50 Years of
“Scaling” Jack Kilby’s Invention

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Miniaturization ("Scaling" today) has driven multiple eras of information technology.

What's Next?

Smaller Components → Cheaper, Faster, More Energy-Efficient Systems

Source: Ray Kurzweil
Insufficient Scaling in this Vision!

Scientists from the RAND Corporation have created this model to illustrate how a "home computer" could look like in the year 2004. However, the needed technology will not be economically feasible for the average home. Also, the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use.

Source: Popular Mechanics, 1954
1958: First Integrated Circuit (Kilby)

Voltage-Controlled Oscillator

Source: Texas Instruments
1966: First Hand-Held Calculator (Merryman)

Source: Texas Instruments
1971-74: First Microcomputer Chips (Cochran and Boone)

Source: Texas Instruments

TMS 1000

RRD 3/12/08
1979-82: First Programmable DSP (Cragon)

Source: Texas Instruments
ICs Have Come a Long Way since 1958
(e.g., one transistor to over a billion transistors)

Source: Texas Instruments