

Riverside Tech Expo
Riverside, California
October 12, 2010

Microsoft[®]

Stuart McKee
National Technology Officer

Our conversation....

- How did I get here?
- Technology history quiz....
- How did this happen?
- What next?
- stimulated yet?



How I got here.....



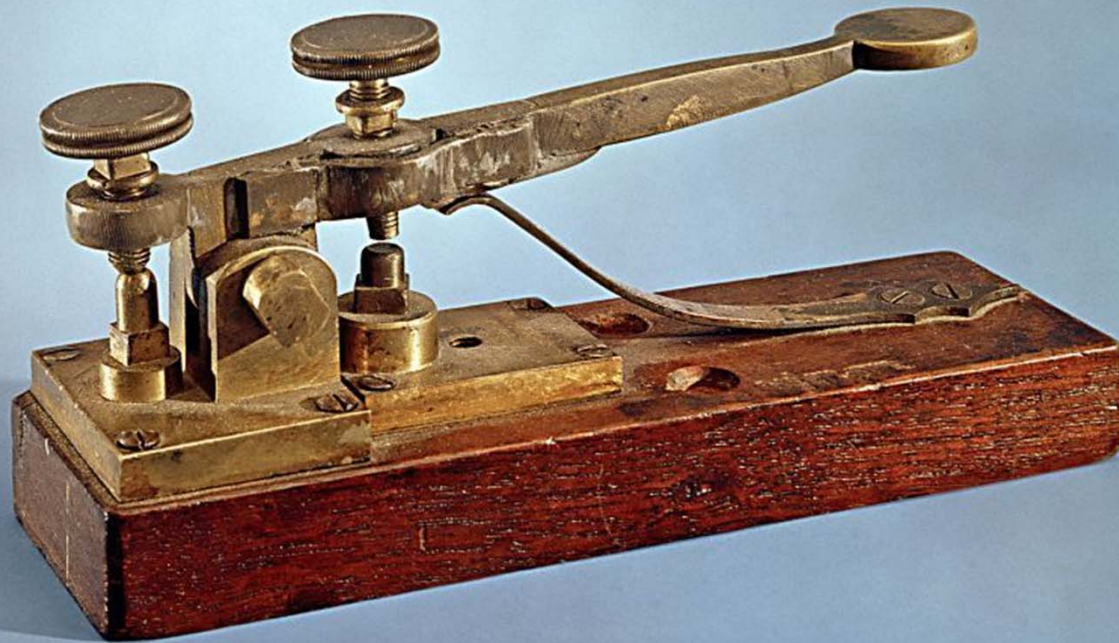
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Technology History Quiz.....

* Extra credit: what is WYSIWYG?

What hath God Wrought?



Samuel Morse 1844

This 'telephone' has too many shortcomings to be seriously considered as a means of communications.

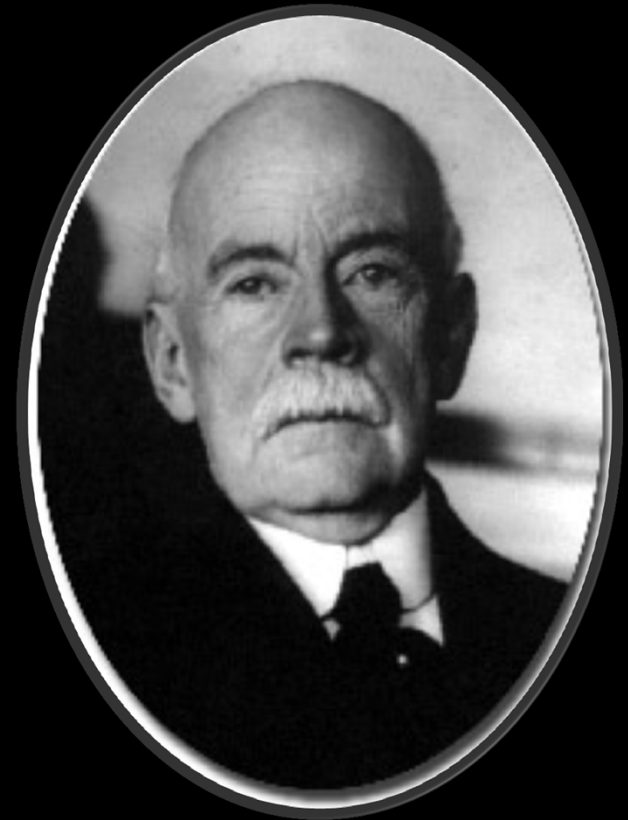
The device is inherently of no value.

Western Union memo, 1876



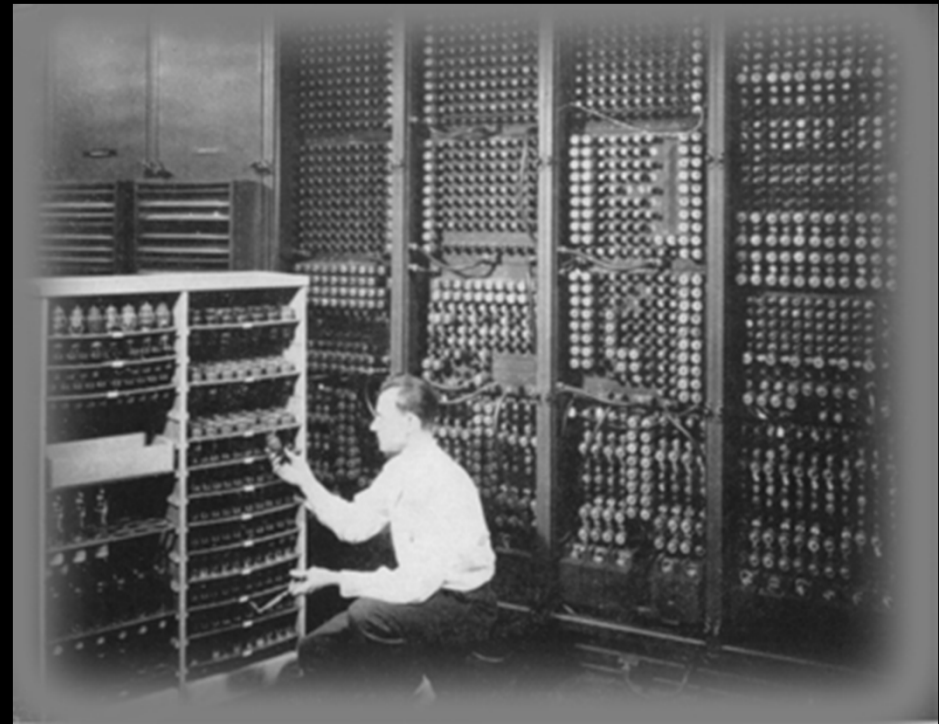
Everything that can be invented has been
invented

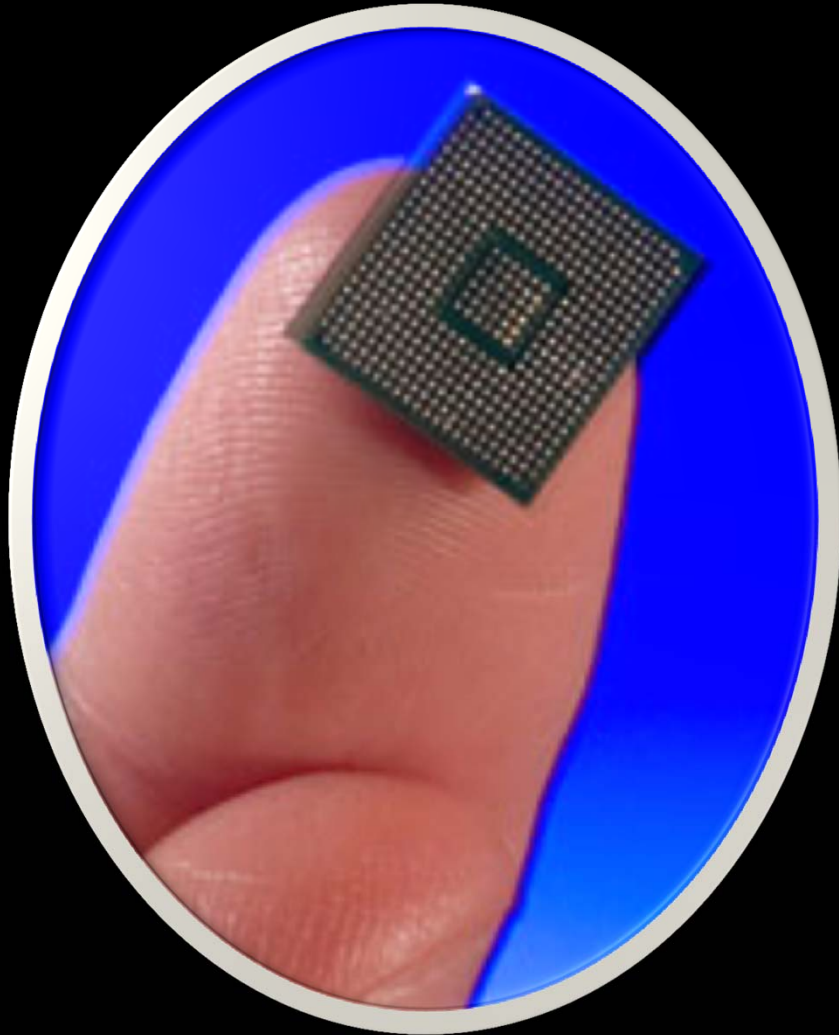
1899 – Charles H. Duell
Commissioner of U.S. Patents
urging President McKinley
to abolish his office.



“I think there is a world market for about five computers.”

Attributed to Thomas J. Watson
Chairman of the Board of
International Business Machines
1943





Computers in the future may have only 1,000 vacuum tubes and perhaps weigh 1.5 tons.

Popular Mechanics 1949

Paul Allen and Bill Gates develop a
BASIC computer language for the Altair
8800.

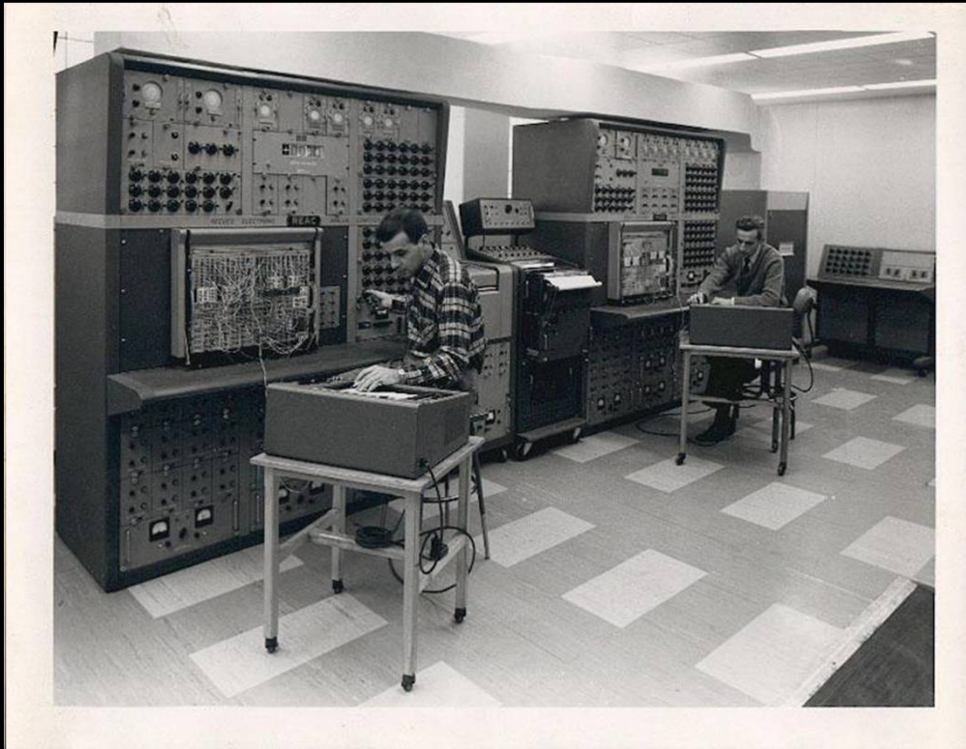
1975



“A PC on Every Desk
and
in Every Home”

Bill Gates
1975





There is no reason for any individual to have a computer in their home.

Ken Olsen (founder of DEC), 1977



64K should be enough
for anybody.

Bill Gates 1981

Beginning here:
**PS special
home-electronics section**

PS SPECIAL **HOME
ELECTRONICS**

Home electronics? Just a few years ago, a section telling you about the latest developments in computers, digital audio technology, and satellite-TV antennas would hardly be considered home electronics. But this year, all that and more is just part of what we have come to expect for our living rooms. In the next 16 pages of this special section, you'll see precisely what we mean: Never before has home electronics meant such a variety of new and exciting products and ideas.

New personal computers

— now the big guns have arrived

IBM heads the list of new small-computer makers—and that means big changes to come

By WILLIAM J. HAWKINS

The room was jammed. I was lucky to be up front, before me sat the demonstrator. His hands stretched across the keyboard as characters streamed onto the CRT display. It was a computer, a personal model for use in home or office. But it wasn't just any new small computer—this was an IBM.

IBM entering the personal-computer business is like General Motors making motorized scooters—you could

Continued



The IBM personal computer (Box 1328, Boca Raton, Fla. 33432) can be made into a complete system by adding the disc drives and printer as shown here. Other options, such as memory and graphics, are added with internal circuit boards.

NOVEMBER 1981 | 93

The number of installed PCs worldwide has surpassed 1 billion units... (at current growth just under 12 percent annually)... it will surpass 2 billion units by early 2014.

Gartner, June 2008

By 2014, over 3 billion of the world's adult population will be able to transact electronically via mobile or Internet technology.

Gartner, 2010 predictions

*extra credit: how many kids will be born digital?

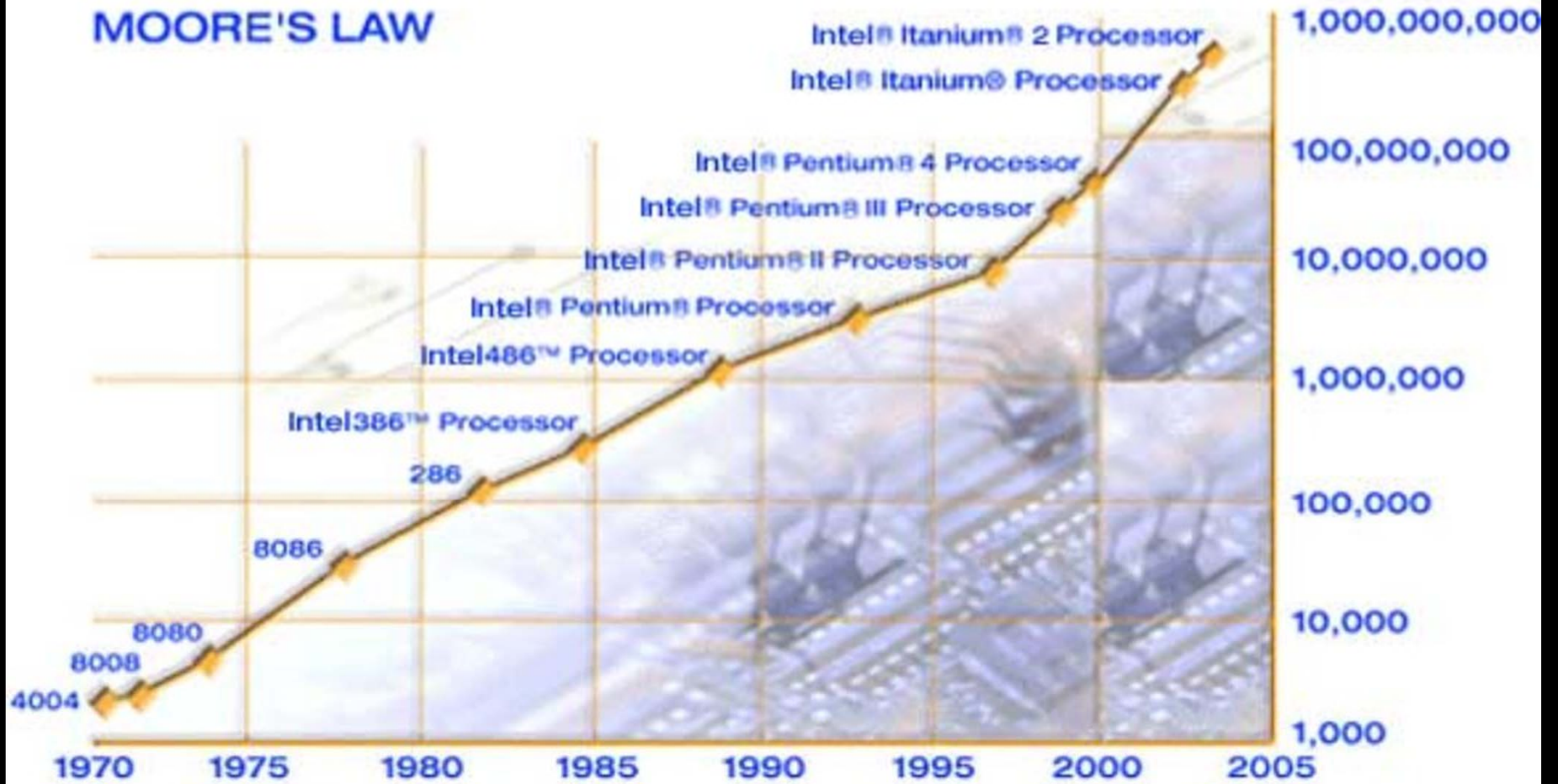


How did this happen?






MOORE'S LAW

transistors



Supercomputing: Yesterday vs. Today

| | 1991 | 1998 | 2005 |
|---------------------|---|---|---|
| |  |  |  |
| Architecture | 16 x Vector 4GB, Bus | 24 x 333MHz Ultra-SPARCII, 24GB, SBus | 4 x 2.2GHz Athlon64 4GB, GigE |
| OS | UNICOS | Solaris 2.5.1 | Windows Server 2003 SP1 |
| GFlops* | ~10 | ~10 | ~10 |
| Top500 # | 1 | 500 | N/A |
| Price | \$40,000,000 | \$1,000,000 (40x drop) | < \$4,000 (250x drop) |
| Customers | Government Labs | Large Enterprises | Every Engineer & Scientist |
| Applications | Classified, Climate, Physics Research | Manufacturing, Energy, Finance, Telecom | Bioinformatics, Materials Sciences, Digital Media |

* Extra credit if you can explain 'gigaflop'

Gigaflops at a discount...

| Date | Approximate \$ cost per GFLOPS | Technology |
|-----------------|-------------------------------------|--|
| 1961 | \$1,100,000,000,000 (1 trillion) | About 17 million IBM 1620 units costing \$64,000 each |
| 1984 | \$15,000,000 | Cray X-MP |
| 1997 | \$30,000 | Two 16-processor Beowulf clusters with Pentium Pro microprocessors ^[32] |
| 2000, April | \$1,000 | Bunyip Beowulf cluster |
| 2000, May | \$640 | KLAT2 |
| 2003, August | \$82 | KASY0 |
| 2007, March | \$0.42 | Ambric AM2045 ^[35] |
| 2009, September | \$0.13 | ATI Radeon R800 ^[36] |

* Note US GDP in 1961 – ½ trillion \$

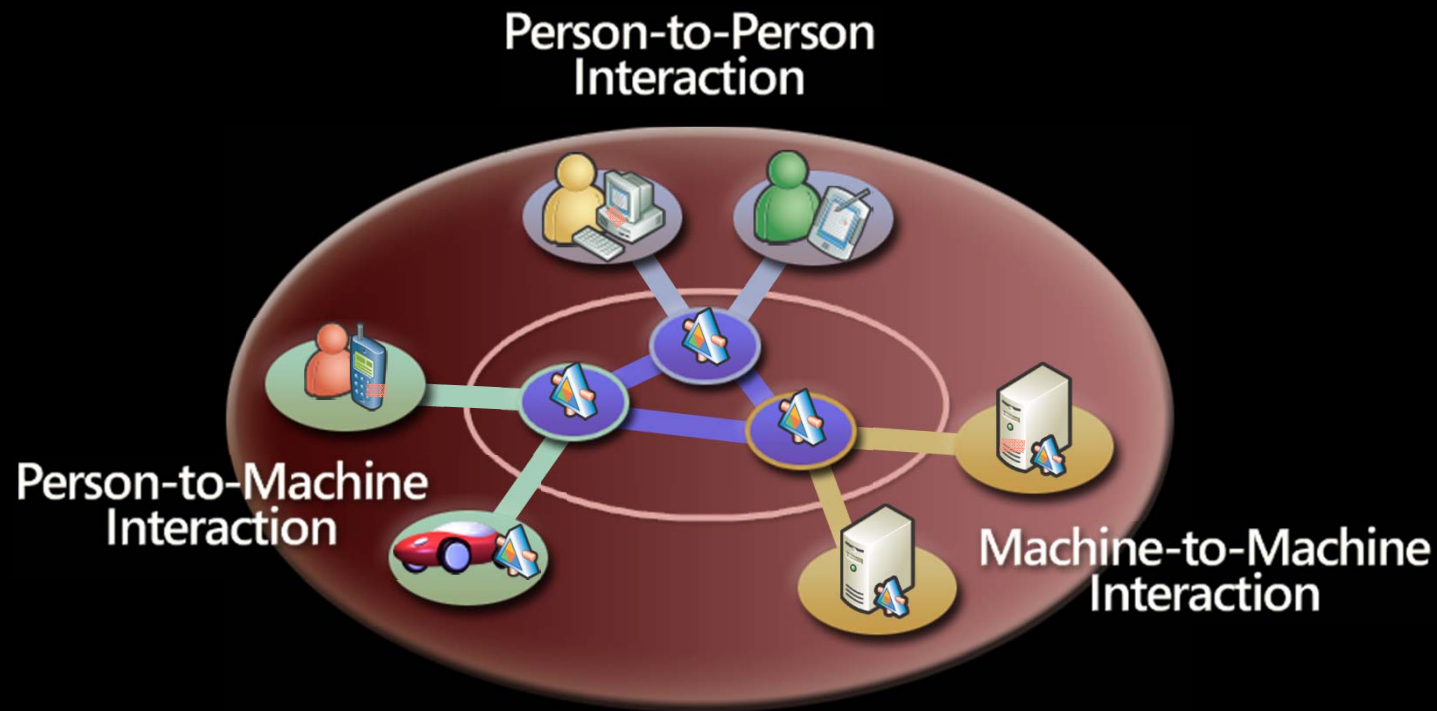
Source: wikipedia

What Next?

The Next Wave In Computing

The "Cloud"

Fabric of loosely coupled systems,
services, devices, applications, data...



We're

all in