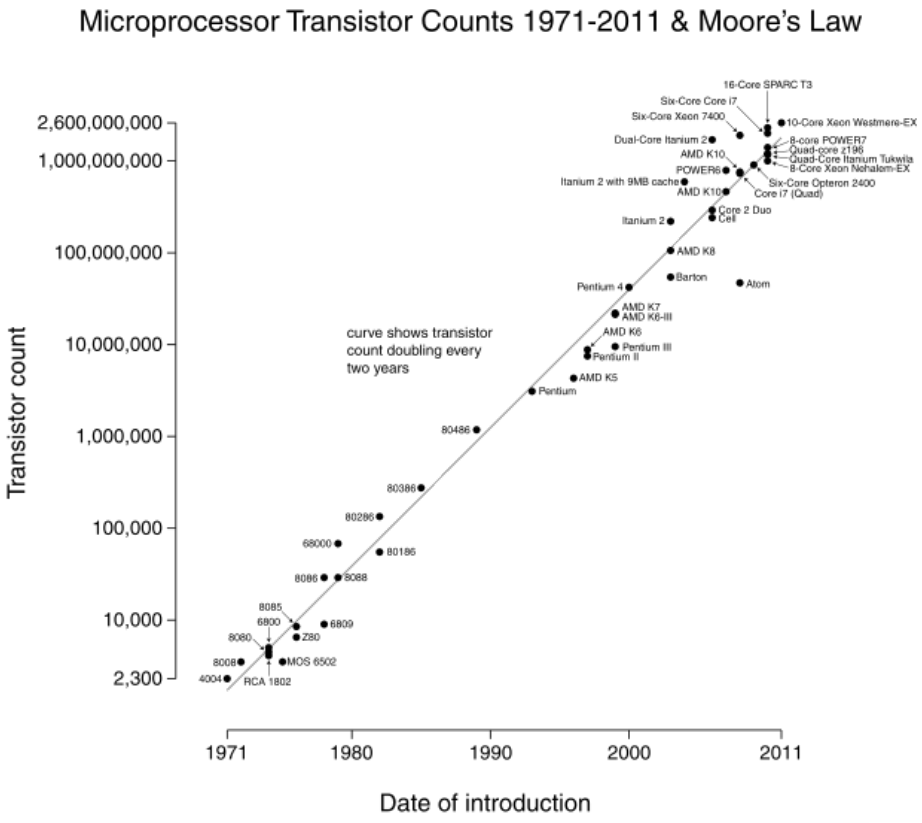
livelessons
video instruction from technology experts

Lesson 1: Introduction to the Spark Environment

1.2 A Brief Historical Diversion

livelessons
©2016 Pearson, Inc.

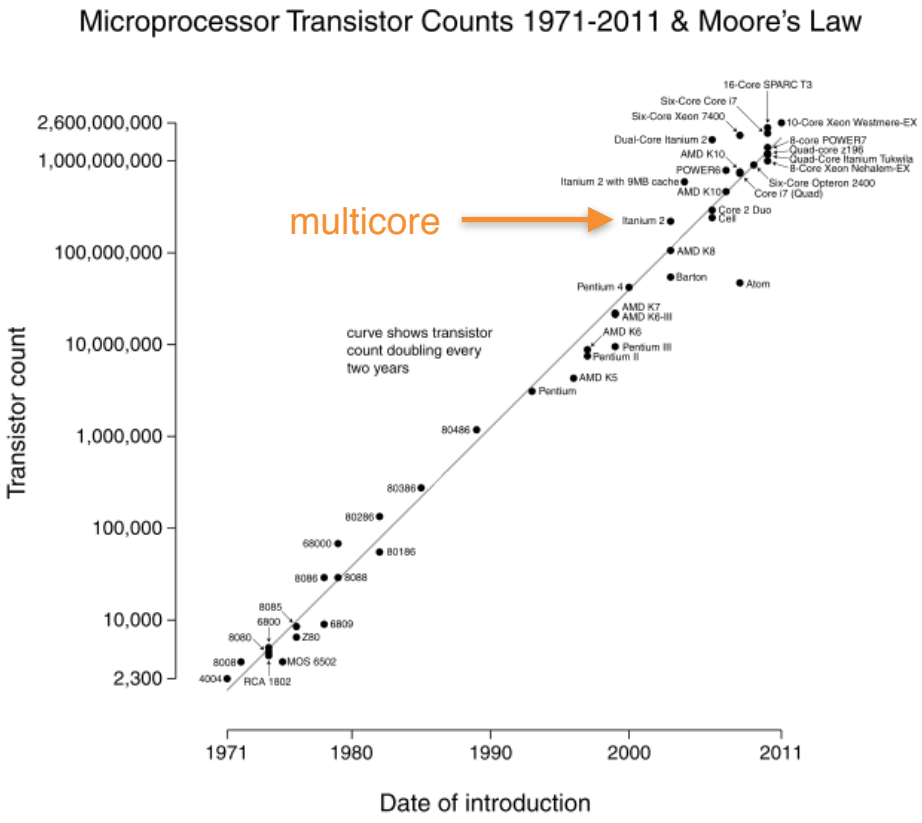
A Brief History



By Wgsimon (Own work) [CC BY-SA 3.0 or GFDL], via Wikimedia Commons

livelessons
©2016 Pearson, Inc.

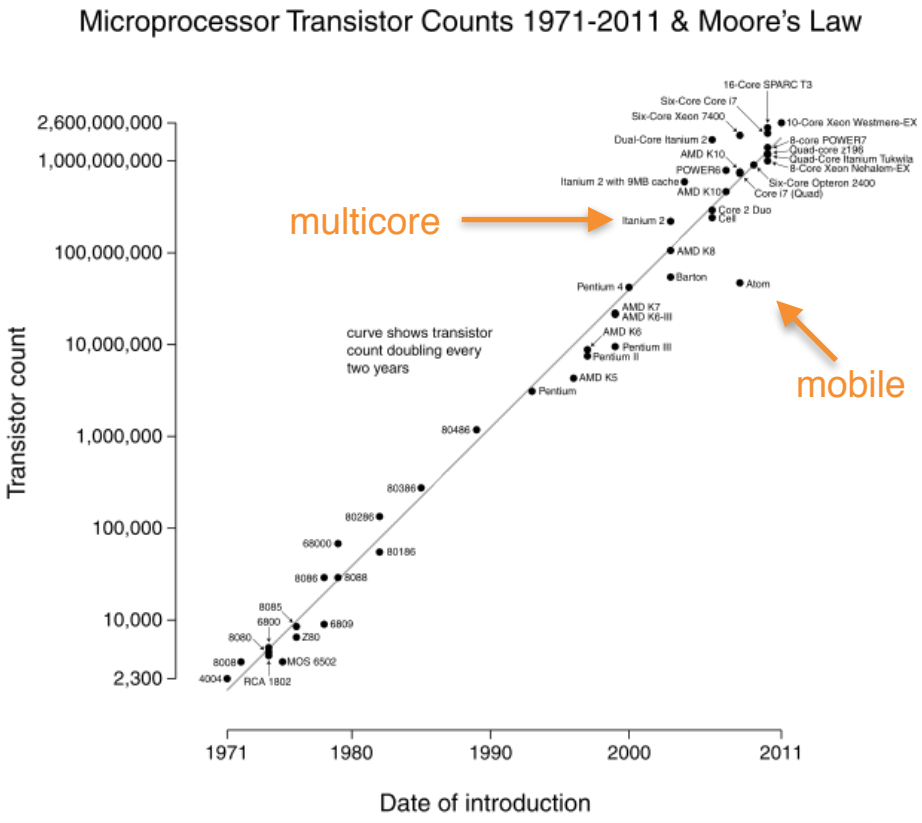
A Brief History



By Wgsimon (Own work) [CC BY-SA 3.0 or GFDL], via Wikimedia Commons

livelessons
©2016 Pearson, Inc.

A Brief History



By Wgsimon (Own work) [CC BY-SA 3.0 or GFDL], via Wikimedia Commons

livelessons
©2016 Pearson, Inc.

A Brief History

> *In terms of size [of transistors] you can see that we're approaching the size of atoms which is a fundamental barrier, but it'll be two or three generations before we get that far—but that's as far out as we've ever been able to see.*

- Gordon Moore (2006)

livelessons
©2016 Pearson, Inc.

A Brief History

Power Wall

- As transistor density increases, so too does power consumption (and dissipation)
- This limits the speed (and density) of transistors on a chip

Atomic Limits

- Thinner transistors can switch faster
- But you cannot make a transistor smaller than a single atom
- This limits the speed of an individual transistor

livelessons
©2016 Pearson, Inc.

A Brief History

> *We have another 10 to 20 years before we reach a fundamental limit. By then they'll be able to make bigger chips and have transistor budgets in the billions.*

- Gordon Moore (2006)

livelessons
©2016 Pearson, Inc.