

The Digital Age

Prologue:

This document comes from the Summer 2011 *Inventing Tomorrow* publication, scanned and reprinted with permission by the University of Minnesota College of Science and Engineering. It is a scan of the page 14 and 15 article "The Digital Age." This *Inventing Tomorrow* issue was a special edition celebrating the 75th anniversary of the Institute of Technology, now the College of Science and Engineering.

This article and photos are a factual re-cap of the post WWII relationship between our heritage company, Engineering Research Associates, and the University of Minnesota.

The article mentions the Seymour Cray relationship to the CDC 1604. It doesn't include the fact that the University had a 1604 in the Experimental Engineering building. In 1965 I took a FORTRAN programming class taught by Dr. Marvin Stein using that computer and his FORTRAN text book, co-authored by Dr. Munro.

More of **our legacy story** not in the brief article! As Dr. Stein took on more computer science department responsibilities in late '70s, Dr. Peter Paton became director of the Experimental Engineering housed Numerical Analysis Center. Pete was a former UNIVAC employee – In the early '80s; he and Dr. Bill Franta collaborated on a cache memory simulation consulting contract with Sperry-UNIVAC. Lowell Benson was the cache memory study manager, Dave Kaminski the lead engineer. Those simulation results subsequently formed the architecture basis for the cache memory designs of the AN/UYK-43 - Dave was one of the UYK-43 design engineers.



Article scanning and prologue by Lowell A. Benson - U of MN, BEE 1966 – UNIVAC 1960 => UNISYS 1994 – VIP Club Legacy Committee Co-chair

The DIGITAL

Age



Digital technology pervades every aspect of modern life. From home entertainment systems, Internet commerce, and cell phones to the high-speed computers and powerful software used to design machinery, vehicles, buildings, and clothing, digital technology has revolutionized industry, entertainment, education, and commerce.

The history of computing in Minnesota can be traced back to the post-war era when Engineering Research Associates (ERA) in St. Paul was developing some of the most advanced computers.

Co-founded by computer pioneer and visionary William Norris, and employing numerous engineering graduates of the University of Minnesota, including Seymour Cray, ERA was a dominant player in the budding computing industry. Several computer industry powerhouses can be traced to ERA, including Sperry-Univac, Control Data Corporation (CDC), and Cray Research.

On the University campus, there was growing interest in computing and its application to mathematics, physics, chemistry, and economics. Several departments were using the University's Reeves Electronic Analog Computer (REAC)—state-of-the-art in 1949. The REAC was in constant demand and it soon became clear that the University needed to expand its resources. In 1955, Sperry-Univac, a company formed by the merger of ERA and Eckert-Mauchly Computer

Corporation, gave the University a gift of 400 usage hours on the ERA 1103, which sparked the beginning of the Department of Computer Science and Engineering.

To manage the new gift and other computing resources, the University hired Marvin L. Stein, a professor of mathematics with a Ph.D. from UCLA's Institute for Numerical Analysis. He immediately began to develop and instruct the first courses in high-speed computation, which shaped the path of the University's computer science curriculum.



Dean Athelstan Spilhaus (left) visiting University computing facility in 1950.

University interest in computing continued to grow, as it acquired its first digital computer in 1958—a UNIVAC 1103—housed in the Numerical Analysis Center in the Experimental Engineering building, a site now occupied by the Departments of Computer Science and Engineering (CS&E) and Electrical and Computer Engineering (ECE). The acquisition of additional computers led to increased computer use on campus and additional computer classes offered by the college's School of Mathematics.



Marvin Stein, Professor Emeritus

About the same time, the core ERA founders left Sperry-Univac to form Control Data Corporation. At CDC, Cray was the chief engineer for the CDC 1604, launched in 1960 as the first commercially successful transistorized computer. Cray then moved a design team to Chippewa Falls, Wis., where they created the first supercomputer, the CDC 6600. By 1967, the company

sold 63 machines, priced at between \$5 and \$10 million each. That year, the University of Minnesota, with help from the NSF, became the third university to buy a CDC 6600 at a reduced price of \$3.4 million. The CDC 6600 was so successful it propelled the company, Cray, and Minnesota to international prominence in computing. ■

"People didn't think that working on machines to solve problems was a good idea."

—Marvin Stein
COMPUTER SCIENCE AND
ENGINEERING DEPARTMENT
FOUNDER

*The Computer Science and Engineering department has grown to almost 40 faculty members who provide leadership and expertise in nearly all areas of computer science and engineering.
Computer science and engineering alumni have founded more than 180 companies.*

"I was fortunate in having an instructor at the University of Minnesota who was looking after me. When I said, 'What's next?' he said, 'If I were you, I'd just go down the street here to Engineering Research Associates, and I'd think you'd like what they're doing there.'"

—Seymour Cray, EE '49
FATHER OF THE SUPERCOMPUTER

