

14 nm Process Technology: Opening New Horizons

A decorative graphic consisting of several horizontal blue lines of varying thickness, with small circles at the ends, resembling a circuit board or data lines.

Mark Bohr

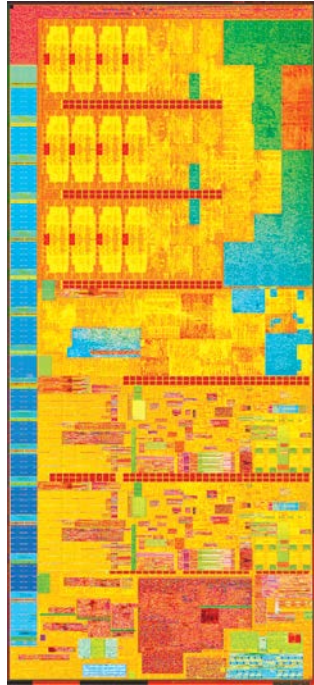
Intel Senior Fellow

Logic Technology Development

SPCS010



14 nm Intel® Core™ M Processor



1.3 billion transistors

82 mm² die size

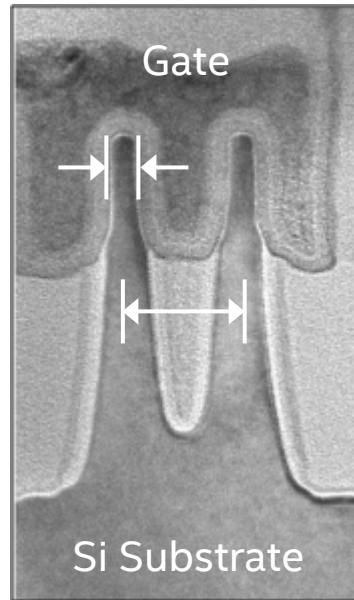
Industry's first 14 nm processor now in volume production

IDF14

14 nm Tri-gate Transistor Fins

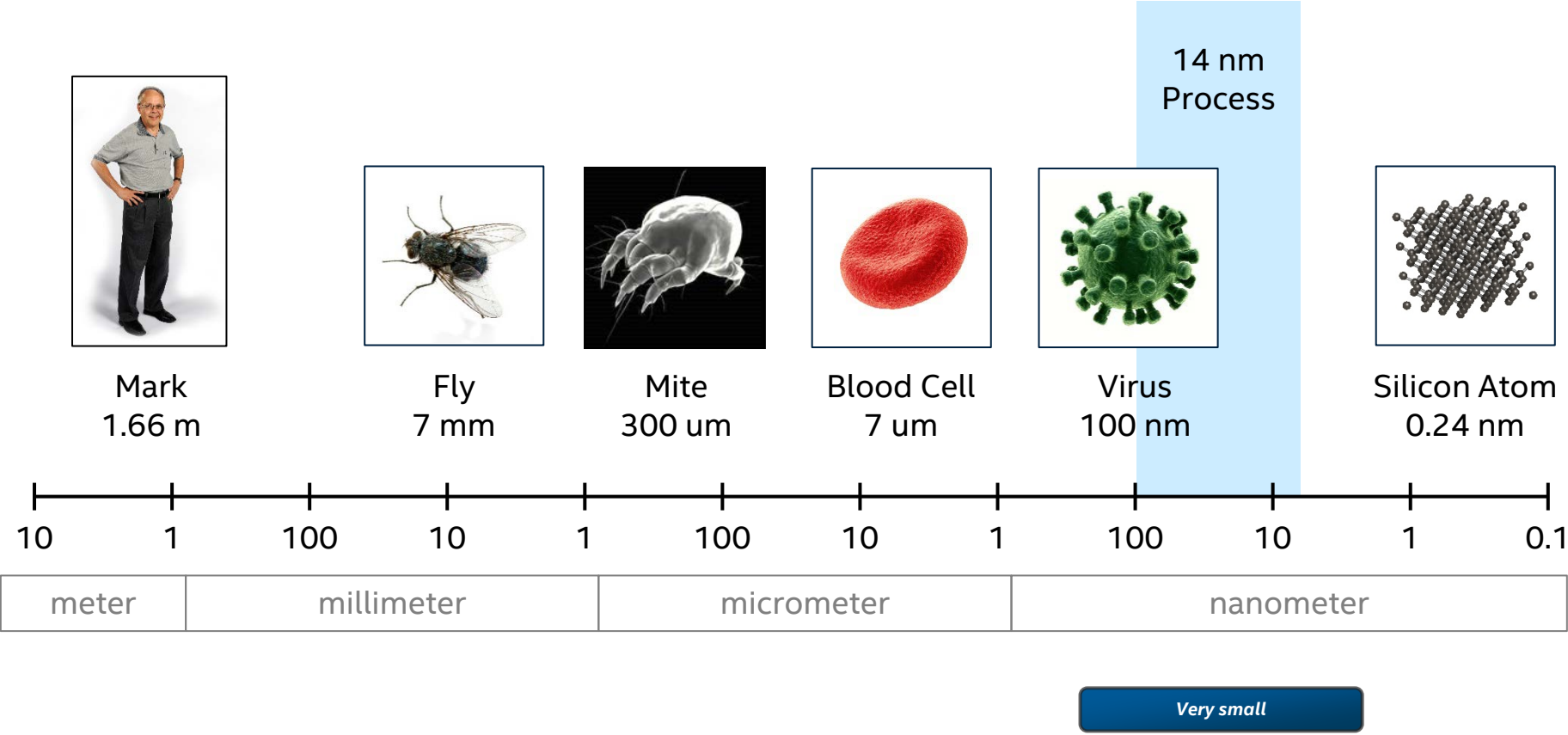
8 nm Fin Width

42 nm Fin Pitch



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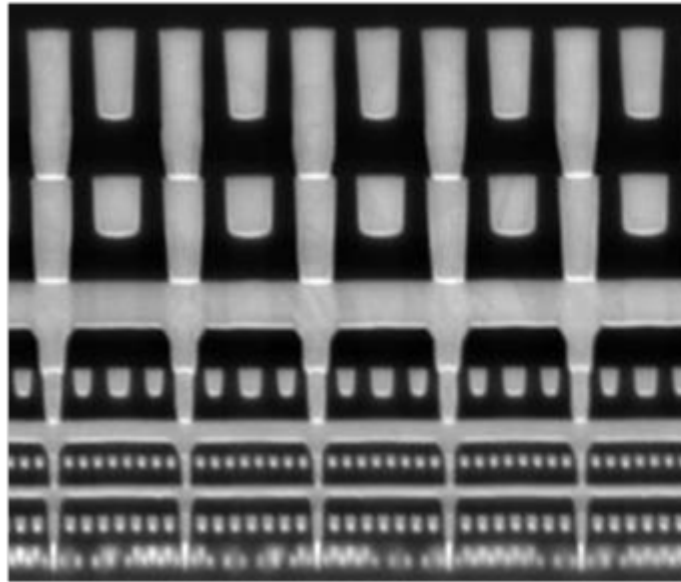
How Small is 14 nm?



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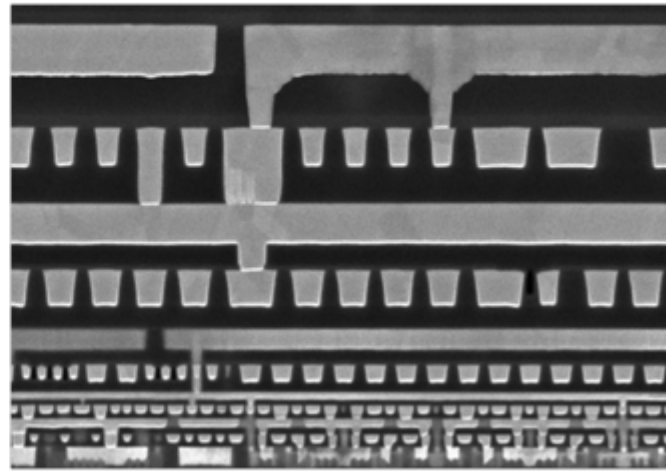
Interconnects

22 nm Process



80 nm minimum pitch

14 nm Process



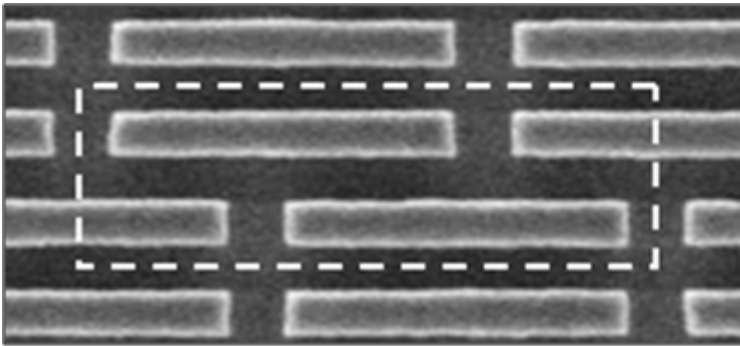
52 nm (0.65x) minimum pitch

52 nm interconnect pitch provides better than normal interconnect scaling

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SRAM Memory Cells

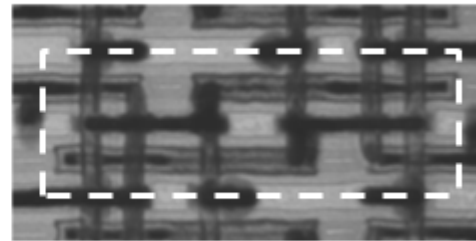
22 nm Process



.108 μm^2

(Used on CPU products)

14 nm Process



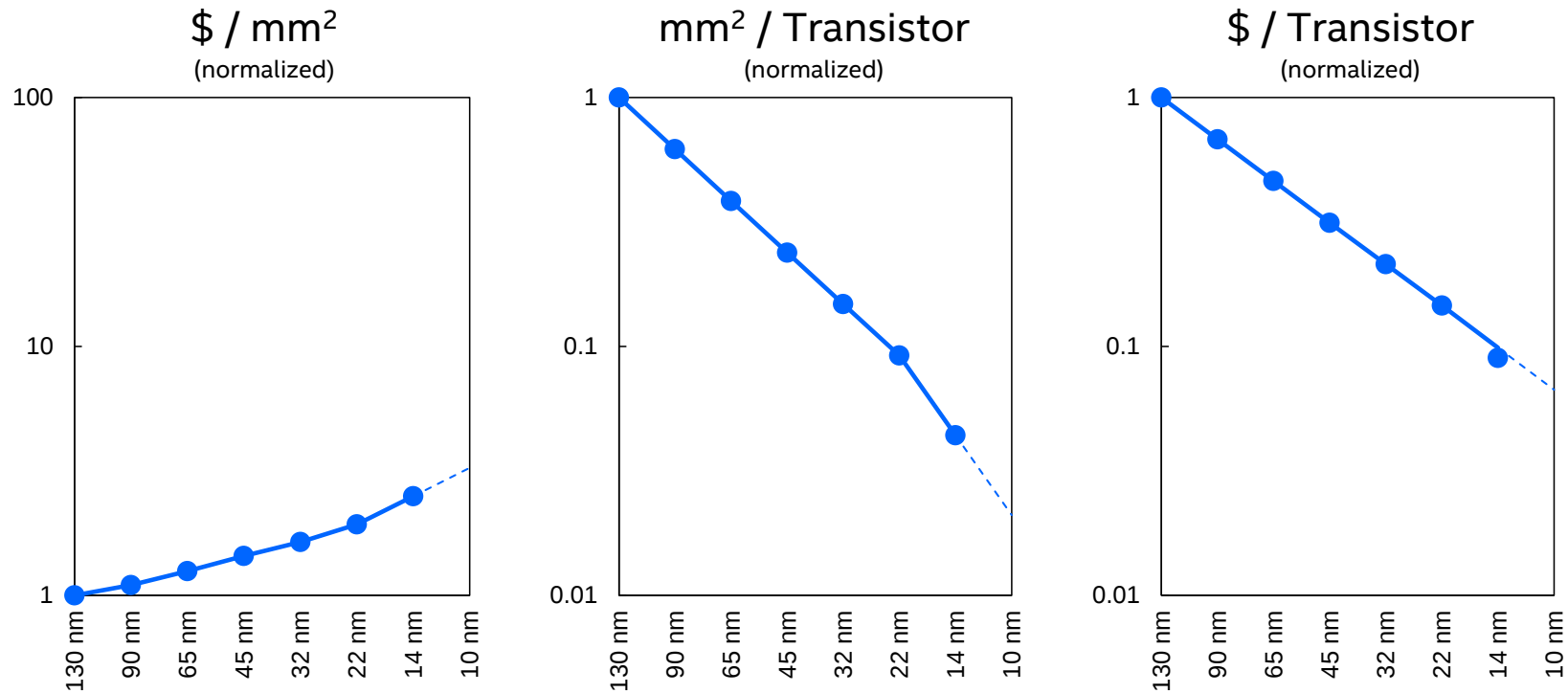
.0588 μm^2

(0.54x)

14 nm design rules + 2nd generation Tri-gate provides industry-leading SRAM density

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Cost per Transistor



Intel 14 nm continues to deliver lower cost per transistor

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