LEADING AT THE EDGE
TECHNOLOGY AND MANUFACTURING DAY
Intel Technology and Manufacturing Day 2017 occurs during Intel’s “Quiet Period,” before Intel announces its 2017 first quarter financial and operating results. Therefore, presenters will not be addressing first quarter information during this year’s program.

Statements in this presentation that refer to forecasts, future plans and expectations are forward-looking statements that involve a number of risks and uncertainties. Words such as “anticipates,” “expects,” “intends,” “goals,” “plans,” “believes,” “seeks,” “estimates,” “continues,” “may,” “will,” “would,” “should,” “could,” and variations of such words and similar expressions are intended to identify such forward-looking statements. Statements that refer to or are based on projections, uncertain events or assumptions also identify forward-looking statements. Such statements are based on management’s expectations as of March 28, 2017, and involve many risks and uncertainties that could cause actual results to differ materially from those expressed or implied in these forward-looking statements. Important factors that could cause actual results to differ materially from the company’s expectations are set forth in Intel’s earnings release dated January 26, 2017, which is included as an exhibit to Intel’s Form 8-K furnished to the SEC on such date. Additional information regarding these and other factors that could affect Intel’s results is included in Intel’s SEC filings, including the company’s most recent reports on Forms 10-K, 10-Q and 8-K reports may be obtained by visiting our Investor Relations website at www.intc.com or the SEC’s website at www.sec.gov.
How small is 14 nm?

- Mark: 1.66 m (1,600,000,000 nm)
- Fly: 7 mm (7,000,000 nm)
- Mite: 300 um (300,000 nm)
- Blood Cell: 7 um (7,000 nm)
- Virus: 100 nm
- Transistor: 14 nm
- Silicon Atom: 0.24 nm

Measurement scales: METER, MILLIMETER, MICROMETER, NANOMETER
Two Implications:

1. Cost per square millimeter goes up over time
2. Doubling of transistors = “Scaling”
   - Improves performance
   - Cost per transistor declines

“The number of transistors and resistors on a chip doubles every 24 months”
-Gordon Moore
What if Moore’s Law is applied to…

**TRANSPORTATION?**

We could travel to the Sun on a single gallon

**AGRICULTURAL PRODUCTIVITY?**

We could feed the world’s population with 1km\(^2\) of land

**SPACE TRAVEL?**

We could travel at 300x light-speed

Source: Intel estimates.
IS MOORE’S LAW DEAD?
IS MOORE’S LAW DEAD? NO!

10 nm and 7 nm forecasts are Intel estimates, based upon current expectations and available information. Source: Intel
The time between nodes has lengthened...

Are you getting the same Moore’s Law benefit?
YES!

Because we are getting more scaling
WE ARE HYPER SCALING
(on 14 nm & 10 nm)

Hyper scaling enables us to achieve accelerated density improvement

Intra-node optimizations enable an annual cadence of product enhancements
Hyper scaling delivers 0.46-0.43x die area scaling on 14 nm and 10 nm.

10 nm forecast is an Intel estimate, based upon current expectations and available information. Source: Intel
Moore’s Law Translates to Lower Product Costs

22 nm & 14 nm Client Cost Curves (Launch + 5 quarters)

*Q1’17 forecast is an Intel estimate, based upon current expectations and available information.

Source: Intel
MOORE'S LAW IN ACTION...

PC CPU Weighted Average Cost Per Transistor ($/MTX)
(log scale normalized to 90 nm)

*Q1’17 forecast is an Intel estimate, based upon current expectations and available information.
Source: Intel
GROSS MARGINS
Gross Margin % Annual 2005 - 2016
Source: Intel
Competitors are announcing 10nm this year...

HAVE YOU LOST YOUR LEAD?
HAVE YOU LOST YOUR LEAD? NO!
14 NM IS ~3 YEARS AHEAD

*Forecast is an estimate, based upon current expectations and available information.
Source: Intel estimates.
OUR SCALE
INVESTMENT REQUIRED TO BUILD & EQUIP A LEADING EDGE WAFER FACTORY

$10B

Source: Intel
SI TECHNOLOGY IS BECOMING RARE

NUMBER OF PLAYERS WITH A LEADING EDGE LOGIC FAB

- **25**
  - Mitsubishi
  - Sanyo
  - Rohm
  - ON
  - Hitachi
  - Atmel
  - ADI
  - Sharp
  - Cypress
  - Sony
  - Infinion
  - TI
  - Toshiba
  - Freescale
  - SMIC
  - Renesas
  - Fujitsu
  - Panasonic
  - UMC
  - ST-M
  - IBM
  - AMD
  - Samsung
  - TSMC
  - Intel

- **18**
  - Sharp
  - Cypress
  - Sony
  - Infinion
  - TI
  - Toshiba
  - Freescale
  - SMIC
  - Renesas
  - Fujitsu
  - Panasonic
  - UMC
  - ST-M
  - IBM
  - AMD
  - Samsung
  - TSMC
  - Intel

- **13**
  - TI
  - Toshiba
  - Freescale
  - SMIC
  - Renesas
  - Fujitsu
  - Panasonic
  - UMC
  - ST-M
  - IBM
  - AMD
  - Samsung
  - TSMC
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  - Freescale
  - SMIC
  - Renesas
  - Fujitsu
  - Panasonic
  - UMC
  - ST-M
  - IBM
  - AMD
  - Samsung
  - TSMC
  - Intel

- **8**
  - Panasonic
  - UMC
  - ST-M
  - IBM
  - GF
  - Samsung
  - TSMC
  - Intel

- **5**
  - IBM
  - GF
  - Samsung
  - TSMC
  - Intel

- **4**
  - GF
  - Samsung
  - TSMC
  - Intel

Other names and brands may be claimed as the property of others.
Source: Amalgamation of analyst data and Intel analysis.
GLOBAL MANUFACTURING BY THE NUMBERS

<table>
<thead>
<tr>
<th>INTEL EMPLOYEES</th>
<th>MANUFACTURING SPACE</th>
<th>TRANSISTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>~30K</td>
<td>&gt;4M</td>
<td>&gt;10B</td>
</tr>
</tbody>
</table>

SQUARE FEET OF CLEANROOM

MANUFACTURED PER SECOND

Source: Intel
Over half of our high tech manufacturing jobs are in the US. 80% of our revenue comes from outside the US.

Source: Amalgamation of analyst data and Intel analysis.
WORLD CLASS SUPPLY CHAIN

2016

1. Unilever
2. McDonald’s
3. Amazon.com
4. Intel
5. H&M
6. Inditex
7. Cisco Systems
8. Samsung Electronics
9. The Coca-Cola Company
10. Nestlé

Other names and brands may be claimed as the property of others.
Source: Gartner
INTEL CUSTOM FOUNDRY
The opportunity ~ Leading edge foundry market is growing

Note: Samsung and Intel internal are excluded from TAM. Leading edge defined as: 65nm and below for 2010, 45nm and below for 2011 and 2012, 32 nm and below for 2013-2016.

Source: Amalgamation of analyst data and Intel analysis.
2016 LEADING EDGE FOUNDRY MARKET

LEADING EDGE FOUNDRY TAM BY NODE

- 14 nm
- 16 nm
- 20 nm
- 28 nm

2016 TAM ($B)

$23B

GROWING AT 14%
(CAGR 2010 - 2016)

Note: Samsung and Intel internal are excluded from TAM. Leading edge defined as: 28 nm and below for 2016.
Source: Amalgamation of analyst data and Intel analysis.
Bringing tomorrow's technology today with comprehensive foundry services.
INTEL CUSTOM FOUNDRY ~ ENABLING FINFET CAPABILITIES

- **22 nm GP**: 1st gen FinFET technology focused on the networking market
- **14 nm**: 2nd gen FinFET technology in mass production targeting networking, FPGA and mobile SOC markets
- **10 nm**: 3rd gen FinFET technology, targeting high performance client and mobile markets

Proven Capability: Intel has manufactured ~7M FinFET wafers
INTRODUCING 22FFL PLATFORM

Extreme Integration Capability
Cost Effective Design
Fast Time to Market
FinFET for the masses

Ideal for highly integrated, cost sensitive products requiring a combination of high performance and ultra low power
PUTTING IT ALL TOGETHER

We continue to advance Moore’s Law resulting in significant product and cost benefits.

We continue to outpace the rest of the industry (~3 year lead on 14nm).

Our scale is a unique competitive advantage.

We are building a foundry franchise.

Source: Intel estimates
ONE MORE THING...
INTEL’S LEADERSHIP RESPONSIBILITIES

Addressing critical Sustainability and Human Rights issues

- Sourcing minerals responsibly
- Caring for the environment
- Promoting human rights programs
- Supply chain free of forced and bonded labor
- Reducing waste, water and carbon footprint

Inspiring employees, shareholders, customers