

## Remembering Ken Olsen – An IT Icon

March 2011

Ken Olsen was my first boss. As a graduate student working as a research assistant at MIT's Lincoln Laboratory in 1957, I was assigned to Ken to work on the first all-transistorized computer ever attempted. I was under Ken's supervision when he decided to start his own company using the transistor technology he had developed at Lincoln Labs. The company he founded was Digital Equipment Corporation, which was to become in the late 1980s the second largest computer manufacturer next to IBM.



Ken Olsen  
credit: Gordon College

I kept in touch with Ken for several years after he founded DEC. Throughout his career, he carried his personal style of management that I had the privilege of witnessing. He was nurturing and fiercely loyal to his employees. During one visit, when he was showing me around the old New England mill that was DEC's first home, Ken seemed to know virtually everyone by their first name and on what they were working.

Through the PDP and VAX series of computers, it was Ken's vision of interactivity that was a powerful force in moving computing from centralized mainframes into the hands of people. Though he passed away on February 6, 2011, at the age of 84, his legacy will be felt by all of us for a long time to come.

### Ken's Early Years

Ken was born in Bridgeport, Connecticut, in 1926. As a young boy, he became enthralled with electronics and spent a good deal of his time in his father's basement workshop taking apart and repairing radios.

He joined the Navy in World War II at the age of 18 and attended the Navy's electronics school, where he learned how to maintain radar, sonar, and navigation systems.

### On to MIT and Lincoln Laboratories

After the war, Ken entered MIT in 1947, where he earned his bachelor's and master's degrees in electrical engineering. Following that, he joined MIT's Lincoln Laboratory. One of his first jobs was working on Whirlwind, an advanced computer for its time. Whirlwind was a behemoth! It contained 10,000 vacuum tubes, occupied an entire floor of a



Whirlwind

large building, and had a failure interval measured in days. Whirlwind grew into the Air Force's Semi-Automatic Ground Environment System (SAGE), which was intended to track and intercept enemy aircraft.

Ken was then assigned to Lincoln Labs' TX-0 project. TX-0 was the first successful attempt to build a large, general purpose, transistorized digital computer. Modeled after Whirlwind, it was an 18-bit machine (two bits for instructions, 16 bits for address) with a 4K magnetic-core memory. It fit in a room instead of requiring an entire floor.

It was when Ken became the manager of a group tasked with building a transistorized multiplier that I, as a research assistant at MIT, started working for him. Ken made a breakthrough in transistor-circuit packaging when he built logic circuits – gates, flip-flops, etc. – into plastic tubes resembling vacuum tubes. These packages could then be plugged into backplanes resembling the known vacuum-tube technology of the time.

## Digital Equipment Corporation

Feeling strongly that packaged transistor-logic circuits were a significant innovation for the emerging computer technology, Ken left Lincoln Labs in 1957 to begin his own company. He was chided for giving up 70% of his new company for a paltry \$70,000 from venture capital firm American Research and Development. His new company was Digital Equipment Corporation, and it became the first successful, venture-backed computer company in history.



The Mill, Maynard, Massachusetts

Ken set up operations in Maynard, Massachusetts, in an old mill that was an industrial age relic, where blankets for the Union army had once been made. Rather than continue with vacuum-tube-like packaging, DEC moved to plug-in printed circuit boards. These evolved into the company's popular line of "flip-chips."

In 1960, the company introduced its first computer, the PDP-1 (Programmed Data Processor), which was built using DEC's flip-chips.

The PDP-1 was soon followed in 1965 by the PDP-8. The PDP-8 was a twelve-bit, desktop computer with 4k of memory, no operating system, and an assembler, PAL. It was the first computer to be mass produced. At a starting price of \$18,000, the PDP-8 established minicomputers as a major industry. It moved computing from the large corporate data centers to small- and medium-size businesses.



PDP-8

Five years later, in 1970, DEC announced the PDP-11, a sixteen-bit computer with 64K of memory. Until PCs were introduced, the PDP-11 and its successor, the 32-bit VAX (Virtual Address eXtension), became the most popular computers ever.

DEC created one of the first sales forces to be based on salary rather than on commission. Ken's philosophy was that salespeople should concentrate on what the customer needed rather than on what was going to make them the most money.

By the late 1980s, DEC was the second largest computer company in the world, next to IBM. With operations in 95 countries, it had over 120,000 employees and generated \$14 billion in annual revenues. It ranked among the most profitable companies in the nation.

## In Retrospect

DEC's fortunes began to fade in the early 1990s. The company was late to recognize the growing popularity of the smaller personal computers that were just entering the marketplace; and its attempt to compete with its own personal computer, the Rainbow, failed.

One of Ken's famous misstatements was his pronouncement that "there is no reason for any individual to have a computer in his home." He later explained that his quote was taken out of context. What he meant was that he couldn't envision a day when computers would run people's lives. (It seems that he may have been wrong here as well.)

Digital also resisted the market's shift from proprietary hardware and software to the new technology of open systems. Though it was a major early driver in interactive systems, networking, and Ethernet, Digital seemed to lose its way in the Internet era.

In 1998, Compaq bought what was left of DEC. Compaq was in turn acquired by HP in 2002. HP's OpenVMS product line is the legacy of Ken Olsen. Though Digital is no longer around, it is its innovations in interactivity that brought computers to the people.

## Honored by Many

Ken received many honors during his life. In 1986, Fortune Magazine called him "America's most successful entrepreneur." The Town of Maynard declared June 17, 2006, "Ken Olsen Day."

Ken was a trustee of Gordon College in Wenham, Massachusetts. In September 2008, Gordon College dedicated the 80,000 square foot Ken Olsen Science Center.



The Ken Olsen Science Center  
Credit DECconnection

People called Ken's management style "management by walking around." Whether at The Mill or in sales offices around the world, Ken took time to visit with and listen to his employees. This led to a culture in which any employee could talk to any other employee or manager – the "open door" policy. The result was a fostering of engineering innovation.

A wonderful look at Ken and his accomplishments can be found in two videos published by PC Magazine on February 8, 2011, in an online article entitled [Computing Pioneer Ken Olsen Dead at 84](http://www.pcmag.com/article2/0,2817,2379648,00.asp). The videos can be found at <http://www.pcmag.com/article2/0,2817,2379648,00.asp> (view the first video to see the second one).

Ken Olsen left us on February 6, 2011. Though he is gone, his legacy lives on. He was indeed the father of the computer's second generation – the transistorized computer.