A Look at Early Open Systems

BY MICHAEL NORTON

In the late 19th century, the Industrial Revolution sparked a massive migration from impoverished nations to the New World. The U.S. Census Bureau, faced with the daunting challenge of counting the burgeoning population, recognized that its current methods were woefully inadequate for the task. In the spirit of the age, the Census Bureau looked to technology for solutions and sponsored a contest to encourage inventors to devise more efficient methods of tabulating the massive amounts of data. It seems fitting that the winner, Herman Hollerith, was a German immigrant and an employee of the Census Bureau who capitalized on the opportunity by forming the Tabulating Machine Company in 1896. In 1911, the company merged with Computing Scale Company of America and International Time Recording Company to form the Computing-Tabulating-Recording Company, or C-T-R. After recruiting the second ranking executive of NCR, Thomas Watson, to run CTR, the company blossomed, expanding its operations to other continents. To reflect its growing world presence, in 1924 the company changed its name to International Business Machines.

It was Watson who fostered the corporate image of IBM most of us have today, including the infamous suits. He was a firm believer in the value of company pride and loyalty, and IBM was renowned for its generosity towards its employees, being one of the first companies to offer such benefits as group insurance and paid vacations. Watson's care of his employees proved to be visionary. Instead of laying off workers and curtailing production during the Great Depression, IBM continued to build machines despite decreasing demand, a strategy which paid off handsomely when the U.S. Government, attempting to alleviate the suffering of its people, proposed a new social program. With its inventory and production facilities at the ready, IBM was perfectly positioned to win the government contract to maintain records on 26 million people to fulfill the mandate of the Social Security Act of 1935.

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SUCCESS FOLLOWS SUCCESS

Success follows success, and other government contracts soon followed, along with government scrutiny. The Justice Department successfully prosecuted an antitrust case against IBM and Remington-Rand, who owned a practical monopoly on the punch card machine market, for requiring consumers to purchase their punch cards. A couple of years later, research began that would transform IBM from just another purveyor of tabulating machines and typewriters into the monolithic juggernaut we recognize today.

Like most wars, World War II sparked a wave of research. We've already seen in another column how the ENIAC was born during this era at the Moore School. Many of these research projects were joint efforts between academia and industry. IBM worked on just such a project with Harvard University, resulting in The Automatic Sequence Controlled Calculator, or Mark I. Completed in 1944 after six years of development, the Mark I belonged to the dead-end branch of mechanical computing machines and was too late to be of much value in the war effort.

MOVING INTO THE COMPUTER AGE

The end of the war brought an added bonus to IBM, however; the return of Thomas Watson, Jr., who had served in the U.S. Army Air Corps through much of World War II. In 1946, just six months after returning to the company, Watson was named vice president. He was instrumental in moving IBM into the computer age. In the year he was named president of the company, 1952, IBM released its first commercial computer, the IBM 701, which, as we saw a couple of columns ago, competed quite successfully against the UNIVAC. The fully transistorized 7090 mainframe, released in 1959, built on the success of the 701 and solidified IBM's position as the leading provider of business computer hardware. During Watson Jr.'s 20-year reign, IBM grew from a $900 million dollar company to an $8 billion dollar company.

Perhaps Watson's greatest contribution was to dis-integrate IBM's products. The bold concept of the System/360, introduced in April 1964, was that components could be mixed and matched between systems. This meant a customer didn't necessarily have to upgrade his DASD devices to take advantage of the newest processor. This philosophy was also applied to marketing strategies, and customers were no longer forced to buy complete packages of hardware,

software and services but rather could choose from a variety of options or vendors.

Because this strategy was so successful, it is easily forgotten that the new openness was considered to be a rather risky gamble at the time, much as the move, two decades later, to open the IBM PC architecture to the clone makers, was considered a gamble. In both cases, openness had exactly the opposite effect from the dire predictions of advocates of proprietariness: It made IBM the standard. From manufacturers of peripherals to software developers, everyone started creating their "part" to be "IBM compatible." This created a broader market for the independent vendors and, for IBM, the impression that adoption of their technology was a long-term investment and, correspondingly, that adoption of a competing technology was a short-sighted plunge into proprietariness.

In a rather ironic twist, Thomas Watson, Jr., left IBM to become U.S. ambassador to Russia. IBM's rise from a small business machine supplier to the envy of Wall Street hinged basically on two business decisions that would cause any self-respecting Capitalist to roll over in his grave. Maintaining production capacity and personnel to produce a product for which there is dwindling demand is not a standard business maneuver — just ask the rightsizing IBM of the '80s. Yet, the gamble paid off handsomely when IBM was ready to win the Social Security contract. The business acumen of open systems vs. proprietary technologies continues to this day, despite IBM's example of how an open system can be parlayed into a standard. Microsoft and Sun could learn a thing or two from their big brother Big Blue. **ts**

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