

21.3bn

17.7bn

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Investments

Profitability
Investing in engineering to increase productive output

Arm recruitment is consistent with previous years

Focus on retaining quality as well as quantity; and on cultural and organisational integration

Expect to sustain this run rate for next 2-3 years

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-Engineering</th>
<th>Engineering</th>
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<tbody>
<tr>
<td>2012</td>
<td>+13%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>+18%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>+16%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>+23%</td>
<td></td>
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<tr>
<td>2016</td>
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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.
Managing new risks and threats
Forward View
Forecasting future growth

On track for 100 billion Arm-based chips shipped 2017 + 2018 + 2019 + 2020
## Arm’s expanding opportunity

<table>
<thead>
<tr>
<th>Segment</th>
<th>Applications processor</th>
<th>Other mobile chips</th>
<th>Networking</th>
<th>Servers</th>
<th>IVI and ADAS</th>
<th>Other automotive chips</th>
</tr>
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<tbody>
<tr>
<td><strong>Mobile Computing</strong></td>
<td>90%</td>
<td>$21bn</td>
<td>45%</td>
<td>$14bn</td>
<td>~1%</td>
<td>$17bn</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td></td>
<td></td>
<td>20%</td>
<td>$14bn</td>
<td>90%</td>
<td>$4bn</td>
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<td><strong>Automotive</strong></td>
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<td>10%</td>
<td>$8bn</td>
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### Arm’s expanding opportunity

**Embedded**
- Controller in IoT Devices: 90% Market Share, $7bn Market Value in 2017, $24bn in 2026
- Microcontrollers/SIM Cards: 20% Market Share, $17bn Market Value in 2017, $21bn in 2026

**Other Markets**
- Consumer Electronics: 40% Market Share, $21bn Market Value in 2017, $27bn in 2026
- Other chips: 40% Market Share, $7bn Market Value in 2017, $10bn in 2026

**Total Market**
- All chips with processors (current TAM): 39% Market Share, $130bn Market Value in 2017, $200bn in 2026
- All addressable chips (future TAM): 25% Market Share, $165bn Market Value in 2017, $220bn in 2026
Arm China

A Joint Venture: Built on strong foundations
Arm has great success in China

>200 CUSTOMERS

95%

Chinese designed SoC based on ARM processor technology

10bn

Chips shipped by Chinese partners using ARM processor technology

x140

Growth in volume shipment by Chinese partners 2006-2017
China landscape

China is investing to become a net exporter of semiconductors

China already has world class chip developers

Some companies desire technology optimised for local market

Some Government projects are accessible to technology

• Chinese developed
• Chinese owned
• Chinese controlled
Arm decided to create “Arm China” Joint Venture

Largest single shareholder

49% 51%

Multiple investors
Strong foundation for development in China

- Sustain access to the Chinese market
- Increase adoption of Arm technology
- Partnerships with government & ecosystem
- Localised products can be licensed globally by Arm Ltd
- Reduced risk & enable other investment opportunities
Making smartphones smarter
Smartphone – Growing volume and technology

Mobile - 1.6Bn today, ~2.0Bn by 2022

Smartphone CAGR 4.3% over next 5 years

High-resolution display at all price points enabling capabilities for new and richer user experiences
• AAA Game play,
• HD video and
• AR/MR

AI for Natural Language and visual understanding

5G Modem enabling increased compute

3D and 360 video capture and playback

Feature phone users transition to 4G smartphones

Source: Strategy Analytics and Arm
Project Trillium: Arm ML for All Devices

Arm ML suite of IP: designed for unmatched versatility and scalability:
  ✧ Machine Learning (ML) processor
  ✧ Object Detection (OD) processor
  ✧ Neural Network (NN) software libraries

Market growth in units (today to 2028):
  ✧ Mobile - 1.7Bn to 2.2Bn
  ✧ Smart IP Cameras - 160M to 1.3Bn
  ✧ AI-enabled devices - 300M to 3.2Bn
Machine learning will be everywhere

Endpoints
Physical to Digital Interface, Long Battery Life

Smart Nodes
More computer and power available, may be battery powered or not

Gateway Node
Access to the larger network

Infrastructure
Core Networking & Servers
Voice recognition in device

Speaker recognition

Keyword recognition
Virtual SIM Card

- Mini SIM: 25 x 15 mm, 1996
- Micro SIM: 15 x 12 mm, 2003
- Nano SIM: 12.3 x 8.8 mm, 2012
- eSIM (MFF2): 6 x 5 mm, 2016
- iSIM

Miniaturization of IoT Devices
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