

# SPECTRUM

DECEMBER 1985 A SPECIAL EDITION  
COMMEMORATING THE TWENTIETH ANNIVERSARY OF GENERAL ELECTRIC INFORMATION SERVICES COMPANY

JOE SCHARTMAN

20  
YEARS OF  
EXCELLENCE

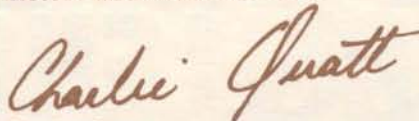
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**INFORMATION  
SERVICES**

General Electric Information Services Company

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**GENERAL ELECTRIC  
INFORMATION SERVICES**

U.S.A.

General Electric Information Services Company

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**WALTER W. WILLIAMS**  
PRESIDENT

December, 1985

Dear Fellow Employees:

As you read this special anniversary issue of *SPECTRUM* which highlights "Twenty Years of Excellence" at GE Information Services, I hope you'll be impressed, as I was, by the range and caliber of our accomplishments as a company. Moreover—and perhaps more importantly—as I look to our past, I see the prologue to our future.

The history of GE Information Services is the story of creative and far-sighted people who encountered challenge after challenge and responded with solutions that frequently far exceeded the then-current state of the art. As we develop entrepreneurial strategies for the next 20 years, we are emphasizing our strengths, which stem from our roots:

- Our goals remain essentially the same: be number one or two in markets we pursue; maintain growth and profitability; produce high-quality products and services; and provide the top standard of dependable client services.
- We will modify products and services to take advantage of our strengths and to target the most profitable market niches. Just as we once anticipated future markets by moving from computer time-sharing to across-the-board services and products to information sharing, so have we recently moved to position ourselves to be the leader in markets in network-based services, EDI, consulting, software, and integrated communications.
- We will design our products and services to match end-user needs, essentially responding to the market's demands by specializing in inter-company and other applications in our areas of particular expertise. From our longstanding accounts, we are now choosing to focus on specialized services for industries such as banking, health care, international trade, office communications, claims and automated clearinghouse functions, payment services, and value-added services relying on application/industry expertise and application software.
- We will employ our worldwide networks and personnel to provide high-quality products and services. Two of our great strengths are GE Information Services' outstanding reputation for quality and reliability and our established international operations. Both constitute a basis for our projected success in narrowly focused markets and in potentially explosive international markets.

Where others have seen crises or impossible obstacles, GE Information Services historically has seen opportunities and seized them. As you read about—and take pride in—our last 20 Years of Excellence, I hope you'll also be thinking about ways to sustain and surpass our accomplishments in the 20 years to come.

Walter W. Williams  
President

# Chronicle of the Early Years

*Ladies and gentlemen, I'd like to do a song now,  
that tells a little story, that makes a lot of sense  
... "Awopbopaloopbop — Alopbopalamboon!  
Tutti frutti! All rootie! Tutti frutti! All rootie!"*

—Elvis Presley, 1956\*

World War II and the Korean War had ended. Peace and the "baby boom" had settled in. It was 1956, a time of crew cuts and hula-hoops, 3-D movies and, yes, Elvis Presley. Barbeques in suburbia were becoming our goals; television our fascination. Sputnik I had reached outer space, and UFOs were appearing in the night. Everybody seemed to like Ike, especially Vice President Nixon. Polio was being eradicated, and cables had provided the first transatlantic telephone service. Building of the great interstate highway system had just commenced.

Corporations were dominating the economic scene, and technological developments were changing the face of American industry. A new industrial revolution had been launched in 1954 with the sale of the first commercial UNIVAC computer. And in 1956, in the arid land of Phoenix, Arizona, the General Electric Company pioneered in that revolution, forming a Computer Department to produce the ERMA system under contract with the Bank of America. That system led to full automation of the banking industry with its perfection of the Magnetic Ink Character Recognition method for reading coded characters along the lower edge of bank checks.

Shortly after its formation, the Computer Department set up a Scientific Applications Section to train personnel and provide programming support for hardware customers. Looking for a means to produce revenue, the section began selling various computing services, and between 1957 and 1959, it won three major contracts to provide computer-related per-

sonnel services. The contracts were with NASA in Huntsville, Alabama; with the United States Air Force in Falls Church, Virginia; and with Bell Laboratories in New Jersey, New Mexico, and on Kwajalein Island in the Pacific.

During this time, too, the component's name was changed to simply the Applications Section. But hardware sales remained the primary thrust of the department, and by 1962 its main product was the GE-225, a general purpose computer designed to do scientific and engineering calculations. That year, the Applications Section opened two computer centers in Chicago and Phoenix. Again the centers' major responsibilities were to support hardware sales: they conducted demonstrations, trained customers, and provided customer debugging and back-up services.

Computer sales boomed during the next three years, and the department opened additional centers in Bethesda, Schenectady, Dallas, New York, and Cleveland; in Richmond, California; and Wichita Falls, Texas. These were the early batch-processing days when people lined up to run their punched-card jobs or check processing on a computer. For those who didn't have in-house computers, the centers provided walk-in batch-processing services. The revolution was really underway, and the centers acquired more and more external business by offering programming services, package applications, and machine time. Little could anyone know at the time that these centers would be so essential to General Electric's success in the time-sharing business.

## Genesis of an Industry

1964-1966

In the early and middle sixties we were emerging from our suburban cocoons. Elvis had lost some of his spotlight to four mop-topped Beatles from Liverpool. A preacher named Martin Luther King, Jr., had marched for blacks' civil rights in Selma, Alabama. A Catholic had defeated Nixon for the Presidency, then promised we'd beat the sputniks and be on the moon by decade's end. He didn't live to see it, and we sobbed.

Collegians were cramming for the Peace Corps instead of into Volkswagens and phone booths. And corporations were increasingly supporting the research and development taking place at universities and colleges. One such cooperative venture occurred between General Electric and Dartmouth College in Hanover, New Hampshire.

Two Dartmouth mathematics professors, John Kemeny and his assistant Thomas Kurtz, had been experimenting since 1959 with ways to get students to use computers more directly in their college work. Using LGP-30 computers, their undergraduate students were proving themselves quite adept at composing major programs and software systems.

The LGP-30, however, could accommodate only one student at a time on its

\*The song itself was written by Little Richard.

console. And Kemeny soon realized that if he was to succeed in making computers an essential part of *all* students' education, two things would be needed—a less formidable programming language and some sort of "time-sharing" system. He needed a way to serve a multitude of students virtually simultaneously.

### Conceiving the Idea

To the first point, Kemeny gathered a team of about six undergraduate students, and in an impressively short time, they invented a new programming language, the Beginners All-Purpose Symbolic Instruction Code—BASIC. But even though the language was successful, its mode of operation was still far from what Kemeny wanted.

About that time, in 1963, General Electric's Computer Department developed a new message switching system that could handle as many as 40 teletype-writers at once. Called the Datanet-30, or DN-30, the system was installed for the Chrysler Corporation in the eye of considerable publicity. It captured Professor Kemeny's fascination and inspired him to try a similar real-time system at Dartmouth: he would marry a GE-225 computer to a DN-30. The GE-225 would perform the actual computations, but it would operate as a "slave" to the DN-30 "master." The master would allocate the services of the slave among its several simultaneous users.

Convinced of Kemeny's insight, Dartmouth then obtained funding from the National Science Foundation, and in spring 1964, General Electric loaned the college one each of the GE-225 and DN-30 computers. Dartmouth students, under the direction of Professors Kemeny and Kurtz, began programming the system, and GE furnished a resident liaison to answer technical questions and observe.

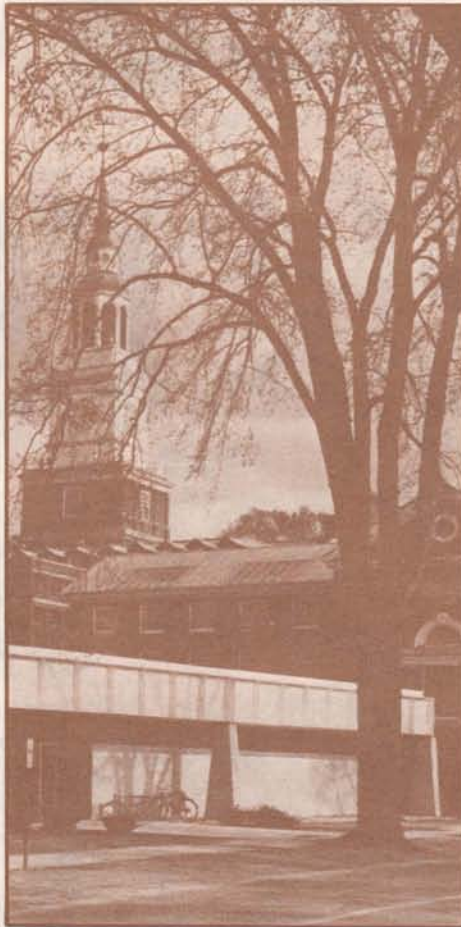
On May 1, 1964, at four o'clock in the morning, the Dartmouth time-sharing system was born. By the following October, Dartmouth had coupled the DN-30 with the GE-235—a faster version of the 225—and had developed its software sufficiently to launch a freshman training program and to open the system for use by all interested students.

### Founding a Business

Meanwhile, during Dartmouth's May-to-October development period, General Electric decided to gain its own knowledge of time-sharing by experimenting with a duplicate system in Phoenix. The Computer Department and the college

worked closely through this time, keeping their two systems as similar as possible. And by October, with software improvements incorporated, the Phoenix system, too, was capable of serving multiple users. Later that month, the GE-Dartmouth time-sharing system was publicly demonstrated at the Fall Joint Computer Conference in San Francisco.

Eventually the system was opened to user's outside the Arizona plant. General Electric employees from across the country—including corporate headquarters—obtained teletypes and accessed the system through DIAL-COMM phone connections. Outside the company, several people were offered access to the system through long-distance phone calls. Soon more than 100 trial users nationwide were getting free computational service. GE, in turn, was getting valuable user feedback



Dartmouth College, home of the time-sharing concept.

and the experience of operating the system under load.

Late in 1964, the Applications Section was given full profit and loss responsibilities. Its name was changed to the Information Processing Business (IPB); the computer centers became Information Processing Centers (IPCs); and Warner Sinback was appointed the IPB manager. The component was still, however, a part of the Computer Department, whose prime interest in time-sharing was its potential to support the sale of profitable *hardware* contracts.

One of Sinback's first projects was to determine which of the IPB's existing services or potential new ones could produce the most revenue. The processing centers and government contracts were filling out his initial list when an engineer invited him downstairs "to see something called time-sharing." Sinback was immediately impressed with the powerful mechanism and soon was convinced that it had great commercial potential. But it was going to cost money—\$208,000 in fact—to refine the software with such "niceties" as the security features and compilers that customers would need.

In early 1965, Sinback proposed developing a commercialized time-sharing service to his Division Manager and requested the funds for doing so. In April the project was approved, but the money was not. The IPB would have to cover its expenditures for time-sharing by generating \$208,000 in unbudgeted new revenue by year's end—a criterion that would keep most projects from ever seeing the light of day.

In the meantime, Sinback had concluded early in the year that if the time-sharing venture was going to succeed it needed to be distanced from the hardware sales focus. After conducting an informal, "back of the envelope" study, he decided that the IPB should be moved to Washington, D.C. Its metropolitan area had the largest conglomeration of computer talent in the country. In terms of transportation, it was rapidly becoming just as convenient as New York City. And its cultural and educational facilities provided an excellent environment for the caliber of people he was seeking.

At first, most people thought Sinback's choice was "crazy." But eventually he gained the necessary approval, and in July 1965, headquarters for the IPB was set up in Bethesda, Maryland.

The engineering development work for the time-sharing system was still taking

# INFORMATION PROCESSING CENTER







































