Chapter 1

BIRTH AND MISSION

Table of Contents

Chapter 1

BIRTH AND MISSION

1.1 INTRODUCTION

When the word informatics is mentioned, one usually thinks of the science of information processing by automated means, generally by an electronic computer. The word means precisely this in much of the world and especially in Europe. However in the United States and for those actively involved in the computer industry, the name Informatics signifies a well-known successful company in the computer services business. It emphasizes software, the term given to systems design, computer programs, and documentation; i.e., the part of the data processing industry that is not concerned with the manufacture of hardware.

The history of Informatics is the history of its people, their accomplishments, and the challenges they faced in a wide diversity of technical projects and business endeavors. The technical projects range from custom programming services and computer program system design to the production of standardized software packages, installation of computerized communications systems, and the operation of commercial remote-access data processing facilities. These projects were performed for a variety of customers which span the many agencies within the Department of Defense and NASA to some of the largest FORTUNE 500 companies as well as small legal firms. They involved computer applications from radar tracking and sonar mapping to insurance industry, health care, and brokerage house accounting systems. The growth of the company was marked as well by business decisions concerning investments in 31 acquisitions and joint ventures in addition to over 50 major internal development projects. Therefore Informatics history is not just a history of a single company or two but the story of over 20 years of association and success of a small group of top level executives and computer industry pioneers and the talented and creative people who worked for them in the two corporate enterprises which they directed.

Although Informatics Inc. has been familiar to many industry participants for 20 years, the technical truth is that the name Informatics actually refers to two separate corporations which were founded and managed by a common cadre of computer professionals and managers.(1)

The first Informatics Inc. was founded during March 1962 and went out of legal existence as a corporate entity on February 28, 1974, when it was acquired by and merged with Equimatics, Inc., a subsidiary of The Equitable Life Assurance Society of the United States.(2) The resulting entity immediately changed its name to Informatics, Inc. It is this second Informatics with which people are now familiar. The Equitable later divested itself of its subsidiary in two steps by public stock offerings in 1979 and 1980.(3) In May 1982 its name was changed to Informatics General Corporation.

The history of Informatics is thus based on the contributions and ideals of its three key participants: Dr. Walter F. Bauer, Werner L. Frank, and Francis V. "Frank" Wagner. The founder and leader of the Informatics team is Bauer. It is with him that the story must begin.

1.2 THE RAMO-WOOLDRIDGE YEARS: THE BACKGROUND OF INFORMATICS FOUNDERS

Following service in the U.S. Air Force as a weather officer, Walter Bauer received his doctorate degree in mathematics from the Universty of Michigan in 1951. After this he joined the Michigan Aeronautical Research Center of the University of Michigan at Willow Run as a research engineer using the SEAC computer (Standards Eastern Automatic Computer, in Washington, DC), one of the first electronic digital computers used for general purpose computations, missile simulation and real time control. Bauer was working on the development of the world's first ground based digital flight control system for the BOMARC, a ground-to-air missile. Four years later Bauer was hired by the Ramo-Wooldridge Corporation of Inglewood, California, as its first manager of computer applications. The small staff of ten people which he initially hired rapidly grew to a department of 250 people under him as the Computation and Data Reduction Center of Space Technology Laboratories. The Center performed business and scientific computation for Ramo Wooldridge's systems engineering, coordination of contractors and technical direction for the United States Air Force missile and space program.

It was at Space Technology Laboratories (and later at the Ramo-Wooldridge Division) that Bauer recruited a number of pioneering, creative, and talented managers, systems analysts, and programmers who became closely associated with each other and who later joined in the formation and early activities of Informatics. Among these people were Werner Frank, Richard Hill, Richard Kaylor, Marvin Howard, Lynn Jones, and Robert Rector. The Center used several early computers which included the Univac 1103A and IBM 704 computers. Use of this equipment also led to associations with vendor representatives and fellow professionals who belonged to the then blossoming computer industry associations and user groups. During these years, Bauer and his Ramo-Wooldridge colleagues became acquainted with Erwin Tomash, the West Coast Univac sales representative, and Frank Wagner and John Postley, fellow members and officers of the local chapter of the Association of Computing Machinery and of SHARE, the first IBM computers users group. Each of these men would play vastly important roles in the development of Informatics.(4)

In 1956 the Ramo-Wooldridge Corporation merged with Thompson Industries in the formation of Thompson Ramo-Wooldridge or as it is now known--TRW. As part of this corporate restructuring, Space Technology Laboratories was made a special organization whose only initial client was the Air Force and whose sole purpose for existence was to provide systems engineering and technical direction for the development of the Intercontinental Ballistic Missile System (ICBM). The Ramo-Wooldridge Division (which became known as the RW Division) was formed to design computer systems and applications for both military and commercial use. Bauer, desiring to expand his technical activities to nonmilitary endeavors, transferred to the RW Division in 1959 as manager of the Information Systems department. While in this position he was responsible for the division's activities in digital computer programming, large-scale systems design, computer display systems, and mathematical analysis. Marvin Howard had previously transferred into the Information Systems department temporarily reporting to Milton Moore as Director of the Information Processing Section responsible for the in-house data center operations during 1958. Conferring with Bauer over the interim period prior to Bauer's transfer, Howard built a

staff of 100 people in accordance with Bauer's plans to make the Information Systems department a commercial counterpart to the Space Technology Laboratories Computation and Data Reduction Center.

The department dealt with both the management and technical aspects of a wide variety of high technology projects including proposal preparation and marketing for commercial and noncommercial projects. For instance, in 1961, the nation's first computerized automobile traffic control system was designed and installed in the city of Los Angeles, California, under Bauer's direction. Another project involved the programming of a "polymorphic" computer, the RW 400, built by TRW for the Transit Satellite project, a "spy in the sky" effort of the U.S. Government. The RW 400 included multiple processors and peripheral equipment (all of which could be from diverse manufacturers), and could be reconfigured through a cross-bar switch--hence "polymorphic." This effort featured an early emphasis on man-machine interactive display console, very common today but extremely advanced and experimental for the 1960's. TRW considered commercializing this concept, but it was still too far ahead of the marketplace to be a practical product entry.

The Information Systems department also conducted work for several other multi-million dollar military command and control system contracts for the Department of Defense. Two of these were the AN-UYK computer programming and the Department of Defense Damage Assessment Center (DODDAC) systems design and programming projects. The first effort involved machine language programming for the AN-UYK 1 computer used in the U.S. Navy's Polaris submarine missile guidance system. The computer's purpose was to precisely determine the submarine's position to allow exact targeting of its missiles. The DODDAC project required the design of a multi-computer system for the maintenance of the current status of armed forces and resources within the continental United States. Established at the height of the Cold War, DODDAC's purpose was to enable the Joint Chiefs of Staff to assess damage and available resources in the event of a nuclear attack on the United States so that appropriate stategic and tactical decisions could be made.(5)

Most of the Ramo-Wooldridge projects performed by Bauer's department involved state-of-the-art technology and computer applications which were forerunners of many of today's systems. DODDAC, for example, involved the integrated use of several large data bases, one of the earliest uses of on-line display terminals and real time system control (the computer processes data instantaneously after it is received and answers inquiries simultaneously). This was during a period when almost all computer applications were batch oriented (data had to be put into the computer first, usually in a specified sequence via punched cards or magnetic tape, before the computer could process it and prepare output). The systems analysts and programmers reporting to Bauer became familiar with a number of computers and programming languages. Under Bauer's tenure with the Ramo-Wooldridge Division, the Information Systems department acquired hands-on working experience with IBM 709 and 7090, Univac 1105, CDC 1604/160 and Ramo-Wooldridge computers. The department's knowledge and expertise in programming languages encompassed a range from the now primitive machine and assembly level languages to the then new compiler languages, such as FORTRAN, which had been only recently developed.(6)

It was at the RW Division that Bauer first learned the excitment of marketing, and where he developed his entrepreneurial inclinations. There, too, he recruited several more programmers and analysts, who later played major roles in Informatics. Besides Marvin Howard, Werner Frank transferred with Bauer to serve as associate director of the Information Processing section of the Information Systems department. From outside RW Bauer hired Richard Hill to direct all systems programming efforts for Ramo-Wooldridge computers, Lynn Jones as business manager to handle administrative affairs for the department's contracts, and Jackson Granholm, Herman Hess, Willard Gardner, George Stock, Allen Kroger, Steven Stofko and Mary Ann Savas as analysts and programmers. Everyone in Bauer's organization could be classified as a computer industry pioneer due to the systems they worked with and the period of time they entered the field. This can be best illustrated by looking at several of the more notable examples of expertise among Bauer's staff.

Werner Frank, for instance, began his computer career in the U.S. Army where he acquired experience with IBM 604 calculators and Card Programmed Calculators (CPC) at Fort Bliss. Later he became a graduate research assistant at the University of Illinois where he worked with ILLIAC, one of the several early Princeton-type stored-program computers based on the design developed by renowned mathematician John Von Neumann. He joined Space Technology Laboratories in 1956.

Richard H. Hill had served in various positions on the administrative staff of the University of California, Los Angeles, specializing in administrative analysis, systems and procedures, and staff work for the Chancellor's office. In 1956 Hill was hired by Dr. George Brown (who had been associated with Von Neumann at Princeton) as his assistant director for the newly formed Western Data Processing Center which had been established at U.C.L.A. by IBM. In this position Hill managed an IBM 650 computer installation and subsequently the first IBM 709 installation in the world. He also served on the faculty of the School of Business Administration, teaching courses in data processing and digital computer programming before joining the RW Division in 1960.(7)

Richard Kaylor acquired programming and systems design engineering training and experience at North American Aviation's Missile Systems Division working with IBM 701 and 704 computers in performing telemetry data reduction for the Hound Dog and Navaho missile projects. While at North American, Kaylor learned data processing from some of the leading names in the field, and attended the first IBM 709 users course in Los Angeles in 1957. After graduating from college later in the same year, he was recruited by Western Electric's Defense Products Division and sent to the Massachusetts Institute of Technology to attend a nine month computer engineering training program in connection with the Sage Project which involved the semiautomatic air defense of the continental United States. Kaylor later participated in the installation of Sage systems at Fort Lee, Virginia, and Duluth, Minnesota. In this capacity he was responsible for software/hardware diagnostics, flight test simulation, and general software development. He was first recruited into Space Technology Laboratories in 1959 before being hired by Marvin Howard for the RW Division later in the year.(8)

Marvin Howard had been a professor of mathematics at the University of California at Los Angeles who went to work for the U.S. Department of Commerce National Bureau of Standards Institute for Numerical Analysis in 1947. The

institute, located at U.C.L.A., had begun building the SWAC (Standards Western Automatic Computer) under the direction of Harry Huskey. Howard directed a section of mathematicians performing computations on desk calculators for the purpose of providing sample data to test SWAC's accuracy while another section of people prepared programs for the computer and a third section (directed by John Postley) tested those programs on IBM plug-board machines and Card Programmed Calculators (the famous IBM CPC). When the SWAC was completed, all three sections became actively involved in programming for it. After the Institute of Numerical Analysis was closed in 1953, Howard joined the Computer Research Corporation (later a Division of National Cash Register Corporation) before going to Space Technology Laboratories.(9)

Herman Hess earned a BBA in statistics from the College of the City of New York, and then entered data processing in 1948 as a member of the professional staff of the United States Census Bureau. In this position he was responsible for quality control of tabulations for the 1948 Census of Business and the 1950 Census of Population and Housing. In 1951 he was assigned the task of using UNIVAC I (the very first large-scale electronic digital computer designed for business applications) for census validation and tabulation problems. This activity necessitated the development of pioneering computer techniques due to the fact that UNIVAC I at the Census Bureau was the first such large-scale computer to be installed. In this capacity he pioneered the development of sorting techniques for large files. He supervised a staff of 25 programmers and production people in this effort, producing tabulations for the Bureau's Industry Division. In 1957 Hess was assigned responsibility for research and evaluation of computer systems for future census activity. He also participated in an evaluation that led to industrial use of scientific computers for business data processing applications, and personally converted the Univac 1103A USE compiler to the Univac 1105 computer for the Census Bureau Operating System. Hess joined the RW Division in 1959, performing programming system design and equipment selection for the U.S. Field Army Intelligence System.(10)

Jackson Granholm had graduated from the University of Washington with a bachelor's degree in physics and later did graduate work in English and journalism. In 1947 he joined the Boeing Aircraft Company, responsible for mathematical methods of error estimation for the placement of tracking instruments in connection with the development of range instrumentation for the GAPA Missile Project. Granholm's efforts involved pioneering in telemetry, and after conducting preliminary studies for BOMARC (which Bauer had worked on at the Michigan Aeronautical Research Center), he became one of two founding members of the Boeing Engineering Computing Laboratory where he served as group engineer in charge of operations. In 1954 Granholm became a research analyst for the General America Companies studying the application of digital computers to rating and file keeping in fire and casualty insurance. He rejoined Boeing as senior group engineer responsible for the design, installation, staffing, programming, and training associated with the Boeing Flight Test Data System. This system processed all certification and acceptance test data for the Boeing 707 and KC-135 jet aircraft. Granholm later entered Boeing's System Management office to coordinate the award-winning procurement proposals for the Dynasoar and Minuteman missile programs and then became data processing manager in charge of Minuteman system test planning. In 1959 he joined the RW Division.(11)

1.3 THE SOFTWARE INDUSTRY IN THE LATE 1950's

During the early 1950's, virtually all computer software had been provided and developed by the users of the computers. By 1956 the manufacturers of computer equipment began to supply "systems" software (utility programs and language translators) "bundled" with hardware under one sales price. IBM successfully took the lead in this movement, and even tried (unsuccessfully) to provide some free "applications" software (such as payroll, production control, etc.). However, systems software and especially the development of new computer applications lagged desperately behind that of the engineering and design of hardware. Manufacturers other than IBM were only moderately successful in developing systems software, and all users were overwhelmed by the demand for new application software. Thus there was a need for another source of software construction in order to fully exploit the new and technologically advanced (and highly expensive) computer equipment which was appearing. So by 1960 approximately 40 independent computer or software services companies employing approximately 1,500 programmers had been formed in the United States. Most of these were very small. The best known and largest (with over 100 programmers each) were Computer Applications Corporation, Computer Usage Corporation, Computer Sciences Corporation, the Council for Economic and Industrial Research (CEIR), and Wolfe Research.(12)

Bauer observed these phenomena and recognized that software would eventually become as important as hardware in the sale and use of computer systems. Through his participation in the Association of Computing Machinery, the American Federation of Information Processing Societies and the International Federation of Information Processing Societies, Bauer was familiar with the founders and management of many of these companies. He believed that he and his staff at Ramo-Wooldridge had as much technical and managerial capability as people in the these software companies, and in fact more so due to the state-of-the-art and highly advanced projects being conducted by Ramo-Wooldridge. Although a relatively conservative and cautious man, he nevertheless came to the conclusion that, if these other companies could thrive as independent enterprises and be successful, so could he and his departmental colleagues. Being a logical and courageous man, he took the action dictated by his conclusions.

It is not really clear whether Bauer decided to form a software company on his own or was prompted to the idea of it, as Werner Frank suggests, by Charles Adams who attempted to recruit Bauer to form a West Coast branch of Adams Associates, a consulting firm interested in providing software services. In any event, during 1961 he approached Werner Frank and Richard Hill with the invitation to join him in founding a business to provide computer programming, systems design, and technical consulting. This led to several discussions at Bauer's home. Finally, in January 1962 he presented his two associates copies of a **Prospectus for Corporation D** ("the prospectus"), which he had composed.(13)

1.4 PROSPECTUS FOR CORPORATION D: THE ENTREPRENEURIAL PLAN FOR INFORMATICS

The prospectus was a business plan for the new venture. It predicted that, based on the current industry information, the data processing business would grow from $5 billion in 1962 to $15 billion by 1970. It estimated that the 1962 software business market was $25 million in annual sales (later research

revealed that it was probably over $50 million). Bauer predicted this to grow to $1 billion by 1970, reasoning that computer manufacturers and users would not be able to supply all software needs in the future due to the increased demand for and volume of computer applications, the advent of more sophisticated and complex systems, and the ever present need for the manufacturers to stay profitable. Additionally, Bauer argued that future computer system users and customers would not have software capability themselves because they essentially would be outside of the data processing industry. The prospectus stated that CEIR was the only sizeable software company, recording $11 million per year in revenues, with no more than 12 other software companies (there were actually over 40) which were all under $1.5 million in annual revenues. With the potential size of the market so large and the number of competitors so relatively small in size and in number, the opportunity for a new software venture appeared bright.

The prospectus described the mission of the new venture as follows:

> Corporation D will be formed to provide services in the data processing field, specifically computer applications, systems analysis and development, computer programming and computer time sales.

The company was to be interested "in the entire scope of the data processing field, exclusive of detailed hardware design and fabrication." Also, Corporation D was to "be especially qualified to participate in the advanced problems of data processing by virtue of the experience of its founders in 'on-line' or 'real-time' systems" which were just beginning to grow in the number of applications and in acceptance. Of course, on-line and real-time systems were the specific field of expertise of Bauer and his associates. Systems integration and associated programming were also listed as another area of capability for the corporation.

In terms of an initial and eventual marketing strategy, Bauer stated two key points:

> Consulting work is not intended to be the main area of business of the company. Nevertheless it is important since it leads to business in other areas such as programming and systems. Also, it has the additional advantages of keeping the technical staff knowledgeable and qualified as technicians, and it keeps the name of the people and the company before the computer public since the work frequently results in a published technical paper. Frequently during the course of contract performance, items of a proprietary nature are developed. . . . In some cases these services can be sold at a high profit rate because of their proprietary nature. They frequently, however, require some initial investment. Their greatest importance could very well be that they provide a company a certain amount of prestige and public relations values it would not otherwise have.

These are two very important points in that in a few short sentences they define not only how Informatics was to do business but also what its working atmosphere or internal culture was to be like.

Bauer's mention of "items of a proprietary nature" in a nonhardware business was really an extremely foresighted prediction of the development of and need for "software products," standardized off-the-shelf computer programs for different applications. At the time this prediction was made, no such product was known to exist. The company created several months later, and which had its origins in **Prospectus for Corporation D**, did indeed develop such commercial software products, becoming a leader in the field. It also frequently acquired numerous large-scale systems contracts which evolved out of preliminary consulting studies. Besides keeping the technical staff (all of Informatics consisted of white collar employees--managers, data processing specialists, and supporting clericals) informed and well trained, the consulting efforts and resulting contracts led to a highly educated, very proficient, technical and business oriented environment. The majority of the company's professional staff possessed bachelor's degrees and a large percentage had advanced degrees in various fields from computer science and business to foreign languages, sociology, law, mathematics, chemistry, biology, and physics. By 1972 Informatics publication record consisted of nine hard cover books, sixty articles in professional journals and numerous contributions to encyclopedias. The company literally consisted of technical experts, some of whom became managers.(14) Initially, all administrative support not done by management was obtained from Dataproducts, the company's parent.

In terms of potential customers, Bauer proposed taking advantage of the contacts and work experience he and his colleagues already had by attempting to sell their services to the same organizations which had contracted with them at Ramo-Wooldridge. Among the prospects were Hughes Aircraft, Ramo-Wooldridge itself for continued assistance in programming AN UYK 1 computers (there was to be 100 such machines in 1962-1963; Bauer figured that if Corporation D could capture five percent of this effort it would obtain $50,000 in revenues during its first year), the Department of Defense Damage Assessment Center for the design of military command and control systems, Jet Propulsion Laboratories, the U.S. Navy's Pacific Missile Range, the City of Los Angeles, Scientific Data Systems Inc., and the Aerospace Corporation. Revenues for the first year of operation were projected to be about $150,000 and were to rise to over $300,000 by the end of the second year. Revenues were expected to be derived from the sources shown in Figure 1-1. Based upon the year-end rates shown, total annual revenues were forecast to be $60,000 in year 1, $250,000 in year 2, and $460,000 in year 3. Operating losses (before corporate charges from Dataproducts) were forecast to total $150,000 for the first 16 months with operating profits thereafter. Profit in the second year was forecast to be $21,000 before taxes.

Initial investment needed in the enterprise was estimated to be $250,000 ($84,000 in the first six months), in order to achieve revenue of $250,000 in the second year. The prospectus noted that further growth could be obtained through additional capitalization. By the end of March, these revenue forecasts had been revised to $180,000 in the first year, $400,000 in the second year, and $800,000 in the third year. Operating profit of $35,000 was forecast for the second year. The prospectus went on to say:

> It is the hope and desire of the founders of Corporation D that a plan of capitalization consisting of convertible debentures and options, deferred purchase plans, etc. could be developed

	AT END OF YEAR		
	1	2	3
Consulting	$4	$5	$5
Programming	8	13	16
Systems Design	1	6	10
Special Services	0	4	6
Computer Rental	0	0	11
Total Monthly Rate	$13	$28	$48
Annual Rate	$156	$336	$576

MONTHLY RATE OF REVENUE AT END OF YEAR AFTER START

($000)

FIGURE 1-1

> in order for the founders to have control of the corporation and provide a financial incentive as well. The plan would include options to be granted after the formation of the company in order to attract additional highly qualified personnel as well as provide continuing incentives for the founders. The participation of the founders would probably be in the range of $8-15 thousand.(15)

The plan seemed reasonable to Frank and Hill who agreed to join Bauer in the formation of "Corporation D." The three men ended their meeting with the agreement that they would look for and pursue venture capital in the coming months.

The reader by now may be wondering about the answers to a couple of obvious questions. First, why did Bauer select Frank and Hill to be his cohorts in this new venture, especially when there were other possible candidates at Ramo-Wooldridge? According to Bauer, he felt that a fledgling company needed people who could sell and obtain work; at the same time, people were needed to do the work for customers. Frank and Hill met both criteria. Frank, the more senior person, had marketing and customer experience particularly with the Department of Defense on contracts such as DODDAC. Hill had more commercial sales experience and contacts, and his services as a programmer could be sold by the new company while Frank's services, if necessary, could be offered for systems design. In fact, during the first year of Informatics existance all three men participated in technical, sales and administrative activities. According to Richard Kaylor, he too was approached by Bauer at Ramo-Wooldridge to join in the venture but chose not to participate at that time.(16)

1.5 THE NAMING OF INFORMATICS

The second question regards the company's name. How did "Informatics" originate from "Corporation D"? Bauer had not settled on an official company name, but he did propose the name of "Datamatics" (thus the "D" in "Corporation D") to his colleagues. This appeared to be the most likely name at first with "Systematics" as a second possibility. However, further investigation revealed that both names had already been registered for use by other businesses. The founding trio liked the Greek suffix "-ics" connoting "the science of" and began considering appropriate word stems. The next word stem choice was information, resulting in the name "Informatics" which had not been adopted by anyone else in the United States. Coincidentally, during the same month the same name was selected by Philip Dreyfus in France for a new company called Societe des Informatique Applique (SIA). At this point the founders of the American company, proud of their selected name, applied for and obtained a registered trademark for it with the official spelling as "informatics" (uncapitalized). The uniqueness of this action was that it immediately precluded the generic use of the word informatics in the United States. In France and the rest of Europe, the term informatics (along with language variations such as informatique and informatica) now commonly means modern information processing and is found in dictionaries. In the United States, however, the name informatics could only be used to refer to the California corporation which provides software programs and services. Thus the company was able to capitalize on the use of its name for marketing and public relations purposes. However, after 21 years, despite the company's efforts to protect it, the term "informatics" was in danger of also

becoming generic in the United States and had been defined in English language dictionaries. So in May 1982 the company changed its name to Informatics General Corporation.(17)

1.6 THE SEARCH FOR VENTURE CAPITAL AND THE DATAPRODUCTS CORPORATION STARTUP

Bauer began searching for venture capital in January 1962. Unfortunately, the economy took a sudden drop and available sources of capital had dried up. After two months of no success, Bauer became aware that Erwin Tomash, the former Univac sales representative who used to make calls on Bauer at Space Technology Laboratories, was also attempting to form his own company to participate in the hardware business. Hill's boss at UCLA, George Brown, had been a director of Telemeter Magnetics, of which Tomash had been president. Hill had met Tomash through Brown and believes that he (Hill) suggested the initial meeting. In any event, Bauer decided that it would be worthwhile to discuss his financing problem with Tomash.

Erwin Tomash had entered the computing field in 1948 as a project engineer for Engineering Research Associates working on prototypes of the 1103 computer. This position led him to be selected as a salesman for the machine when it was ready to be marketed, and when Univac acquired ERA in 1951, Tomash was made Univac's West Coast sales manager. In 1956 Tomash left Remington Rand (which had since acquired Univac) to become vice president of marketing for Telemeter Magnetics, Inc., a small manufacturer of ferrite core memory systems for computers, one of the earliest independent computer peripheral manufacturers. Tomash soon found himself president of the young company and over the next several years succeeded in increasing its business to attractive levels. Ampex Corporation acquired Telemeter Magnetics in 1960 and merged it into its Computer Products Division, much to the dissatisfaction of Tomash and his collegues from Telemeter Magnetics. A year later, several defections occurred at Ampex. Among them were Tomash and several of his associates who had decided to create their own peripheral manufacturing company.

Tomash and his associates formed a small partnership called Ladratomo Electronics (after the partners, Chester LAppin, Willis DRAke, Irwin TOmash, and William MOzena) as a vehicle to find a business to enter. Like Bauer they could not obtain venture capital either, but they did have managerial talent and some money of their own which they were willing to invest. Through contacts they learned that Telex Corporation wished to divest itself of its Data Systems Divisions which included manufacturing activities for a disc file (a random access computer memory device which stores data on magnetic discs) and a line printer (a machine that prints computer data an entire line at a time). Unable to acquire these operations outright, the group negotiated an agreement with Telex whereby it would spin-off the Data Systems Divisions as a separate corporate entity and merge it with Ladratomo Electronics which would then have managerial control. The shares in the new company would then be distributed by Telex to its shareholders as a dividend, payment for the divestiture of the Data Systems Divisions. This new company was to be called "Data Products Corporation" (later renamed and referred to herein as Dataproducts Corporation), and steps for its formation were beginning to be undertaken in February 1962 when Bauer, looking for venture capital and advice, along with Hill, met with Tomash at the latter's home.

Tomash, very much an entrepreneur, was interested in Bauer's ideas and suggested lunch with Bauer's associates and other Dataproducts men. The lunch took place with Bauer and Hill from Informatics and Tomash, Thomas Taggart, and William Drake from Dataproducts. Bauer and his two associates presented their plans and **Prospectus for Corporation D.** The Dataproducts men found the idea of a software company interesting, and both groups felt that a lot of synergy could exist between hardware and software components of the same company. It seemed that a corporation which participated in both fields would have a lot of growth potential and opportunities. The meeting ended with the agreement that Informatics would begin business as a subsidiary of Dataproducts Corporation with the latter providing enough investment money for the software activity to begin. This was acceptable to Tomash because the initial investment was merely the overhead for three professionals and a secretary.(18)

Bauer drafted a **Memorandum of Understanding** between Tomash and himself on February 23, 1962, in order to record the specific working relationship between the two companies which was to exist. Besides agreement that Informatics be a wholly owned subsidiary of Dataproducts and Dataproducts would consider "the establishment of a software business which is sizeable and profitable in its own right" as one of its principal objectives, several other key points were agreed upon. The most important of these involved the matter of synergy between the two operations:

> . . .the software activity will support the hardware objectives of the company through systems studies, product evaluation, product studies, etc., with the aim of injecting the systems and user's viewpoint. It will be the responsibility of the software group to establish and maintain a close and harmonious working relationship with the remainder of the company. . . . There will be a longer range objective to bring the software and hardware product areas together to provide successively more systems work, customized data processing systems design, and implementation.

A separate corporate image was to be maintained for the software business "to reduce the possible sales resistance on the part of certain customers who might be sensitive to hardware and software interactions" and to aid in the recruitment of programmers and analysts "who would like to be more exclusively in the software business." The software activity was to build towards a $300-500,000 sales level within two to three years and Dataproducts would invest between $100-150,000 during the same period in software activity to achieve this level. The three founders were to hire a fourth "highly qualified" person to join them (who turned out to be Frank Wagner; see Section 1.8.4). All four "insiders" would be able to purchase Dataproducts stock at insiders' prices. Dataproducts stock options were also to be available for approximately three additional people during the first six months in order to expand the software activity.(19)

With this arrangement it was decided that Dataproducts and Informatics would officially begin business about the beginning of April 1962. Bauer, Frank, and Hill gave notice to Ramo-Wooldridge which was somewhat displeased at the sudden news, according to Bauer, who had to leave quickly to pursue an urgent contract

possibility from Hughes Aircraft for his new company. However, Werner Frank was on temporary assignment in Washington, D.C., for Ramo-Wooldridge on DODDAC. His participation in this was essential to the completion of the project, so Informatics founders agreed to allow Ramo-Wooldridge the option of keeping Frank until June 1962, which it accepted. Frank's home was in Woodland Hills, California, and since his family was with him in Washington and Informatics needed office space to begin work, he made his house on Larkwood Avenue available for use. Legal incorporation of Informatics, Inc. as a California corporation took place on Thursday, March 14, 1962, and the first day of business was Monday, March 19, 1962, which the company uses as its anniversary. Bauer, Hill, and Bauer's secretary, Marie Kirchner, gathered at Frank's vacant home. Marie Kirchner was a very competent executive secretary who had many years of experience in the movie industry before working with Walter Bauer. She assumed control of handling all of the secretarial and administrative work of the fledging company during its early months. She was a perfectionist, almost to a fault, staying many hours after quitting time to complete her work to her own extremely exacting standards. Thus, she helped set a tone for quality and precision within the new born company.

On the first day of business, there was no heat in Frank's home, so they burned wood in the fireplace, and there were no desks so they set up card tables instead. Bauer immediately began preparation of a marketing plan while Hill started development of a capabilities brochure and making contacts to prospective customers. The first paychecks came from Ladratomo Electronics since Dataproducts was not yet an official corporation.(20)

1.7 THE INFORMATICS MARKETING PLAN, 1962

In additon to the essential points mentioned in **Prospectus for Corporation** D, Bauer furthur elaborated on the sales and business objectives of Informatics. According to **Informatics, Inc. Marketing Plan** completed by Bauer on April 3, 1962, the company planned to achieve a $10 million market share by 1970. Specific sales objectives were explained as follows:

> The primary sales objective of Informatics is to sell technical services in the data processing field of the highest professional type. It will be seeking work on challenging problems which cannot be handled by the normal staff of the customer. Furthermore, it is expected that the design and analysis work on many jobs will be followed by implementation through programming. Although straight programming jobs or job shopping in the programming market area will not be ruled out completely, this type of activity will not have the highest sales priority and Informatics does not expect to do a significant fraction of its business in these areas. As has been previously stated, Informatics will provide services in the systems and programming area through a complete spectrum of activities. We will have capabilities also to perform successfully on nearly every kind of task which involves the stored program digital computer or the processing of information by a similiar device. However a company such as Informatics should have a specialty. It should have a technical area in which it regards itself more capable and more experienced than similar companies.

Bauer defined the specialty areas of Informatics as 1) on-line systems, 2) systems involving the display of information after computer processing, 3) systems which involve close man-machine relationships in the control or monitoring of the system, 4) analysis of new products in the digital computer field in terms of feasibility studies and programming development to exploit them, and 5) systems analysis having high mathematical content such as that found in the missile and space fields or advanced control systems areas. These areas of specialization, emphasizing real-time applications, were summarized by Bauer with the following statement:

> Clearly the area of interest of Informatics is in the most modern and most advanced information processing systems. Its area of specialty is frequently called the real-time applications. Programming systems for these real-time or on-line applications are considerably behind in development as compared with those of standard scientific and business applications. Automatic programming techniques in these areas need to be developed and applied. Informatics will offer the complete line of services for these systems, including programming. It is emphasized, however, that technical areas outside the specialty area of on-line or real-time applications will be pursued by Informatics.

To prevent the dilution of the company's resources, efforts in the area of straight compiler production (such as preparing versions of standard language processors for FORTRAN and COBOL to run on different brands of computers) and business data processing were initially ruled out because "the capabilities of Informatics are the capabilities of its professional employees; Informatics will have capability in these areas and will explore them on a second priority or opportunistic basis." Data processing efforts related to the Department of Defense were seen as a very large area of potential work and favorable to Informatics since many defense projects involved advanced systems of the type that the company would prefer and wanted to specialize in and because Southern California was a leading area for industry involved in defense contract work. Bauer thus expected that "a great source of sales for Informatics will be government sponsored either under direct contract to the government or, most usually, indirectly through subcontract with a government contractor." However, Bauer also realized the need for commercial or nongovernment related sales and set an eventual objective that "30 percent of the sales could be in this nonfederal government area."

Commercial sales were a long-range goal because, as Bauer explained, "the general orientation and knowledge of the Informatics staff as it presently exists will not be readily adapted to the pursuance of this business." The specific services related to the real-time applications work that was to be offered by Informatics were:

a) General Programming offered to customers to help solve manpower shortages and within situations in which the specifications of the required computer program have been outlined so that an outside group could design, implement and test it independently;

b) Automatic Programming or the sale of compiler programs to be approached only on "an opportunistic basis;"

c) Product Analysis and Computer Comparison for the technical and competitive information needs of computer system manufacturers;

d) Systems Analysis and Design for the development of operating concepts and specifications for entire computer systems involving both hardware and software;

e) Programming Analysis as a management service to identify for a customer computer programs which need to be prepared and to determine the feasibility of preparing these programs under the customer's individual constraints of technical capability, manpower, time, and cost;

f) Proposal Help to aid qualified organizations in the writing of procurement proposals which involve the use of or need for a digital computer;

h) Display Systems Analysis and Programming as a special area of expertise of Informatics to assist customers in evaluating and selecting the appropriate displays (equipment and programs) they need and to design and implement displays for them; and,

i) Computing Center Operations as opportunistic offering to meet the requirements of Informatics and/or managed on a contract basis for military and governmental groups.

All of these services were to be offered to defense contractors, hardware systems manufacturers, captive contractors (non-profit organizations with large responsibilities for government related work such as Aerospace Corporation, Jet Propulsion Laboratory, System Development Corporation, and RAND Corporation), government agencies and departments and, in the long term, commercial customers. Beginning sales activity or tactics were to focus on disseminating information on Informatics and to make contacts with associates in the field of data processing to discover leads and possible prospects. Sales efforts were to be specifically directed towards prospective customers and projects where the most likelihood of a sale and best match to Informatics abilities existed. In terms

of pricing, Bauer outlined five labor categories for time and materials contracts:

LABOR CATEGORY	PRICE PER HOUR	DIRECT LABOR COST PER YEAR
Management Consultant	$25	$17,000 or more
Senior Systems Analyst	$20	$14-17,000
Senior Programmer	$16	$11-14,000
Programmer	$12	$ 8-11,000
Coder	$10	less than $8,000

This became the very first price schedule of Informatics, and for the first year of 1962 one could obtain the management consulting services of Dr. Walter Bauer, Werner Frank, Frank Wagner, or Richard Hill for a mere $25 per hour.(21)

1.8 FIRST YEAR OF ACTIVITY

1.8.1 First Contracts

After the above marketing plan was prepared, Bauer and Hill began making sales contacts in the local Southern California area. At first things were very slow and contracts hard to come by. The first contract, for $4,699, came on April 13 with Packard Bell Computer Corporation for the consulting services of Hill in relation to a stored-logic computer it was building. The customer representative was Edward Boutwell (later president of Compata) who had had a previous association with Bauer. This was soon followed in May by two other small commercial contracts from Astrodata, Inc. ($6,994), for consulting on a Mariner B system, and the Data Systems Division of Radio Corporation of America (RCA) ($3,300) for a self-loading relocatable trace program for a special RCA computer.(22)

1.8.2 Synergy with Dataproducts--DiscFiles

In April Dataproducts awarded an in-house contract for $3,979 to Informatics for its consultation to the corporation's disc file development program. This was an effort to generate synergy between the software and hardware sides of the Dataproducts Corporation as agreed to by Bauer and Tomash. During the first year this effort proved fruitful as Informatics gained small contracts with Control Data Corporation for the evaluation of available disc file products and with Bendix Corporation's Computer Systems Division to assist in the programming of its DM-10 system using Bryant Computer Products disc files. These projects allowed Informatics to develop quickly expertise in the evaluation and programming of computer systems involving disc files when this peripheral product was relatively new and state-of-the-art equipment. In 1962 there were only three companies involved in the production of disc files: IBM, Bryant Computer Products, and Dataproducts Corporation. Informatics early experience in programming and evaluating disc file systems, especially those made by Bryant (which were competing products), was particulary helpful to Dataproducts in its early disc file development, as Informatics provided the hardware engineers with the user's requirements and point of view.(23)

Most importantly, the disc file knowledge of Informatics blossomed into planning and sponsorship of the nation's first professional industry symposium

on disc files. The symposium was held at the Thunderbird Hotel in Hollywood, California, in March 1963 near the close of the company's first fiscal year, and attended by an overflowing crowd. Registrations for the meeting totaled 173 paid participants at $75 each. One hundred and fifty additional people without advance registration showed up but had to be turned away due to lack of seating. The great success of this effort resulted in Informatics first book, the hardback publication of the 16 technical papers presented at the symposium under the company's editorship, and a 10-year practice of sponsoring annual symposia on state-of-the-art topics of concern to computer industry professionals.(24)

1.8.3 First Programmers and Analysts

Although small in size, the initial contracts allowed Informatics to begin hiring a staff. In May Werner Frank was able to leave Ramo-Wooldridge and the company hired Donald Breheim from the Rocketdyne Division of North American Aviation. Both men served as the company's first senior systems analysts. Frank, of course, also made sales contacts, and he capitalized upon his experience at DODDAC to get a contract for $16,526 in June for consulting work from Ramo-Wooldridge for DODDAC system design. This effort, two contracts from Bendix for G-20 and G-21 system and disc file programming and follow-on utility programming work from RCA, enabled the company to hire five more professionals in June. Herman Hess joined as a senior systems analyst while Norman Van den Bergh joined as senior programmer, Lynn Stoller as a programmer-analyst, and Willard Gardner and Allen Kroger, Jr. as senior programmers.(25) These additions justified the hiring of another managerial-supervisory person or the fourth "insider" to join Informatics as previously agreed by Bauer and Tomash.

1.8.4 The Recruitment of Frank Wagner

This fourth person was Francis V. (Frank) Wagner who joined Informatics as director of plans and programs in August 1962. Wagner had originally been a civil engineer beginning in 1938 in New York City. As described in Chapter 2, he discovered that some of his structural design problems were similar to those of aircraft. The civil engineer transformed himself into an aircraft design engineer and by 1944 was working in Los Angeles at North American Aviation (now North American Rockwell).

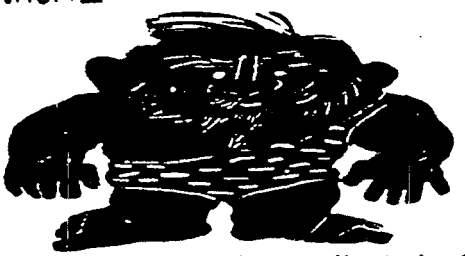
During this period, aircraft design and development were severely impeded by the vast amount of mathematical calculations engineers had to perform, using slide rules and desk calculators. In the late 1940's Wagner became one of the major advocates of breaking this bottleneck by using IBM card processing equipment. Thus when IBM announced its 701 computer (its first electronic stored program computer) in 1952, Wagner was appointed manager of Engineering Computing for North American, and plunged into the nascent computer industry.

He looked up six years later and found himself a founder and past president of SHARE (the first IBM computer users group), author of many professional articles on computing, a well known and respected member of the data processing industry, and still in the same position at North American. He no longer was a aeronautical engineer but instead a computing professional. Wagner then realized that as a computing professional he had no future career path at North American and began to think about a new employer.

World's oldest infant

That's us. A brand-new software outfit whose five key people have a total of 49 years' experience in implementing advanced digital computer systems. These people: Dr. Walt Bauer, ex-RW, STL and UNIVERSITY of MICHIGAN; Dick Hill, ex-RW and UCLA/WDPC; Werner Frank, ex-RW, STL and UNIVERSITY of ILLINOIS; Herman Hess, ex-RW and BUREAU of CENSUS; and Don Breheim, ex-NAA/Rocketdyne. They and the other members of the Informatics Inc. staff are available to help you solve your systems problems with consulting, design, analysis, programming, computing, installation and operations services on CPFF, fixed-price or time-and-materials contracts. Why not give us a call. Or, ask for our capabilities brochure. Or, ask us about employment. Contact: Room 701/8535 Warner Drive/Culver City/California/837-0158.

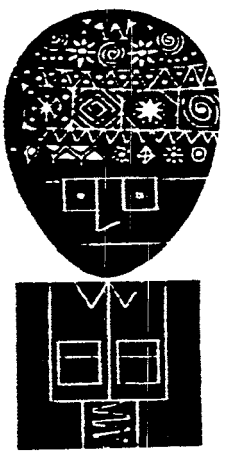
informatics inc.



world's smallest giant

That's us. The practically brand-new software outfit that's still small—tightly integrated, fast on its feet, a bear for work. And, giant—with capability built on our five key people's 49 years' experience in modern computers. Led by Dr. Walt Bauer, we want to help you solve your computer systems analysis and programming problems. Or welcome you to a rewarding career. Contact: Room 912 8535 Warner Drive / Culver City / California / 837-0158.

informatics inc.



world's most practical egghead

That's us. The fast-growing software outfit that's so well versed in esoteric theory we can actually put it to work—and produce! That's because our 6 key people have 67 years of practical know-how in modern computers. Led by Dr. Walt Bauer, we'd like to help you solve your computer systems analysis and programming problems. Or welcome you to a rewarding career. Contact: Room 101 / 8535 Warner Drive / Culver City / California / Phone 837-0158.

informatics inc.

FIRST THREE ADVERTISEMENTS

FIGURE 1-2

As president of SHARE, Wagner had attracted the attention of Frank Cary, an IBM vice president (later CEO) who attempted to recruit him for IBM. Realizing that upward mobility in IBM was through the sales force, Wagner declined the opportunity because he felt selling was less prestigeous than his technical capability, a perspective reflecting an engineering bias he then held.

He began considering possible employment by one of the independent software companies which were then being formed. He rejected the more prominent ones because of the personalities of their founders. Wagner had just about exhausted all the possibilities when he unexpectedly received, in April of 1962, a telephone call from Bauer regarding a reference check on Donald Breheim, a former North American employee.

Bauer, searching for a fourth management team member, called Wagner at the suggestion of Richard Hill, who had been on the SHARE board of directors when Wagner was its president. Whether or not Hill was aware that Wagner was thinking about a new job is not known, but Hill thought that Wagner had the right ability and stature and suggested to Bauer that the Breheim call was a good excuse to contact him. Bauer, during the reference check, informed Wagner of the formation of Informatics and invited him to lunch to tell him more about the planned software business. This, of course, led to an offer of employment. Wagner had known Bauer well as a professional colleague. He had worked closely with him on building the Los Angeles Chapter of the ACM from almost nothing to the largest and best chapter with over 1,000 members. So he had a great deal of respect for Bauer's leadership and executive abilities. Informatics seemed to be the opportunity that he was looking for, so Wagner accepted readily. It was decided however, at Wagner's initiative, that he should not join the company in May but wait until it had enough business and staff (he suggested six professionals on direct billing) to support his overhead position. By August Informatics had achieved the required size, so Wagner joined as director of plans and programs, a euphemistic name used by government contractors for the head of marketing.(26)

1.8.5 Early Sales and Proposal Efforts

Wagner completed the founding management team at Informatics. By April the company had set up permanent headquarters in Culver City, California, above the corporate office of Dataproducts located at 8535 Warner Drive, and Bauer, Frank, Hill, and after August, Wagner, all concentrated on finding and selling work. Many contacts were made, and a number of technical procurement proposals submitted either as the result of an announced Request for Proposal (RFP) or on Informatics own initiative. Carson-Roberts, the company's first advertising agency, initiated a campaign promoting the "world's oldest infant, smallest giant and most practical egghead" announcing the creation of Informatics by placing in the trade press the advertisements shown in Figure 1-2.

However, the focus on the Southern California defense and aerospace industry during the first six months only produced sales leads for very small consulting and programming projects. Besides those noted above, through September, sales were made to Plesset, Mesa Scientific (Hughes), Bendix Computers, Astrodata, GE/Syracuse, RCA/Van Nuys, Packard Bell, and Hobbs Associates. All of these were for less than $10,000 except for a $46,910 contract (by far the largest of that era) from Bendix in August. All the contract values quoted were the final

billings. Since they were for time and expenses (T&M), which could be cancelled on short notice, the revenues were very uncertain. The dollar volume was too low to make the company profitable. Losses of several thousand dollars occurred each month and reached $7,304 in September.

By October Bauer had finally tired of only small local contracts so he invested in a sales trip to the East Coast where he met with representatives from the National Security Agency, Oak Ridge National Laboratories, the U.S. Air Force Office of Scientific Research (OSR), the Office of Naval Research (ORN), DODDAC, U.S. Naval Bureau of Ships (BuShips) and Bendix Corporation. The trip uncovered a few significant prospective projects which resulted in proposals for several large-scale activities, the largest being a programming support proposal to DODDAC for $190,000 submitted during November. This procurement was not awarded but may have helped make Informatics known as a company to the contracting officers, since the successor organization to DODDAC awarded Informatics a contract within four months.(27)

During the remaining months of 1962, small-scale projects were still performed while Informatics perfected its proposal writing with more "comprehensiveness and perfection." One of the most dramatic very early projects was a $23,000 firm fixed-price contract for Jet Propulsion Laboratory to provide programming for the computers which controlled its deep space antenna at Goldstone. This brought Robert Heckathorne into the company. It is further described in Chapter 6. Six large contract proposals were submitted in January 1963. Among these were bids to Rome Air Development Center for the development of an executive control program for $72,747, to Pacific Missile Range for the specification of a real-time data handling system for $20,800, and to Jet Propulsion Laboratory for programming support to its computer facilities for $200,000.

At last in February 1963, 11 months after its founding, Informatics was awarded its first of many significant contracts from Rome Air Development Center for $74,000. This first "fixed-price term" contract, issued April 4, 1963, ultimately had a value of $150,179. During the same month, Bauer and Frank made a return sales trip to the East making contacts in Washington, D.C.; Rome, New York; and Boston. Two more potential projects were discovered at the National Military Command Systems Support Center (NMCSSC), which had just come into existence as the successor to DODDAC, and proposals were submitted. In March the company was awarded an NMCSSC contract for $28,000. This soon proved important as it increased in scope and enabled Informatics to win follow-on contracts with NMCSSC, having a value of $222,550 over the next 27 months, which was the basis for the start of Informatics Eastern Operations.

A third major success in March was obtained by Hill, who won the first of many large contracts from the Navy's Pacific Missile Range (PMR), for the design and programming of a system to control and record data from tracking radars. This brought Wilson Cooper into the company and was the basis for Informatics Western Operations. With these sales the company's proposal efforts began to emphasize projects of $30,000 or more.(28)

Bauer by this time had decided to focus sales efforts on two general business areas: 1) government and military projects in the East (mainly Washington, D.C. and Rome, New York), and 2) an expanded southwest region which

included the commercial defense industry in Southern California and the "sun-belt" computing market between Edwards Air Force base located in California's Mojave desert and the NASA Johnson Space Center in Houston, Texas. Werner Frank was assigned responsibility for East Coast governmental sales, while Hill handled the California coastal region and Wagner covered the desert market. Upon adopting this approach, significant sales success began to appear. Wagner, the engineer who did not want to be a salesman, discovered during March 1963 a substantial subcontract opportunity with IBM at the Real Time Control Center of NASA's Manned Space Craft Center. He immediately went on a nationwide recruiting campaign, and by April had signed contingent letters of acceptance from 14 new programmers whose resumes constituted his proposal. By May this resulted in Wagner's biggest sale up to that time, a long-term T&M contract for $272,676. Since 12 of the programmers began billing in Houston in June and July, at relatively high billing rates, this more than doubled the monthly revenues of Informatics Inc.(29) Informatics, the world's oldest infant and smallest giant had finally begun to grow. Its coming of age was marked on January 13, 1964, when the last proposal prepared under the personal management of Bauer resulted in the issue by the Office of Naval Research of the company's first $1 million contract for the design of what today is the Marine Corps Tactical Command and Control System.

1.8.6 The Role of Thomas L. Taggart

As noted in Section 3.2.1, the first board of directors consisted of Walter F. Bauer and, representing Dataproducts, its two senior officers, Erwin Tomash and William N. Mozena. In early 1963 Dataproducts added George Brown and Thomas L. "Tom" Taggart, both members of its board of directors. Tom Taggart was an independent business consultant who had been a senior vice president of Ampex Corporation where he had met Tomash. Of all the outside directors, as a consultant he had the most motivation and time available to make a serious effort to understand Informatics business. He succeeded and was soon able to provide informed, balanced advice to the inexperienced management of Informatics. Consequently, he eventually became a highly valued consultant to Bauer. Along with Bauer he has been continuously a member of the board through 1982, and has served on its executive committee and as chairman of the finance and compensation committees. He has served as a consultant to the company since 1969, particularly on financial affairs and on the negotiation of acquisitions. During one interval after Lynn Jones resigned in 1973, Taggart served as chief financial officer for six months, directed the financial and administrative operations of Informatics, and assisted in recruiting Carl Long for that position. He was very influential in negotiating the Equimatics joint venture, was on its board of directors, and assisted in developing the agreement for the acquisition of Informatics by The Equitable. His contributions to the company exceed those of many of its executives whose biographies appear in Chapter 2.

1.9 INFORMATICS IN 1982

The Informatics Inc. of 1982 has provided every service and served every market identified both explicitly and implicitly in its original corporate objectives found in the **Prospectus for Company D** and the **Informatics, Inc. Marketing Plan** of 1962. The founders and managers of Informatics have never swerved off course or fundamentally changed their business direction or ideals from the plan they established 21 years ago: to create a leading computer

services company. Through their faith in and adherance to this goal, they have struggled to survive, learned many lessons and successfully built the prominent software enterprise they dreamed of building. It is now a New York Stock Exchange company with 1982 revenues of $170 million, making it the fifth largest independent computer software firm and the most diversified. The following chapters of this history discuss the various aspects and highlights of this business experience from the founding of the company up through 1982.

Rather than being organized in a chronological sequence of events, the following history of Informatics activities is organized into topical chapters. Their purpose is to serve as an internal fast-reference source of information on Informatics past, providing relevant and frequently required data, while still telling the story of the company's growth and development. The 12 chapters discuss the following specific subjects:

1 Birth and Mission
2 Human Resourses
3 Overview: Organization, Planning, Operations, and Financial Performance
4 External Growth by Acquisitions, Joint Ventures and Mergers
5 The Technologies of Informatics
6 Professsional Services to the Federal Government
7 Information Services
8 Professional Services to the Commercial Market
9 The Story of MARK IV
10 Insurance Products and Services - Equimatics
11 Other Software Products
12 Data Services

Each of these topical histories covers the company activities and events that have occurred in the general subject areas with which they deal. The nature of Informatics business, as a service company, is such that it has participated in numerous activities and performed hundreds of programming and systems design contracts. To discuss every large contract in detail would make this historical effort too cumbersome for most readers. Therefore, the most significant projects and events are discussed in appropriate length while other related activities or developments are merely mentioned in passing or presented in tabular format. This is to enable readers to be aware of relevant matters of secondary importance while still presenting the most important information in a summary fashion. Those readers who desire more detail of the secondary information are referred to the company's archival collection at its headquarters.

It is inevitable that a great many technical terms are used. There is no glossary but, for the reader who has little or no knowledge of such terms, it is suggested that an initial reading of Chapter 5, "The Technologies of Informatics" will provide enough description to assist in understanding such technical terminology.

The history is supplemented by a number of appendices, identified as Chapter 13. The Table of Contents for Chapter 13 and a few of the appendices are included in this Volume I. The remaining appendices comprise Volume II, which is retained in the company's archives.

1.10 REFERENCES

1. Informatics, Inc., Interview with Dr. Walter F. Bauer, president of Informatics, Inc., October 1, 1981.

2. Equimatics, Inc. to Stockholders, Equimatics, Inc., February 6, 1974.

3. Goldman Sachs and Company, 600,000 Shares Informatics, Inc. Common Stock (Prospectus), (New York: Goldman, Sachs, October 4, 1979).

   Goldman Sachs and Company, 1,267,250 Shares Informatics, Inc. Common Stock (Prospectus), (New York, September 18, 1980).

4. Bauer interview.

   Informatics, Inc., Interview with Francis V. Wagner, senior vice president of Operations, Informatics, Inc., October 20, 1981.

   Informatics, Inc., Interview with John A. Postley, former president MARK IV Systems Company and senior vice president International Marketing, Informatics, Inc., June 18, 1981.

   Interview with Erwin Tomash, founder and retired Chairman of the Board of Dataproducts Corporation (Dataproducts archives).

   Informatics, Inc. **Capabilities**, (1962).

5. Bauer interview.

   Informatics, Inc., Interview with Marvin Howard, vice president of Administration, Informatics, Inc., June 25, 1981.

   Informatics, Inc., Interview with Werner L. Frank, executive vice president of Corporate Development, Informatics, Inc., October 1, 1981.

6. Ibid.

7. Informatics, Inc., Interview with Richard H. Hill, former vice president Western Operations, Informatics, Inc., July 2, 1981.

8. Informatics, Inc., Interview with Richard E. Kaylor, former group vice president Professional Services and Data Services, Informatics, Inc., September 25, 1981.

   Informatics, Inc. **Capabilities**, (1963-1965).

9. Howard interview.

10. Frank interview.

11. Informatics, Inc., Interview with Jackson Granholm, former vice president of Technical Communications, Informatics, Inc., September 17, 1981.

12. Informatics, Inc., F.V. Wagner to R.C. Lemons, **Re: Software Firms in the U.S., October 1962** (Attachment 2), March 11, 1969. Initially compiled for October 18, 1962 talk by Wagner to San Francisco Bay Area Chapter of Association for Computing Machinery.

13. Bauer, Frank and Hill interviews.

Informatics, Inc., Walter F. Bauer, **The Informatics Story**, November 15, 1962.

Walter F. Bauer, **Prospectus for Corporation D**, Informatics, Inc. (pre-Company formation), January 15, 1961.