

## Chapter 2

### HUMAN RESOURCES

#### Table of Contents

		<u>Page</u>
2.0	INTRODUCTION	2-3
2.1	CONTRIBUTIONS OF KEY MANAGEMENT MEMBERS	2-3
	2.1.1 Dr. Walter F. Bauer	2-3
	2.1.2 Werner L. Frank	2-4
	2.1.3 Richard H. Hill	2-6
	2.1.4 Francis V. "Frank" Wagner	2-8
	2.1.5 John A. Postley	2-11
	2.1.6 Richard E. Kaylor	2-13
	2.1.7 Wilson R. Cooper	2-15
	2.1.8 Dr. Robert W. Rector	2-17
	2.1.9 Richard C. Lemons	2-18
	2.1.10 Dr. Paul T. Wrotenbery	2-20
	2.1.11 Marion L. "Spec" Bradley	2-22
	2.1.12 Donald A. Toy	2-24
	2.1.13 Paul J. Connolly	2-25
	2.1.14 Bruce T. Coleman	2-28
2.2	THE IMPORTANCE OF PEOPLE TO INFORMATICS	2-29
	2.2.1 The Environment in the 1960's	2-29
	2.2.2 Recruiting Philosophy for Programmers	2-31
	2.2.3 Early Problems in Obtaining Middle Management	2-35
	2.2.4 Recruiting Problems in the 1970's	2-37
2.3	INFORMATICS EMPLOYEE BENEFIT PROGRAMS AND INCENTIVES	2-39
	2.3.1 Health and Disability Insurance Programs	2-40
	2.3.2 Incentive, Bonus, Profit Sharing, and Retirement Programs	2-40
	2.3.3 Equal Opportunity and Affirmative Action Employment Programs	2-41
	2.3.4 Management Incentive Plan	2-42
	2.3.5 Employee Recognition Program	2-43
	2.3.6 Employee Development	2-43
2.4	INFORMATICS AND ITS PROFESSIONAL PARTICIPATION	2-44
	2.4.1 Informatics and the U.C.L.A. Symposia	2-45
	2.4.2 Informatics Professional Publications	2-46
	2.4.3 Professional Organization Participation by Informatics	2-46
	2.4.3.1 The Association for Computing Machinery (ACM)	2-47
	2.4.3.2 American Federation of Information Processing Societies (AFIPS)	2-48
	2.4.3.3 The Association of Data Processing Service Organizations (ADAPSO)	2-48
	2.4.3.4 Other Organizations	2-49
2.5	REFERENCES	2-49



## Chapter 2

### HUMAN RESOURCES

#### 2.0 INTRODUCTION

As was discussed in Chapter 1, the company was founded in 1962 by a small, talented, and creative cadre of managers and computer systems analysts. The background of several of these people prior to the formation of Informatics was mentioned. In this chapter of Informatics history, the background, contributions, and activity of some of these people and several other key participants of the company are more completely described. This is followed by discussion of the company's historical philosophy and attitude towards its employees, development of its benefit programs, and professional contributions and participation of Informatics members through the years.

#### 2.1 CONTRIBUTIONS OF KEY MANAGEMENT MEMBERS

There are 14 executives who are considered as having made significant contributions to Informatics. In the order in which they joined the company, these people are Walter F. Bauer, Werner L. Frank, Richard H. Hill, Francis V. Wagner, John A. Postley, Richard E. Kaylor, Wilson R. Cooper, Robert W. Rector, Richard C. Lemons, Paul T. Wrotenbery, Marion L. Bradley, Paul J. Connolly, Donald A. Toy, and Bruce T. Coleman. Their contributions to and activities with Informatics are discussed below in that order.

##### 2.1.1 Dr. Walter F. Bauer

The history of Informatics is inextricably bound with the contributions of Walter Bauer, its founder and only chief executive officer. This section is relatively short, because his professional biography through the founding and early years of the company is related in detail throughout Chapter 1. His later contributions are frequently mentioned in all of the other chapters.

As the company's primary founder, Bauer has been its leader from 1962 to the present time (1982) and has been the guiding force of the company throughout its entire existence. He has been responsible for defining the general areas of the computer services business in which Informatics has participated, and the development of its formal business planning and administration. In the early years he was the chief salesperson directly responsible for some of the major contract awards granted to Informatics. Until the company expanded and diversified, he was personally involved in every aspect of marketing tactics and strategy. Then he planned and established the environment in which the talented executives that he recruited could enthusiastically exercise their abilities to make the company grow and flourish. To motivate them he developed a wide variety of incentive plans.

Bauer initiated and personally negotiated several of the corporation's most successful acquisitions, such as Advanced Information Systems. It was he who planned and executed Informatics separation from Dataproducts Corporation and its later merger with and eventual public divestiture by The Equitable Life Assurance Society of the United States. He has been chief executive officer

during the entire period and also served, during the two periods when Informatics was publicly owned, as chairman of the board. As such, he determined the strategy for, and directed the obtaining of, all the financing for the company. In later years when subordinates initiated and negotiated acquisitions, he remained intimately familiar with the details, contributing to the negotiating strategy and finally approving the terms of the deal. Through the years he has been the source of management strength, conservatism, integrity, and stability, acting as a model for the other management members of the company. Informatics and its corporate culture are the lengthened shadow of Walter Bauer.(1)

### 2.1.2 Werner L. Frank

Werner Frank received his bachelor's degree in mathematics in 1951 from Illinois Institute of Technology, and his master of science degree in mathematics from the University of Illinois in 1955. He began his computer career in 1952 with the U.S. Army at Fort Bliss where he acquired experience with IBM 604 computers and Card Programmed Calculators (CPC) which were used to run trajectories on targets for guided missiles. He later gained more experience as a graduate research assistant at the University of Illinois working with ILLIAC, one of the several renowned early stored-program computers based on a design developed by physicist John Von Neumann for the very early computer located at Princeton University. Frank was then recruited by Walter Bauer for Space Technology Laboratories in 1955. In 1958 he transferred with Bauer to the Information Systems Department of the Ramo-Wooldridge Division of Thompson Ramo-Wooldridge as associate director of the Information Processing Section. In this capacity Frank worked on several military systems projects involving real-time on-line applications, particularly systems for the Department of Defense Damage Assessment Center, in which he developed specialized expertise in man-machine interfaces such as operator-terminal dialogues.

Upon joining Walter Bauer as one of the original founders of Informatics in 1962, Frank became director of systems analysis in May of that year. In this position, to provide Informatics with much needed work and revenues, he sought out contracts for program systems design and development for military command and control systems. Eleven months after the company's formation, his sales efforts were successful with the award to Informatics of its first large-size contract from the United States Air Force Rome Air Development Center (RADC) for the development of an executive control program for INTIPS (Integrated Intelligence Processing System). This project became the beginning of a long line of Informatics projects (mostly dealing with the use of computer displays for photo-interpretation intelligence systems) conducted for RADC. Cumulative revenues reached over \$2 million during the company's first several years. Frank was also successful in gaining contracts from the National Military Command System Support Center (NMCSSC) in May of 1963. This also led to a line of follow-on contracts with the NMCSSC which eventually amounted to several million dollars of work for the company. These contracts were awarded to Informatics because of the high regard for Frank's ability that both government organizations had gained during his previous work for them as a Ramo-Wooldridge employee.

Frank was appointed vice president, Eastern Operations in August 1963 and relocated to Washington, DC. In this capacity he supervised all Informatics East Coast activities with personal attention paid to military systems design and programming projects. Informatics earned an early reputation under Frank's guidance as an excellent military computer systems designer with particular capability in on-line command and control projects. It was this early reputation which enabled the team of Bauer and Frank to win contracts for Informatics from the United States Office of Naval Research for futuristic studies. These involved generating requirements, specifications, and recommendations for the design of an Advanced Naval Tactical Command and Control System (ANTACCS) and the Marine Corps Tactical Command and Control System (MTCCS) to be developed for operational use in the 1970's. Other military and intelligence systems contracts awarded to Informatics under Frank's leadership included the design and programming of PACER, a computerized intelligence system for the United States Strategic Air Command (SAC) and a subcontract to General Instruments Corporation on Project Honey for the software design and programming of a sonar oceanographic mapping system for use by the U.S. Navy.

Frank led Eastern Operations from being primarily a supplier to the military and intelligence agencies into areas that would form the foundation for Informatics commercial work. This strategy began with early contracts for IBM at Poughkeepsie on software for the IBM 360 and subsequently at Mohansic for the IBM timesharing system TSS 67. But his greatest contribution was the formation of Informatics TISCO (later Informatics NASA Facility Operations Division) to provide information processing services for NASA's Science and Technical Information Facility for the computer indexing, abstracting, retrieval, and distribution of published and NASA-produced technical literature related to space exploration. It provided the basis for Informatics success in legal services and publishing services. A large-scale communications message switching system design contract performed for the General Services Administration (as subcontractor to Univac) led to commercial contracts with Western Union, General Foods, and Dun & Bradstreet. On the basis of these contracts, the New Jersey office (for Northeast Operations) was formed, reporting to him. It won such contracts as the programming of the CBS Presidential Election Prediction System of 1968 and a series of financial system design and programming contracts for Wall Street brokerage houses. Supervising Washington Operations and Northeast Operations, reporting to Frank, were vice presidents Richard Lemons and Richard Kaylor.

In 1972 Informatics joined with The Equitable Life Assurance Society of the United States in a joint venture corporation known as Equimatics Inc. for the purpose of providing data processing services and software products aimed exclusively towards the needs of the insurance industry. Frank played a major role in the Equimatics negotiations and subsequently was selected to be its president and chief executive officer. He left Informatics and relocated to Equimatics headquarters in New Jersey. During the next two years, Equimatics became a major supplier to the insurance industry for software services and systems. Under Frank's direction, Equimatics built a data center in Fairfield, New Jersey (which ultimately became the heart of Informatics Data Services Group), and initiated timesharing services to The Equitable and other companies in the New York area. Frank also successfully initiated and negotiated the acquisition by Equimatics of United Systems International of Dallas, Texas, which gave it a major capability for insurance software design and

implementation. This resulted in the development of LIFE-COMM, a comprehensive software package for life insurance back-office administration (such as policy files maintenance and billing) which became one of the most successful products adopted by the life insurance industry.

Informatics and Equimatics merged in 1974 and the combined operation, renamed Informatics, remained a subsidiary of The Equitable. Under this new Informatics Frank relocated to Los Angeles and became executive vice president for corporate development and chief strategy officer in charge of finding new opportunities for the company. Between 1974 and 1976, he and Frank Wagner successfully negotiated the acquisition by Informatics of Programming Methods, Inc. (PMI), and participated in the initial negotiations for the acquisition of Management Horizons Data Services (MHDS). PMI, now the major part of Informatics Professional Services Group, has since contributed a significant percentage of annual profits to Informatics, while MHDS has become a major component of Informatics Data Services Group. Frank took a leave of absence between October 1976 and February 1977 to serve as a consultant to the Government of Israel but was recalled to active company duty to resume his position as executive vice president and also to serve as group vice president of Informatics Professional Services. A year later he turned over the latter role to Frank Wagner and took over the corporate supervision of all Informatics data services. In 1979 he was appointed group vice president of the newly formed Corporate Development Group. In this capacity he formed Informatics Central Europe, became responsible for the acquisition of the TAPS software product, and the establishment of Project 80 for the purpose of getting Informatics into the microcomputer marketplace. Under his direction Project 80 developed an information analyst's workstation, INFORMATICOM, a stand-alone office terminal which is able to communicate with mainframes in order to obtain data from central files and provide facilities for analyzing it. Frank resigned from the company on December 31, 1982, to form a consulting practice devoted to microcomputers.(2)

### 2.1.3 Richard H. Hill

Richard Hill earned a master's degree in English literature from the University of California, Los Angeles, and later served, in the early 1950's, in various positions on the University's administrative staff specializing in administrative analysis, systems and procedures, and staff work as administrative assistant to the Chancellor. In 1956 Hill was hired by Dean Neil Jacoby as assistant director of the newly formed Western Data Processing Center which had been established at U.C.L.A. as a result of a grant from IBM. In this position he managed an IBM 650 computer installation and subsequently the first IBM 709 installation in the world. During this time he was very active in the SHARE organization, working closely with Frank Wagner, and in the Association of Computing Machinery, where he first met Walter Bauer. He also served on the faculty of the School of Business Administration, teaching courses in data processing and digital computer programming before he was recruited by Walter Bauer into the Ramo-Wooldridge Division in 1960. At Ramo-Wooldridge Hill was responsible for directing the systems programming for the computers designed and built by that company.

Hill joined Walter Bauer in the formation of Informatics in 1962. Serving as the company's first programmer and analyst and soon as director of

programming, Hill's initial duties involved both providing direct services to customers and conducting commercial sales efforts in Southern California. In the early years he was much in demand personally as a consultant to local computer manufacturers. Through his sales efforts Informatics obtained a \$37,500 systems design contract with the U.S. Navy Pacific Missile Range (PMR) in April 1963. This project was Informatics second multicomputer system project, firmly establishing the company's expertise in this area. The project ultimately grew much larger and required the design and programming of a state-of-the-art real-time computerized radar tracking system, with Hill as project manager. It was used for the testing of missiles by PMR and involved six Univac 1218 and three Univac 1212 computers in communication with each other. This effort led to several large follow-on projects with PMR including a FORTRAN compiler programming project. The activity grew large enough to warrant an office at Point Mugu, which Hill staffed and occupied for a time. When Hill returned to corporate headquarters in 1964, Bob Reinarts became manager of the Point Mugu Office. Hill's other early contributions consisted of preparing the company's first programming standards manual, project managers' handbook, and proposal handbook. His sales efforts resulted in many commercial projects beginning with disc file systems programming for Bendix Corporation and ending with a number of projects in systems programming for the IBM 360. All during this period Hill carried out personal consulting assignments for such companies as Honeywell, Univac, and IBM, as well as for Philips in The Netherlands. These contracts were instrumental in sales of larger follow-on projects.

In October 1965 Hill became vice president of Informatics Programming Services Division with responsibility for directing all programming support and consulting services activities performed by the company's Western Operations, including the organization of major programming efforts performed for the Jet Propulsion Laboratory and the programming of a number of modules of OS/360 for IBM. He made a concerted effort to open up the state and local government markets, which succeeded for a time with the California Law Enforcement Telecommunications System (CLETS) contract and the opening of a Sacramento office. Another specialty marketing area for Hill was computer manufacturers. His efforts led to contracts with Univac, Control Data, NCR, GE, and Honeywell, in addition to IBM. His duties also encompassed supervising the company's European efforts which involved projects conducted for DataSaab, Philips, Electrologica, the European Nuclear Research Institute (ENRI), and Univac/Switzerland.

In 1968 Hill was made vice president of Data Services when Informatics established a data center on Ventura Boulevard near Informatics San Fernando Valley headquarters, as described in Chapter 12. The company then acquired two Data Centers in Los Angeles and one in Oakland from the Rucker Company. He served two years in this position until 1970 when he became vice president for special projects. In this capacity he wrote, in collaboration with Walter Bauer, the company's first formal annual five-year plan. He was also the lead corporate staff member working with The Equitable to structure the plan for joint activity that resulted in Equimatics. In late 1970 he resigned from Informatics and joined Honeywell Information Systems.(3)

#### 2.1.4 Francis "Frank" V. Wagner

Frank Wagner received a bachelor of engineering (magna cum laude) degree from Manhattan College in 1938 and a masters in mechanical engineering from New York University in 1941. He began his professional life in 1938 as a civil engineer, working on the construction of New York City subways and under-river tunnels. In 1941 he joined the New York firm of Fredrick R. Harris, providing structural design for floating drydocks. The similarity of design problems between floating drydocks and airplanes led Wagner to investigate airframe design research at NACA (National Advisory Committee for Aeronautics, precursor to NASA) in Langley, Virginia. Inevitably, the civil engineer transformed himself into an aircraft structures designer in 1942 when Wagner joined Brewster Aircraft in Hatboro, Pennsylvania. In 1944 he was hired by 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. The engineers discovered that many of their problems could be solved by the IBM punch card tabulators actively used by their accounting department. Later, engineers at Northrop Aircraft figured out that by connecting different IBM punch card equipments (calculators, card tabulators, and printing tabulators) in the proper arrangement they would have a machine that could be externally programmed by a sequence of punched cards and thus rapidly compute the complex equations and formulas they had to solve. This was the invention of the IBM CPC (Card-Programmed Calculator), one of the immediate predecessors to the modern electronic stored-program digital computer.

The use of CPC's were soon adopted on a widespread basis by the aircraft industry and especially at North American where Wagner became one of the major advocates of the engineering use of CPC's and of engineers doing their own programming of them. Thus when IBM announced its 701 computer (its electronic stored program computer) in 1952, North American was well prepared for digital computing. The company ordered a 701 for its engineering department, began formulating plans to organize a computing section to maximize the use of the machine (a necessity due to its high lease cost of approximately \$12,000 per month), and asked Wagner (by now a structures project manager) to head the new activity. As described in Section 1.8.4, Wagner feared that computing was a "back-water" function, out of the mainstream of engineering. But he reluctantly accepted the position of manager of Engineering Computing.

However, Wagner plunged with enthusiasm into the exploding growth of this new field. He looked up six years later and found himself an author of many professional articles on computing, a well known and respected member of the data processing industry, a founder and past president of SHARE (the first IBM computer users group), and still in the same position at North American. As a computing professional he had no future career path at North American and began to think about a new employer.

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 selling was not attractive to him, reflecting an engineering

bias he then held. After other opportunities with Ford Motor Company and the Lockheed Corporation failed to be what he wanted, he began considering possible employment by one of the independent software companies which were then being formed. He rejected Computer Sciences Corporation (formed by Fletcher Jones, a former employee of Wagner's), CEIR, and Computer Usage mainly due to reasons related to 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. The details of his recruitment are related in Section 1.8.4. After a four-month delay, to allow Informatics to achieve the required size, Wagner joined the company in August 1962 as director of plans and programs, an euphemistic name for a salesman. He had realized the error of his former bias, and now recognized that sales were the life-blood of any profit-making enterprise, and especially of a fledgling company in a new field.

As director of plans and programs, Wagner's first assignment was to find business for Informatics particularly in the "desert computing market" between Vandenberg Air Force Base in California and the NASA Johnson Space Center at Clear Lake, near Houston, Texas. His efforts soon proved advantageous for Informatics when, due to their mutual respect for one another, he was able to persuade Howard Bedford, IBM's director of programming at the Flight Control Center at Clear Lake, that Informatics, with Wagner responsible for the project, could better support IBM than other competitors. This \$250,000 subcontract from IBM Federal Systems Division for programming support to the Gemini and Apollo space missions was won in May 1963 for Informatics to supply ten programmers at the Manned Spacecraft Center. Wagner had previously assumed direct command of staffing the project by undertaking a national recruiting trip, signing programmers to conditional employment contracts (if the contract were won) in order to demonstrate to IBM that Informatics could supply qualified people. He was so successful in this, fulfilling Informatics manpower requirements to IBM much faster than competing Computer Applications, that IBM extended the scope of the project for Informatics to supply its entire need for contract programmers-- a total of 20 to 25 positions. The contract was renewed in March 1964 for an additional \$300,000 and Informatics eventually supplied the services of 30 people.

In June 1963 Wagner was appointed vice president of plans and programs, and in June 1964 along with Werner Frank, was elected to Informatics Board of Directors. Soon after this, his position changed to being vice president/Western Operations in which he directed all Informatics operations in the Western United States. These included major contracts performed for the U.S. Navy's Pacific Missile Range, for Litton Industries as subcontractor for the Department of Defense's TACFIRE program, the continuing support to IBM in Houston, the State of California for the systems design and implementation of the California Law Enforcement Telecommunications System (CLETS), the Jet Propulsion Laboratory for programming support, Shell Oil Company for scientific programming, and for compiler design and construction, Philips and Electrologica in Holland, and DataSaab in Sweden. Until they were transferred to Eastern Operations, he had sales and management responsibility for several projects for IBM on the major software development of that era, OS/360. From 1965 to 1968, during the early years of MARK IV, he supervised the Advanced Information Systems Division. Heading these efforts, reporting to Wagner, were vice presidents Richard Hill, Robert Rector, and John Postley. Under Wagner's tenure as vice president/Western Operations, Northern California sales offices and

activities were established in Sacramento to service the state government and in Palo Alto to provide services to NASA Ames Research Center and the San Francisco business community.

Wagner also participated in the negotiations for the acquisition of the Rucker Data Centers and in the corporate supervision of Informatics first attempt (under Richard Hill) at supplying data services. This effort on Wagner's part was interrupted in 1968 when he was assigned part time to serve as president and chief executive officer of ATAR Computer Systems, Inc., a joint venture between Informatics and several private investors, created for the purpose of designing, implementing, and providing a single unified computerized airline reservation (and auxillary services) system for use by travel agents. As described in Chapter 4, the company was unsuccessful and ceased to operate in 1971.

Wagner resumed his full-time duties with Informatics as senior vice president. While in this position, he was directly responsible for successfully extricating Informatics from a major firm fixed-price contract with the Department of Housing and Urban Development that had resulted in contract disputes and threatened losses of over \$1 million.

In 1972, after Werner Frank left to become president of Equimatics, Wagner was elected executive vice president. His responsibility was chief operations officer. Western Operations reported directly to him and, in a staff capacity, he monitored and reviewed operations of Information Systems and Services Company and Software Products Company. During this period he continued as chief planning officer of the company and also negotiated the acquisition of the System/3 Company (subsequently renamed Group 3), a small mail order supply and publication house catering to the IBM Systems/3 computer users market. Wagner was also involved with the acquisition of Parsons & Williams, a Danish company which had developed a software product for the manufacturing market, which became the Manufacturing Systems Division. Both of these acquisitions reported to him.

When Werner Frank merged Equimatics with Informatics, and became executive vice president, Wagner retained all the same duties, with the title of senior vice president of operations. He aggressively promoted the acquisition of PMI and, when Werner Frank took a leave of absence, brought the negotiations to a successful conclusion with the help of Albert Kaplan.

In 1978 in addition to his operations and planning duties as a member of the President's Office, Wagner was made group vice president of Professional Services, a position he held until March 1982. This involved direct supervision and responsibility for the activities of Professional Services Operations East and West (formerly Programming Methods, Inc.) with Operations Vice Presidents Donald Toy and Paul Connolly reporting to him. Other corporate duties performed by Wagner included the development, under Walter Bauer, and administration of the company's Management Incentive plan.

At its inception Wagner became a department editor of the "Annals of the History of Computing" published by the American Federation of Information Processing Societies. Wagner reached retirement age in April 1981. However, he was persuaded to remain a full-time employee for a year in order to be acting

Group Vice President of Data Services, owing to the sudden resignation of Richard Kaylor. He was a part-time employee during 1982 on a number of special projects. He resigned as an officer and an employee on December 31, 1982 and became a consultant to the company.

Frank Wagner's major contribution to Informatics has been through his executive versatility, filling almost every management job. In addition, he always had the responsibility for persistent "watch-dog" monitoring of operations, ensuring that actual performance was maintained in accordance with corporate plans. His tough-minded positions on corporate issues often caused the company to act in ways beneficial to itself which may not have happened without his forceful advocacy. A large, hard-working and thoughtful man who is not timid in any way, Wagner speaks his mind and demands top performance from himself and subordinates. A placard on his desk presented to him by Paul Connolly crystalizes what many thought of him: "All great men are driven by a rage which lesser men cannot comprehend."(4)

#### 2.1.5 John A. Postley

John Postley began his computing career in 1948 after graduating from the University of California at Los Angeles (U.C.L.A.) with a bachelor's degree in mathematics by joining the Institute for Numerical Analysis of the National Bureau of Standards at the U.C.L.A. As assistant supervisor of computing, Postley initially instructed other mathematicians and scientists in programming through the use of Card Programmed Calculators and other IBM scientific tabulating equipment used for scientific computing. Soon he became involved with the programming of the Bureau of Standards computer at U.C.L.A., the Standards Western Automatic Computer (SWAC). In 1951 Postley became head of computing for the Nortronics Division of Northrop Aircraft Company, and then joined The RAND Corporation as head of the Data Processing Group of its Logistics Department. In these positions Postley pioneered in the use of computers for business systems and performed systems design and programming for almost every type of computer then in use. His major contribution was the design of the first giant computer system to use multiple disc files for a logistics application at Tinker Air Force Base.

This experience enabled him to become familiar with the potential uses of computers and ultimately led to the authorship of Computers and People, the first published book on the relationship of automated information systems and the people they serve. Well received, the book was published in paperback and in Japanese. Postley also contributed to several other early books on computing and authored over 50 published articles and technical papers. His professional affiliations and activities included being the chairman of the Committee of Urban Data Systems, an editor of Computing Reviews and international chairman of the Special Interest Group on Business Data Processing for the Association of Computing Machinery. Through his ACM activity Postley served as a lecturer and an ACM visiting scientist representing the U.S. State Department in Europe. It was also through the ACM that Postley became acquainted with the men who became the founders of Informatics: Walter Bauer, Werner Frank, Richard Hill, and Frank Wagner.

In 1960 Postley became vice president of a new venture called Advanced Information Systems, Inc. (AIS), formed to provide digital computer programming

and systems design for business applications with special expertise in information retrieval. Along with about 30 other small companies, AIS was acquired by Hughes Dynamics, Inc., a personally-owned company of Howard Hughes. Under Postley's direction, AIS began development of "generalized" file management systems to create, selectively retrieve from, and prepare reports for a wide variety of computerized information systems using data bases stored on magnetic tape. These were designed to allow users to obtain the majority of their computer information needs without reliance on programmers to write programs for the creation of special reports. This was a major step, or even break through, in bringing the active use of computers to the people who were directly benefiting from them but who had no technical expertise in programming.

The first such system to be designed by AIS was for the Douglas Aircraft Company with the installation of the Generalized Information Retrieval and Listing System (GIRLS). This system was designed for the IBM 709 computer and was followed by MARK I, II, and III for the IBM 1400 series of computers. These were the predecessors of MARK IV for the IBM 360, the industry's first major, and to this day, most successful software product.

However, before MARK III was fully perfected, Howard Hughes, perturbed at the poor overall financial performance of Hughes Dynamics, Inc., (despite the success of AIS), decided to liquidate his company and divest himself of its current holdings. Moving to save AIS from closure, Postley called Bauer at Informatics and offered himself and his department as a favorable acquisition candidate. Informatics acquired AIS from Hughes by accepting a check from Hughes in 1964 for \$38,000 to cover Informatics taking over the responsibility for its current contracts, and thus obtained a new department of 10 people and an in-development software product.

At Informatics Postley, first becoming director and then vice president of the Advanced Information Systems Department, continued to develop MARK III and successfully installed it in the city of Alexandria, Virginia. Informatics and Postley received some national publicity and television coverage for this effort. Shortly thereafter, the success of the IBM System/360 computer aided in making MARK III prematurely obsolete, but greatly increased the need for generalized file management systems among IBM computer users. Recognizing this need and gaining Walter Bauer's support, Postley obtained customer sponsorship for the development of MARK IV, a file management software product for use with the IBM 360. Announced in 1967, it placed Informatics into the software products market, made the company a leader in the field, and became the major source of revenues and profits up to the present.

Considerably more detail about the foregoing is given in Chapter 9. When Informatics decentralized in 1970, Postley became president of the MARK IV Systems Company and later group vice president of Software Products Group. When Informatics reorganized itself into product-service groups in 1976, he moved to the corporate staff as senior vice president for long-range product strategy. He continued to have line responsibility for International Marketing, which was very profitable during that period. He served in these positions until 1979 when he retired.

Perhaps Postley's greatest contribution to Informatics is not his direction of the development and marketing of MARK IV but his outspoken, undaunted

opinions and philosophy as to what a software product could and should be as compared to other programming services. He was the first to comprehend fully the concept of a true software product, to bring to Informatics pioneering concepts of software product marketing, and to persevere with the iron will necessary to bring his vision to practical reality. It was Postley's leadership and pursuit of his goal for MARK IV that gave Informatics the ability to productize its programs, to explore potential markets for their use, to apply to them the principles of quality assurance and configuration management, to create optional special features and enhancements to further their sales and earn added revenue, to supply user education and rigorous training for the sales force, and generally learn how to market software products to the point of becoming the first leader in this field. Due to its importance to the development of Informatics, a separate chapter is devoted to MARK IV and application development products.(5)

#### 2.1.6 Richard E. Kaylor

As described in detail in Section 1.2, Richard Kaylor entered the computer field during the mid-1950's at North American Aviation's Missile Development Division. In 1957, after graduating from Whittier College with a degree in mathematics and chemistry, he was recruited by Western Electric Defense Products Division to work on the Sage Project for the semiautomatic air defense of the United States, which involved computer-aided control of the deployment of interceptor aircraft. There he was responsible for software/hardware diagnostics for the most modern computers then extant.

He was recruited into Space Technology Laboratories in 1959 before transferring into the Ramo-Wooldridge Division of Thompson Ramo-Wooldridge (TRW) later in the same year. At TRW Kaylor served in several positions responsible for programming for the RW 400 multicomputer, participating in the design of the system programming for the TRW 130, and heading the military products section for the programming support of all military computing equipment.

Kaylor joined Informatics in 1963 in the capacity of system program designer and project manager for many of the highly classified projects performed for Rome Air Development Center, including an advanced executive control system for experimental timesharing on a multicomputer complex, an on-line photo-interpretation system, an on-line computation system, and the development of system diagnostic programs. For the Strategic Air Command, he was author of the planning and design documents and served as initial project manager for the design and implementation of the Visual Analysis System (VAS), the mobile wing Reconnaissance Technical System (RECCE TECH) and the very successful PACER (Program Assisted Computer Evaluation and Review) System for photo-interpretation. He was project manager and program system designer for Project Honey, a sonar oceanographic mapping system developed for the U.S. Navy. These were some of the most important early advanced technology military projects conducted by Informatics.

In September 1965 Kaylor was appointed director and subsequently vice president (in 1967) of Northeast Operations. He relocated to northern New Jersey, where he founded an office responsible for developing commercial business for Informatics in the Northeastern United States. In this position he took over responsibility for the existing contracts and later obtained important

contracts with IBM/Poughkeepsie and IBM/Mohansic related to the development of the System 360. Among these projects were the design and development of a test and control program for OS/360 and parts of TSS 67, the System 360/67 timesharing system, and the preparation of various pieces of System 360 documentation. These projects were significant in that they gave Informatics capability in IBM 360 programming and system design at the time that this third generation computer was being announced. Informatics later used this capability to obtain contracts with numerous government and commercial customers.

Other commercial business obtained by Kaylor in the Northeast involved pioneering of computerized message-switching projects, first for Western Union, and then through the development, between 1967 and 1974, of the ICS IV/500 communications software product (see Chapter 11). It was first installed at the Federal Reserve Bank of New York, then at General Foods and Dun & Bradstreet, and abroad at Japan National Railway and KDD. Each of these installations was large scale and was performed for a sales price between \$500,000 and \$2.2 million each. Another significant and prestigious contract awarded to Informatics under Kaylor's initiative was the design and programming of Columbia Broadcasting System's first Election Prediction System for the 1968 presidential election, which forecast the results very early, though Walter Cronkite and Mike Wallace refused to believe it until hours later. Under his management and technical direction there was developed, in 1968-1970, a nationwide order processing system for CBS records, which pioneered the use of portable terminals for salesmen, and in 1970-1971 an international money transfer system for Citibank. During this era he established an office in Boston, Massachusetts, which lasted a few years, but was then closed for lack of business.

In 1969 Informatics acquired Computing Technology, Inc. (CTI) of New York City which specialized in programming and systems design services for the brokerage houses of Wall Street. CTI was maintained as a legal entity, renamed the Computing Technology Company (CTC) with Kaylor appointed as its president. Under his leadership, CTC obtained major contracts with both the American and New York Stock Exchanges and with Dean Witter & Company for a wire transfer system and then for the design and implementation of a back-office accounting system. These commercial programming projects lead Kaylor into the application products business with the acquisition of the ACCOUNTING IV cross-industry software products, discussed in Chapter 11.

Kaylor was appointed an executive vice president in 1973. He played a major role in defining the operational interfaces that would be necessary after the merger of Informatics into The Equitable in 1974. After the merger, in addition to the Business Systems Division, the Communication Systems Division, and the Industry Application Division, he assumed responsibility for the management of the Fairfield, New Jersey, data center, previously part of Equimatics, Inc. Under Kaylor's general supervision, the Fairfield operation began expanding its commercial timesharing services to other companies besides The Equitable in the metropolitan New York Area. After the acquisition of Programming Methods, Inc., by Informatics in late 1975, CTC went out of existence. Beginning with 1976, the Business Systems Division (ACCOUNTING IV) and the software products of PMI were made part of Software Products Group. A new Commercial Services Group was formed with Kaylor as group vice president. It included Data Services Division and the professional software services part of PMI to which was added all the custom programming formerly done in CTC and Western Systems Company.

After he successfully negotiated the acquisition of Management Horizons Data Services of Columbus, Ohio, from Citibank Corporation, Kaylor relocated to Columbus and became group vice president of the newly formed Data Services Group. (Werner Frank succeeded him as group vice president of Professional Services Group, which included all the custom programming.) MHDS vastly increased Informatics vertical industry data services capability by providing nationwide processing services dedicated to a specific industry--wholesale distribution. Under Kaylor's direction MHDS became profitable and dominated data services in several segments of the distribution industry such as the drug and hardware distribution businesses. In 1981 Kaylor was responsible for extending data services to the apparel manufacturing and taxi cab industries in New York through the acquisition of Transportation Computing Services and its subsidiary, Commercial On-Line Systems.

In July 1981 Kaylor resigned from Informatics to become president and CEO of Strategic Information in Burlington, Massachusetts. His contribution and importance to Informatics were 1) his early leadership in high technology programming; 2) the vast extension and growth, through the performance of large-scale projects, of the company's commercial programming business in the financial and communication systems markets; 3) the company's entry into the applications products business; and 4) the successful direction of Informatics entry into commercial data services via expansion of the Fairfield data center and the acquisition of MHDS.(6)

#### 2.1.7 Wilson R. Cooper

Wilson Cooper received his bachelor's degree in mathematics in 1959 from the University of North Carolina and his master's degree in mathematics from the University of Washington in 1961. He entered the computer field in 1961 working as a civilian employee of the United States Navy at the Pacific Missile Range, programming large-scale IBM and Univac computers. The Range was one of Informatics earliest customers, awarding the company a contract for the design of a real time data handling system for the radar tracking of missiles. After a governmental reorganization of the Range in 1964, Cooper was recruited by Richard Hill for Informatics, where he initially served as a systems programmer on an IBM commercial contract in Poughkeepsie, New York. That project involved the conceptual design and then the programming of a Control and Reproducibility Monitor (CRM) program for the then in-development IBM System/360 computer, a project headed by Richard Hill and Robert Heckathorne. The CRM program recorded the timing of interrupts processed by the computer, along with errors, and then reproduced the interrupts and errors which had occurred in order to test the new machine's reliability and to trouble shoot operational problems. This contract gave Informatics first-hand experience and expertise with the System/360 before this highly successful third generation computer was delivered to customers. Due to its early knowledge of the system, the company later actively sold its services to a large number of IBM 360 users. After serving on the IBM project, Cooper served as project manager on a contract with the Kansas City Southern Railway for the implementation of a teleprocessing system utilizing an IBM 360. Then in mid-1966 he had a six-month assignment on an East Coast project for Western Union, performing systems design for a nationwide computerized message-switching system under the direction of Richard Kaylor and Roy Morris.

Cooper returned to California at the end of 1966 to become part of the MARK IV design team under John Postley for a period of seven months, making notable contributions to its architecture. After this he was promoted to his first management position and assigned the task of establishing a programming office in Palo Alto, California, reporting to Robert Rector. Cooper's assignment also made him responsible for marketing the services of the office, primarily to the NASA/Ames Research Center. Under his supervision, Informatics was awarded a variety of contracts with NASA including programming for mathematical analysis and data reduction systems for satellite experiments in the ionosphere, real-time data systems for airborne computers such as the CV990 and C-141 flying laboratories, and data recording systems for research involving automatic landings and wind tunnel experimentation. The Palo Alto office grew to 50 employees during his tenure as office manager. Even though not recognized by accounting as a profit center, Cooper, encouraged by Frank Wagner, demonstrated his profit orientation by keeping his own books and producing a monthly operating statement for his unit.

In 1969 Cooper became the project manager for the system design and programming of the California Law Enforcement Telecommunications System (CLETS), an Informatics subcontract for RCA with a fixed price of \$465,000. To support it, the company had previously opened an office in Sacramento. The contract, with a \$1,000 per day late completion penalty clause, had fallen very behind in schedule, and Cooper was assigned to direct the project so it would result in a minimal financial loss to the company. For 18 months of hard work, he supervised both the company's Sacramento office and, with Marvin Howard's help, the Palo Alto Office. Cooper hired new project managers, obtained an agreement with RCA and the State on revised schedules, improved the technical performance on CLETS, and kept the contract from producing a loss. The project involved the implementation of a statewide computer controlled telecommunications system which connected state, local, and federal law enforcement agencies to each other. It provided automatic access to criminal history, stolen vehicle and missing persons files, and distributed instant statewide notification of wanted criminals and suspects. It was the first of its kind and attracted a good deal of public and media attention which reflected favorably on Informatics.

In 1971 Cooper became general manager of the Western Systems Division and soon afterward, when Informatics reorganized itself into separate functional companies, became president of the Western Systems Company. In this position Cooper directed all Informatics professional software services on the West Coast and elsewhere in the country where another corporate unit could not fill the customer's need. Under Cooper's leadership between 1971 and 1975, the Western Systems Company obtained major contracts with NASA/Ames, Jet Propulsion Laboratory, the State of Washington, and Illinois Bell Telephone Company. In addition, he built up a skilled group of MARK IV programmers, who provided services for many users of the company's MARK IV product. Western Systems Company grew to 130 employees, doubling its revenues to \$3.5 million. Also, during his tenure in this position, the company acquired the PRODUCTION IV software product and GROUP/3, a mail order software and supplies business, both of which reported to Western Systems Company.

When Informatics acquired Programming Methods, Inc. in 1975, PMI Western Division and Informatics Western Systems Company were combined into one group directed by Paul Connolly. Cooper was then appointed vice president of the

newly created Software Products Technology Division, reporting directly to Walter Bauer until 1977, when Paul Wrotenbery became group vice president of Software Products, and subsequently to Bruce Coleman and Merritt Lutz. In this position Cooper was responsible for the development of new software products and the improvement of existing ones sold by Informatics. A major activity has been to update and maintain the MARK IV, MONITOR IV (since sold), ACCOUNTING IV (since sold), and SHRINK product lines. Since 1975 the Technology Division has successfully developed MARK V (a MARK IV-like product for developing on-line applications), Answer/DB (a query system for data bases), and acquired and productized two implementation systems products, INQUIRY IV and TRANS IV.(7)

#### 2.1.8 Dr. Robert W. Rector

Robert Rector learned computer programming at the University of Maryland where he earned a doctorate degree in applied mathematics while also serving as an associate professor, civilian faculty, at the United States Naval Academy. In 1956 his mentor, Professor David M. Young, joined the Ramo-Wooldridge Corporation under the immediate supervision of Walter Bauer, director of the Computation and Data Reduction Center, and recruited Rector as a member of the technical staff performing numerical analysis. Rector soon became involved in programming Univac 1103 and 1103A computers and, after one year of service, was asked to become staff mathematician and administrative manager for the Data Reduction Center. In this capacity he coordinated the administrative aspects of computing support, by providing liaison and general project assistance, for a number of space programs such as the Atlas, Titan, Thor, and Minuteman missile projects. When Ramo-Wooldridge formed the Aerospace Corporation, Rector joined it as assistant director of its computing center, a position he held until 1965. He jointly directed a staff of 150 computing professionals and the operation of IBM 704, 709, and 7094 computer systems dedicated to data processing support for systems engineering and technical direction for the U.S. Air Force Ballistic Missile and Space Systems Division.

During these early years Rector was very active in the local and national levels of the Association for Computing Machinery. His professional participation began with the position of educational chairman for the Los Angeles Chapter of the ACM when Bauer served as its chairman. Rector himself later became chairman of the Los Angeles Chapter between 1962 and 1964 and served in several national positions such as a member of the National Council of the ACM for Southern California, chairman of the Committee on Chapters and National Lectureship Series, director of the Visiting Scientist Program, and the Fall Joint Computer Conference Administrator for 1961. Due to this involvement Rector was ultimately appointed general chairman of the 1965 Fall Joint Computer Conference in Las Vegas. Rector had also published several articles, establishing his reputation as a mathematician and computing professional, and became listed in American Men of Science, Who's Who in the Computer Field, Who's Who in America, and Who's Who in the World. He also served as a special lecturer for the University of California at Los Angeles Extension program and as a member of the Mayor's Space Advisory Committee for the City of Los Angeles.

Bauer originally hired Rector in 1965 for the use of his professional reputation and name for the purpose of winning a large-scale contract with Jet Propulsion Laboratory. Informatics had previously made several unsuccessful

programming support proposals to JPL, and eventually realized that JPL preferred an experienced and acknowledged technical authority and academic as project director. Rector had the credentials of a Ph.D. and was well known as a computing professional, so Informatics recruited him as vice president of Plans and Programs with primary responsibility for sales of programming services by Western Operations, particularly services to NASA/Ames Research Center and JPL. His reputation did prove advantageous, and Informatics did gain sizeable contracts with both prospects for several years, which Rector initially directed.

Rector was also responsible for the company's public relations efforts and organized a series of annual symposia, co-sponsored by U.C.L.A. and Informatics, devoted to the most relevant topics of concern to the computing profession. The subjects and nature of the symposia are discussed in more detail below. Their currency and focus on state-of-the-art technology gave Informatics industry visibility as a highly professional and technically advanced enterprise. He spoke at several of the symposia and was responsible for the publication of the various technical papers presented at them. These were published as books under the company editorship of Fred Gruenberger, an Informatics employee and computer pioneer, reporting directly to Rector.

In 1966 Rector was promoted to vice president of Western Operations Aerospace Systems Division, primarily responsible for directing Informatics programming services to the Ames Research Center and Jet Propulsion Laboratory. The division expanded to an additional 60 people under his direction and opened offices in Palo Alto (supervised by Wilson Cooper) and Sacramento (supervised first by Bob Reinarts and then Wilson Cooper) for the purpose of gaining more business with NASA and capturing programming services contracts with California's state government. In 1970 Rector left Informatics to pursue other professional opportunities. He eventually became executive director of the American Federation of Information Processing Societies (AFIPS). He then served as staff consultant for the 1979 White House Conference on Library and Information Services. Rector subsequently has become coordinator of the engineering short course program in the Extension Division of U.C.L.A.(8)

#### 2.1.9 Richard C. Lemons

Richard Lemons began his computing career upon graduating in electrical engineering from West Virginia University in 1955. As a U.S. Air Force officer assigned to the National Security Agency, he was involved in the design and building of special-purpose computers for intelligence data processing. Lemons joined the General Electric Company in Phoenix, Arizona, in 1957 as a logic design engineer for a new computer systems department developing, for the Bank of America, the MCR-304 large-scale special purpose computer system, which was part of ERMA, the first system for processing checks using magnetic ink character recognition. During this time he earned a master's degree in computer sciences from Arizona State University. This soon led, in 1958, to a promotion as a design automation analyst where he was responsible for implementing the design automation program for all the then currently available GE computers. Lemons soon transferred to Falls Church, Virginia, as director of the General Electric Intelligence Systems and Programming Office, serving the Defense Intelligence Agency in the area of systems analysis and programming for the

creation of large-scale data bases of intelligence data and for information storage and retrieval from them for use by Department of Defense intelligence analysts.

In 1962 he was promoted to manager of the General Electric Washington Information Processing Center with responsibilities for business development in commercial data processing services and software projects. Lemons was promoted again in 1964 to become manager of GE's Washington Information Processing Region with responsibility to supervise and promote data processing services in the Washington D.C. area. He directed the establishment of GE's timesharing center in Bethesda, Maryland, with connections to several other GE centers in the area and was responsible for the development of BASIC, FORTRAN, and ALGOL timesharing services offered by GE. Paralleling this activity, Lemons also was very active in the Washington, D.C., chapter of the Association of Computing Machinery. He eventually served as its president and in this capacity he became acquainted with Walter Bauer (who was a featured speaker at professional meetings because of his recent founding of a software company--then a new concept). Bauer was impressed with Lemons, and learning more about him through Werner Frank, decided to hire him as vice president of Informatics Washington D.C. Division in June 1966.

Lemons' first assignment for Informatics involved obtaining and supervising the company's military and intelligence systems business in the Washington, D.C., area. In this position he directed advanced development projects for the National Security Agency for on-line systems in the areas of text editing, file management, inquiry/response, and automated instruction; for the Department of Defense for command and control projects such as NMCSSC, TARMOCS and FLAGPLOT; and for Rome Air Development Center for development work using its GE 635 computer system and the Bunker Ramo BR-90 on-line display system.

In 1967 Informatics teamed up with Information Dynamics Corporation of Boston, Massachusetts, for a joint proposal and bid to NASA for the facility management and operation of its Scientific and Technical Information Facility (NASA STIF). Lemons authored the successful proposal of this three-year cost plus award fee contract, which at the time was the company's largest contract at \$4.5 million per year, and was immediately made president of the joint venture company, Technical Information Services Company (TISCO), established by Informatics and IDC to perform the contract. In this capacity he served as the on-site project director on the contract, which involved performing computer assisted abstracting, indexing, on-line retrieval, and distribution (in paper and microfiche) of technical research literature produced by and of interest to NASA and its contractors. He was responsible for expanding the size of the contract and obtaining follow-on business. This he did with Informatics gaining contracts with NASA/Goddard to operate its library and with other agencies for computer-assisted abstracting and indexing. In 1969 Informatics acquired IDC's interest in TISCO which became Informatics Systems and Services Company with Lemons as president. Later during 1974 when Informatics reorganized itself into product/service groups, Lemons was appointed group vice president of Information Systems and Services. Most importantly, under Lemons direction, Informatics successfully continued to earn very large award fees and obtain renewals of the NASA STIF contract for 12 consecutive years between September 1968 and June 1980.

As described more completely in Chapter 7, the early NASA facility contracts are significant because they allowed the company to obtain expertise in the new field of processing information in natural language form. This included the preparation of specialized data bases, design of automated search and retrieval systems and library system software products, and the development of computer-assisted literature abstracting and indexing, micropublication, and electronic photocomposition. Lemons immediately visualized the importance of this technology. He was one of the first leaders in the computer services industry to insist: "We are not in the computing business--we are in the information business."

Under Lemons' initiative and persuasion, Informatics expanded its information processing business throughout the 1970's. RECON-STIMS, a data base search and retrieval software package, was perfected and offered to users through national timesharing networks. The MINI MARC software product, to provide computerized catalog card preparation was developed for sale to small and medium size libraries. Major information clearinghouse services contracts were obtained such as the alcohol abuse information for the National Institute of Alcohol and Alcoholism, TOXLINE and MEDLARS for the National Library of Medicine, and ENVIRON for the Environmental Protection Agency.

Moving this technology out of the government sector into the commercial sector, Lemons was also responsible for the initial entry of Informatics into litigation information management services during 1974 under a \$350,000 contract with the Petroleum Research Group to handle document abstracting and indexing for anti-trust litigation. This business has since expanded into the Legal Information Systems Operation, which in 1982 accounted for approximately \$17 million in annual revenue. Under Lemons's leadership, Informatics acquired SEA (Software Engineering Associates), SDA (Source Data Automation), the Autocomp photocomposition software, and PSS (Professional Software Systems) to provide the company with capability in optical character recognition conversion and data base services, electronic photocomposition, and integrated hardware/software products for law office automation. Information Systems and Services has grown under Lemons' leadership from 268 employees in 1968 up to 1,200 employees in 1982, producing approximately \$53 million in revenues. In 1981 Richard Lemons' responsibilities were enlarged to encompass the Financial and Insurance Systems and he was promoted to senior vice president.(9)

#### 2.1.10 Dr. Paul T. Wrotenbery

Paul Wrotenbery became familiar with computers on a limited basis as a graduate student at the University of Texas where he earned a doctorate in physics in 1964. While attending graduate school from 1958 to 1964, he worked for Tracor Corporation of Austin, Texas. In early 1964 he was hired by IBM where he became involved in the design and management of major scientific computer applications. Wrotenbery rejoined Tracor in 1968 as vice president of data processing where he was responsible for establishing a computer services subsidiary. In May 1970 he acquired a principal interest in a small insurance-oriented software company located in Dallas, Texas, known as United Systems International (USI) and was appointed its chairman, president and CEO. United

Systems had been the result of a recent merger between two small companies which had been purchased by Transport Life Insurance.

Wrotenbery began guiding his small company to develop a series of insurance-oriented software products and specifically embarked on a strategy to specialize in life insurance applications. As described in more detail in Chapter 10, under his leadership USI successfully developed several software applications modules compatible with and as enhancements to IBM's CFO and CFO II products which provided life insurance daily "cycle" policy records maintenance systems. Although USI had no policy cycle system of its own, it did develop Mortgage Loan, Stock & Bond, Commission, Actuarial, and General Ledger system modules devoted exclusively to the needs of the life insurance business. USI developed a batch system to facilitate the policy issue which would operate with IBM's '62 CFO, and through the system supported the conversion of life insurance companies to batch-oriented '62 CFO. The company thus acquired considerable conversion business and developed TOPIC, an on-line new business system based on IBM's ALIS (Advanced Life Insurance System), IBM's replacement for '62 CFO. This led ultimately to the development by USI of an improved on-line policy issue system, the ISSUE-COMM product, which was based on IBM's CFO II. These efforts enabled USI to become favorably known by the insurance industry and led the company to formulate a strategy to develop a comprehensive, integrated life insurance system product named LIFE-COMM. To achieve this, however, the company needed to obtain user sponsors to fund an expensive product development effort, then estimated to be larger than the entire annual revenue base of the company.

Wrotenbery approached The Equitable in 1970 to sell a Mortgage Loan System and to seek their possible interest and investment money. The Equitable was not interested in investing in USI because it had become deeply involved in plans for a joint venture with Informatics to form Equimatics as its own insurance-oriented software company. However, this contact broke the ice, and The Equitable placed Wrotenbery in touch with Werner Frank, then president designate of Equimatics. The two men met in Washington, D.C., during 1971 and discovered many common business interests but had to discontinue their talks until the formation of Equimatics was approved by the New York State Department of Insurance. Talks resumed in 1972 and resulted in the acquisition of USI by Equimatics on a cash basis, as described in Section 4.4.4.1. The merger allowed Equimatics to accelerate its growth in the software products business and to greatly enlarge its size to 120 employees. USI also gained an association with a major insurance company which gave it sales influence with potential sponsors for its planned new product.

With the acquisition Wrotenbery was appointed a director and executive vice president of Equimatics and general manager of the USI division, including responsibility for LIFE-COMM. Prior to USI's purchase by Equimatics, he had identified ten candidate sponsors for LIFE-COMM and succeeded in gaining several commitments to support LIFE-COMM and ultimately gained the support of nine including Home Life Insurance and The Equitable Variable Life Insurance Company (EVLICO). No other company had ever attempted to achieve, on this scale, the total systems integration of all life insurance data processing functions within one single software product. For Wrotenbery the challenge was to define marketplace needs accurately to ensure that the product would sell and to control development costs. While development costs for LIFE-COMM were ultimately overrun by approximately \$3 million, sales more than exceeded

projections and the project was a financial success. Many sales were made at the then astronomical sales price of up to \$500,000 for a complete LIFE-COMM, the highest price ever demanded for a software product up until that time (1973). LIFE-COMM had state-of-the-art design, was modular and updatable, and served the needs of medium to large size life insurance companies so well that it sold in such numbers as to rapidly become the leading life insurance software product by 1975.

After the merger of Informatics and Equimatics in 1974 to create the new Informatics, Inc., Wrotenbery became a member of Informatics board of directors, a vice president of the company, and president of the Equimatics Company. In 1976 he became group vice president of the Industry Applications Group which included Equimatics. In 1977 Walter Bauer asked Wrotenbery to relocate to California and assume the position of group vice president of the Software Products Group as well as continue to run Equimatics. Although reluctant to leave Texas, he agreed to give it a try.

The company had become overly dependent on revenues from MARK IV, which was beginning to decline in its life cycle. Plans to update the product to extend its life or to develop new products to replace it and broaden the company's product line had been floundering. In this new position under Bauer's direction, Wrotenbery was instrumental in redefining and solidifying the product development strategy for Informatics Software Products. An tall commanding Texan, Wrotenbery earned a reputation among his staff as a persistently hard worker and demanding superior. Frequently calling early morning and late evening meetings if he felt the situation merited it, he put his subordinates to work on clearly defining and implementing an integrated product strategy for Informatics. This strategy, which resulted from long hours and numerous meetings, placed emphasis on implementation system products to aid the development of various computer applications, in all environments, at the programmer and end user levels.

During Wrotenbery's tenure with Software Products Group, Informatics purchased INQUIRY IV/IMS and TRANS IV to broaden its product offerings and focused and accelerated the development of MARK V. But he was a Texan at heart and had never moved his family to California. Wrotenbery decided he never would do so, and in 1978 accepted the invitation of friends to participate in the administration of Texas' newly elected governor, William P. Clements. He served as senior staff assistant to Governor Clements and head of the Governor's Office of Management and Budget until the end of his term in 1982. In this role Wrotenbery was responsible for developing and overseeing a budget in excess of 25 billion dollars, and served as the Governor's management liason to over 200 agencies and universities with over 150,000 employees.(10)

#### 2.1.11 Marion L. "Spec" Bradley

Spec Bradley began his career in the computing industry in 1957 when he joined IBM where he worked until 1964. Later, between 1964 and 1967, he worked for a small Texas-based life insurance company and became executive vice president, which allowed him to become familiar with the data processing needs of the life insurance business. In 1968 Bradley founded and became president of

United Computer Services which specialized in providing data processing services to life insurance companies. The primary stockholder of United Computer Services, Transport Life Insurance, acquired Consolidated Life Systems, a developer of software systems for the life insurance industry, and merged the two subsidiaries to form United Systems International in 1969.

Consolidated Life Systems initially supplied systems analysis and programming to aid life insurance companies to install and implement IBM's 62 CFO system. Consolidated Life based its business on developing front end programs to perform various standard functions required by 62 CFO customers. These specialized programs were sold both individually or as a combined package known as LIFE-COMM I. When United Systems International was formed in 1969, IBM had just announced its release of CFO II, an upgrade of 62 CFO designed to run on the IBM System/360 computer. CFO II also engendered the need for custom tailored ancillary programs which United Systems eagerly developed and provided, the combination of which was dubbed LIFE-COMM II.

Bradley initially served as vice president of administration and finance of the new company, and guided the merger of operations between the two predecessor companies. During 1970 Transport Life recruited Paul Wrotenbery and James Porter from Tracor Computing Company to serve as president and vice president of finance, respectively, of United Systems International. Bradley then became vice president of operations directing the company's data centers and data processing activities for insurance industry customers. In 1972 United Systems International was acquired by Equimatics, Inc. (see section 4.4.4.1), a joint-venture company of Informatics and The Equitable Life Insurance Society of the United States. This change resulted in Bradley becoming vice president of sales and marketing, primarily responsible for sales of insurance-oriented investment systems software products (such as Stock & Bond and Mortgage Loan) and for finding sponsors for what became LIFE-COMM III.

Under the leadership of Wrotenbery and Bradley, United Systems had determined to design its own integrated life insurance policy billing and maintenance program based upon the use of the various LIFE-COMM II modules or ancillary programs. This new system, however, would encompass a complete redesign of the central processing package and thus would be a vast improvement over IBM's CFO II package. The development of this new software product, LIFE-COMM III, was estimated to take two years and cost \$2.4 million. When Equimatics acquired United Systems, the Equimatics and Informatics management cautiously consented for the project to proceed if customer sponsorships could be found.

It became Bradley's job to first find the needed sponsors who were willing to financially support the product's development and then to develop the sales organization required to sell this product. He succeeded in this task, finding nine sponsors. The project took four years and a total of \$5 million to complete. LIFE-COMM III was introduced in 1975 and rapidly became very successful, selling primarily to medium size life insurance companies. It had a price tag usually exceeding \$1 million for the product plus assistance in installation. The company has since been able to sell between 5 and 14 of these systems annually. It is now developing an improved successor product called LIFE-COMM: The Financial Manager.

When Paul Wrotenbery was promoted to group vice president of Informatics Industry Applications Group, Bradley was appointed vice president and general manager of the Equimatics Division, responsible for all data processing services and software products offered to the life insurance industry. Insurance services continued to grow under Bradley's direction. In 1980 the division split into life and group insurance divisions, and became part of Informatics Information Systems and Services Group with Bradley, as operations vice president, reporting to Richard Lemons, group vice president.(11)

#### 2.1.12 Donald A. Toy

After graduating from Manhattan College with a degree in mathematics, Donald Toy entered the computing industry, working for an insurance company. In 1963 he joined Computer Applications, Inc. (CAI), an early competitor of Informatics for professional services, where he successively served as programmer, project manager, and manager until 1968. In that year Computer Applications went out of business and he joined a new company, Programming Methods, Inc. (PMI), founded by some of the management of CAI. It provided business systems design and custom programming services for commercial customers. Toy eventually rose to vice president of marketing of PMI, located in the corporate office in New York, and was primarily involved with professional services. PMI was first acquired by the Riker Corporation, who, in 1972, sold it to General Telephone and Electric Information Systems Division, which was primarily engaged in selling communications-oriented hardware systems. In 1975 with its Information Systems Division losing money, General Telephone decided to sell PMI to Informatics over the objections of its founding top management, who wanted to buy PMI themselves (see Chapter 4). Informatics made the acquisition primarily to gain the teleprocessing monitor software products that PMI had developed. Although these products were losing money, Informatics planned to finance their growth to profitability by the expected profits from PMI's professional services operations.

Upon the resignation of the founding top management of PMI (who refused to work for Informatics because they wanted to run their own company and thus started the Lambda Corporation), Toy became vice president of the East Coast professional services activities of PMI. Informatics soon consolidated the PMI professional services with that of its own so that PMI East and part of what was previously Informatics Computing Technology Company became Programming Methods Eastern Division (PMED) in January 1976 with Toy as vice president and general manager. This combined organization later was split into two divisions and became Professional Services Operations East (PSOE) with Toy as operations vice president.

The significance of the PMI acquisition is that it enabled Informatics to gain a sizeable portion of the commercial custom services programming market by obtaining a much higher percentage of "bread and butter" business applications and projects than Informatics had pursued previously. All of PSOE's activity is referred to as "professional services," in which the temporary services of programmers are supplied to supplement the programming staffs of customers to provide missing skills and overload assistance. Frequently in this situation, the customer, not Informatics, is directly in charge of the project and assigns the Informatics programmer specific tasks to perform. Approximately one half of

PSOE's contracts are managed by itself and the other half by customers; the average contract usually initially consists of six programmers for six months, but the first contract is usually followed by many more, so that the majority of PSOE's revenues comes from repeat business. Most of PSOE's current customers are FORTUNE 500 companies.

Under Toy's leadership, Informatics acquired considerable business with state governments such as Alaska, Massachusetts, New York, Arizona, Utah, Minnesota, Illinois, New Jersey, Arkansas, Alabama, Georgia, South Carolina, and Tennessee, and (excluding programming for Medicare) came to dominate this state government market. It also established a successfully growing European division with 110 employees in the United Kingdom which recorded \$6 million in revenues in 1981. Although Informatics has been an established software product supplier in Europe, it had never been a sizeable programming services company overseas until PSOE went to Britain under the entrepreneurial drive of Toy and the local direction of Anthony Spargo. It became an independent division in 1980 as a part of Professional Services Operations East when Toy was promoted to operations vice president.

Although Informatics acquired PMI primarily for its teleprocessing monitors, its biggest gain from the acquisition turned out to be the professional services business that came with it. While the software products failed to become profitable, Toy's East Coast professional services almost doubled in size between 1976 and 1982 to 373 employees and recorded \$16.6 million in revenues and \$1.9 million in profits during the latter year. His European operations have grown rapidly. As will be described in the next section, the western operation grew in a similar way. Professional Services Group in total, both East and West operations, in the five years after the acquisition, accounted for 25 percent of corporate revenues and a disproportionate 57 percent of corporate profit. Averaged over the five years, Professional Services Group, directed by Toy and his West Coast counterpart Paul Connolly, have among the highest profit margins of the company's various operating units, and were the largest supplier of commercial professional services in the United States.(12)

#### 2.1.13 Paul J. Connolly

After graduating from the Wharton School of the University of Pennsylvania, Paul Connolly began his computing career in 1961 with the Data Processing Division of Radio Corporation of America (RCA). His last position with RCA was serving as its national account manager for Lockheed Aircraft Company, one of RCA's largest accounts. Between 1967 and 1971 Connolly worked for Comress (one of the first software companies to lease a software package), first as its western region manager and then serving as assistant to its chairman of the board in Rockville, Maryland. In 1971 Connolly joined the Federal Systems Division of Programming Methods, Inc. (PMI) as the division's West Coast vice president. In this capacity he was primarily responsible for directing the division's contract services to the NASA/Ames Research Center for the operation of its computer center and management of programming for its Life Sciences Program.

The Federal Systems Division was formally split from the remaining PMI operations as a distinct West Coast activity during 1973, and Connolly became

vice president of the Western Division responsible for the programming business with both government and commercial customers. Under his direction the division obtained major contracts with Bank of America, Hughes Aircraft, Health Applications Systems, and Avco Financial Systems for software development and programming services. The Avco project, obtained after PMI had been acquired by General Telephone and Electronics (GTE), was the largest PMI contract at \$4 million for software on GTE hardware. It involved the installation of a 1500 terminal on-line consumer finance system during 1974. This was one of the biggest terminal systems to be installed up to that time but never became operational, due to failures in the GTE hardware. The division also obtained an additional contract with NASA/Ames for the programming of its administrative systems such as payroll and financial control. By 1975 when Informatics acquired PMI from GTE (see Section 4.2.13), Connolly had built the Western Division's commercial business to 75 percent of its revenues with a total staff of 120 people.

After the acquisition of PMI, Informatics Western Systems Company was merged into PMI West to form Programming Methods Western Division (PMWD), later known as Professional Services Operations West (PSOW), with a total of about 200 employees. Connolly served first as vice president and general manager and later, in 1980, was promoted to operations vice president. In this position he was responsible for pursuing and directing both governmental and commercial programming services and also assumed responsibility for MARK IV programming support and the Intelligence/Military Applications Division in Washington, DC. The operation, headquartered in Palo Alto, California, had almost tripled in size between 1976 and 1982 to over 600 people under his direction with a regional sales force and branch offices located in Seattle, San Francisco, Palo Alto, Los Angeles (two), Dallas, Houston, Omaha, Colorado Springs, Rockville, and a suboffice in Portland.

Large commercial programming contracts with Bank of America, Standard Oil, Univac (for the states of Texas and Washington), and a business data processing job for the U.S. Air Force have been obtained. Operations have expanded to special programs such as the sale of special training classes to customers in the areas of data base and entry level programming. In 1980 Connolly initiated a new marketing focus for PSOW to sell project management related services, known as Application Development Service (ADS), in addition to the standard "time and materials" programming services. ADS projects require that Informatics have full responsibility for the project. Payment is on a time and materials basis, but there is frequently a provision for a bonus or a penalty based on planned time and cost. The division has performed two such successful projects, with ARCO for a pension thrift system and with the City of San Francisco for a parking ticket system. A third very large (\$1.5 million) ADS contract was awarded from Texas Oil and Gas, and it is expected this business will become a new area of growth for Informatics Professional Services. In the systems and scientific area, the staff (mostly at NASA/Ames Aeronautical Laboratories) has grown to about 250 people, and a promising new business has been started to provide operating facility management services to high technology companies.

Beyond his success in building PSOW, perhaps Paul Connolly's most important contribution has been his personal supervision of Informatics procurement

protest to NASA in 1976. In that year PSOW submitted a proposal in response to a Request for Proposal (RFP) issued by NASA for a competitive contract for all programming services to NASA/Ames which had been carried on by two contractors, PSOW and Computer Sciences Corporation (CSC). Informatics had been receiving very high award fees for excellent performance. But, much to Informatics dismay, NASA awarded the contract to CSC and gave Informatics a 30-day notice of contract termination. NASA refused to discuss its reasons for the award to CSC. At Connolly's initiative PSOW then filed a protest with NASA, arguing that CSC could not have won the contract on a performance basis. It is rare for government procurement protests to be won by the protesting party, and it is believed that up to 1977 not a single protest against a NASA procurement award had ever been won. But the protest held up implementation of the award to CSC. Tension developed between PSOW, NASA and CSC, but nevertheless Connolly, with the help of a Washington attorney, relentlessly pursued the matter over the next 12 months while Informatics continued to work. NASA took no action, so eventually the matter came to the attention of the General Accounting Office (GAO).

Informatics initial investigation revealed that the CSC proposal claimed that contact had been made with nearly all Informatics employees at NASA/Ames and that these employees were willing to work for CSC if it won the contract. Connolly thought this was not true. He questioned the employees concerned and discovered there was no reported contact by CSC. With this discovery Connolly at first offered NASA and the GAO the services of a private law firm to take depositions from the employees. This was refused but did force the GAO to send its own auditor to interview the employees and conduct an investigation. Believing that the GAO investigation had confirmed his belief, Connolly suggested to NASA that it reopen the procurement and disregard the CSC proposal. NASA refused to do so claiming it had not yet received the GAO's report. Upon the refusal Connolly initiated a publicity campaign against CSC in Palo Alto and began contacting congressmen, personally informing them of the situation. The latter activity successfully resulted in NASA being questioned on the procurement issue during its 1978 budget hearings by a committee of the House of Representatives.

By this time the GAO report on the matter became public, stating that there were misstatements in the CSC proposal and that CSC should be disqualified. Several CSC employees had by now admitted to the fraud to gain the contract. After many months of struggle against NASA, the government agency relented, retracted its award to CSC, and awarded the contract to Informatics. After this success, Connolly took a six month leave of absence to decide whether he was ready for a major career change. He was persuaded by Frank Wagner to return and resume his position as operations vice president of PSOW. By the end of 1982 Informatics had 214 people serving NASA/Ames.

The importance of Connolly's protest efforts, besides the additional business, is that it taught Informatics to actively "fight" to win government procurements and to keep them. During the company's early years, it had lost several programming proposals to the federal government. Two of these were under suspicious conditions. In one Informatics had been the low bidder and in the other the company had made an unsolicited proposal for work which was acknowledged as definitely needed and technically superior by government

officials of the agency involved, but was then privately asked to be withdrawn for reasons which could not be disclosed due to "national security." In the latter case the company, wishing to be a good citizen, withdrew the proposal only to find that a competing organization was awarded the same exact technical project several months later by the same government officials. In both cases Informatics acted in a gentlemanly manner and accepted the procurement losses gracefully. This attitude changed after Connolly's successful protest which happened to be the first time a protest over a NASA service contract was won. Since 1977 Informatics has made two major procurement protests on government projects on which it was the incumbent contractor. It lost both of these. However, while the cases were being considered, the protests delayed contract termination on both efforts for a year, and Informatics remained on the projects and kept earning revenues from them.(13)

#### 2.1.14 Bruce T. Coleman

Bruce Coleman began working in the computer industry in 1961 as a sales trainee with IBM after earning a bachelors degree in economics from Trinity College. Coleman did systems engineering work for two years and then became a salesman for IBM for the next four. After this he enrolled in the Harvard University Business School where he graduated in the top 2-1/2 percent of the class in 1969. While at Harvard Coleman set a personal objective of, within five years, running a small business and as a result obtained a job directing Logical Electronics, a small company in financial trouble, where he served for 2-1/2 years until the company was acquired by its customers. His experience at Logical Electronics allowed Coleman to set a higher goal of managing a moderate size company, so in 1971 he joined the software firm of Boole & Babbage as vice president of marketing and finance. Coleman's previous management training and experience quickly paid off. Within the first year at Boole & Babbage, he replaced the company founder as president. He successfully served in this position until 1978 when he was recruited by Informatics to replace Paul Wrotenbery as vice president of Software Products Group.

At Informatics Coleman has been responsible for defining and developing new business and marketing strategies for the Software Products Group. This has included the phase out and sale of the unprofitable ACCOUNTING IV application products and MONITOR IV (MINICOMM, BETACOMM and INTERCOMM) teleprocessing products. He reorganized the Implementation Systems Division, acquired TRANS IV and INQUIRY IV to round out its products line, and directed the development of MARK V. In 1982 he supported James "Jimmy" Porter in acquiring Management Control Systems (MCS) (see Sections 4.2.21 and 11.8.6) which provides software products to public accountants. He focused the Equimatics Division on the further development of an on-line LIFE-COMM system product for use by the insurance industry and on minimizing challenges from competing products to the current LIFE-COMM product. As a result of Coleman's efforts, the Software Products Group was revitalized and strengthened. This is illustrated in the tone of the following "Principles" for Software Products Group which Coleman has established:

- o Quality products and services are essential to our success.

- o Every task should be accomplished in a superior way.
- o Quality is a personal obligation.
- o Innovation in all areas is vital to the growth and well-being of our people and company.
- o Honest problem solving and constructive debate are fundamental to our progress and are encouraged.
- o Company survival is dependent upon planned and profitable growth.
- o Every employee is expected to grow and the company is obligated to cultivate this growth.
- o We will pay premium wages for premium performance.
- o All employees should be respected and treated with dignity.
- o High code of ethical standards is a company mandate.

This revitalization effort has had the greatest impact upon the Implementation Systems Division. Representing 55 percent of the Software Products Group's revenues and employees, Implementation Systems has developed new products in Answer/2, Answer/DB, and MARK V. This has minimized the division's dependence upon the traditional MARK IV product line and has allowed the division to meet the needs for several different computer/user markets. To meet the needs of professional programmers in developing new systems and applications, the division offers MARK IV, TRANS IV and MARK V to serve in batch and on-line environments. Batch and on-line reporting system products are also available to quasi-programmers with Answer/2 and Answer/DB, respectively. For the casual computer user or non-programmer, INQUIRY IV is offered. This expanded product offering by the division has enabled it by 1982 to improve revenues to \$27.5 million with profits of \$2.4 million.

Due to his success in developing and attaining long-range goals in a relatively short period of time and improving the revenue and profit performance of Software Products Group, Bruce Coleman was appointed executive vice president of Informatics in 1981.(14)

## 2.2 THE IMPORTANCE OF PEOPLE TO INFORMATICS

### 2.2.1 The Environment in the 1960's

Software, although it may be standardized and packaged as a product, is not a manufactured good like automobiles, washing machines, or computers in which the basic product, once designed, can be produced or assembled repeatedly by other machines or by people with less skill and capability than the product's original designer. Computer software, whether it is in the form of a standard product or custom program, is a set of complex instructions (employing

specialized languages, terminology, grammar, syntax, and modes of transmitting or communicating commands) used to instruct a computer in the performance of a multiplicity of sequential and parallel tasks.

Since the electronic computer is an extremely capable but ignorant device, with no inherent intelligence or decision-making ability of its own, the instructions it requires to do its work must be exact, specifically defined, and arranged in precise order. This process depends entirely upon the intelligent thought processes of people, particularly their abstract reasoning. Because computers are general-purpose devices designed for computation, data processing and information handling and because the applications are so diverse and unlimited in nature and volume, the creative ability of humans is vitally needed to prepare computer instructions for these applications. The more complicated and involved the application, the more creativity and abstract reasoning is required. Furthermore, as the demands of an application change, the computer instructions or programs must change or be altered as well. Software is therefore dependent upon the intelligence of expert and creative people to produce it and their continued availability to maintain it for repeated use.

The number of creative, talented, and highly intelligent people in society is finite. Thus, the number of people is limited who are capable of programming a computer or who can be trained to do so successfully and who are interested in doing so. Without people capable to program them, computers are incapable of working. This fact was recognized by Informatics founders and prompted them to form the company to serve the growing needs of computer users for capable people. The founders could have exploited their technical skills and built a high-level consulting business. But they also wanted to exploit their management abilities and build a very large company. This fact had two major consequences on Informatics after its formation in 1962.

The first consequence is that it had to embark on an active program to recruit top talent and professionals to program specific applications for many customers, and had to adopt a number of specific fringe benefits in order to attract, retain, and motivate them as employees. The second consequence, based on the shortage of trained programmers and computer professionals during the 1960's and lack of college programs in this field, was the concentration of the company's long-term business objectives and human resources planning on acquisition of large-scale programming contracts and on the leveraging of the company's skills by the development of proprietary software products which had general applicability to a large number of potential customers. Simply put, Informatics realized there were not enough available programmers and people who could be trained in programming to supply all computer users with specialized programs tailored to their personal needs. This early realization and focus allowed the company to become successful in marketing software products for applications which were commonly required by a number of prospective customers and which did not have to be designed over and over again or separately maintained for each user who purchased it.

A Business Week article of 1966 accurately described the shortage of programmers and the situation which confronted Informatics during its first decade of existence:

The overriding issue is people--specifically, skilled computer personnel. . . . Already, the supply is far short of the demand, and the gap is widening inexorably. For the foreseeable future, there is literally no possibility that we shall have enough trained people to go around.

A software company is one of the easiest businesses to start. . . . All you need is two programmers and a coffee pot. Many don't even have their own computer, but rent time to debug programs at a service bureau.(15)

According to the article, there were 120,000 programmers in the United States with a then current need for an additional 55,000. Representative of this situation was a rise in software expenditures (which includes all personnel associated costs for all users and suppliers) as compared to earlier years. Citing Walter Bauer and government statistics, Business Week pointed out that hardware and software expenditures were \$1 billion each in 1960, but by 1965 this had changed to \$3.2 billion spent for software and \$2.8 billion for hardware, and by 1970, the figures would be approximately \$7 billion and \$5 billion for software and hardware, respectively.

Hardware manufacturers were having (and still are having) extreme difficulty in keeping abreast with the demand for software for new computer applications. This made them increasingly dependent on independent software companies to design the system programs required for their products. IBM, for instance, fell behind schedule in developing software for its third generation computer, System/360, and ultimately hired Informatics among many others to assist it. According to Business Week, software consultants were "rapidly acquiring so much expertise in specific program skills that IBM and other computer makers are their largest customer group," providing \$25 million of the \$100 million in purchased programming services supplied by independents. (This was true in 1966, but as software firms grew, computer manufacturers soon became a minor source of their revenues.) The situation was further compounded by the fact that the number of computers and uses for them were rapidly proliferating with 7,000 new computers delivered to customers in 1966.

Since Informatics was one of the early companies to first see this growing need for programs in 1962, the opportunity facing it was enormous and it had only limited competition, as discussed in Chapter 1. For Informatics to exploit this opportunity, it had to obtain the right people and obtain them fast.

### 2.2.2 Recruiting Philosophy for Programmers

In order to recruit and hire able programmers and systems analysts, the company, as a lure, took advantage of its expertise and chosen specialization in on-line and real-time systems. A year after its formation, Informatics deliberately adopted among its long-range objectives the development of a corporate image which entailed the following characteristics:

1. A highly qualified group of professionals experienced and active in computer technology

2. Experts in on-line systems
3. A successful, dynamic and rapidly expanding company
4. Corporate interests include the most abstruse areas of basic research and new technical development as well as practical implementation of highly sophisticated systems and the solving of technical problems
5. Business-like in approach
6. Unusually experienced with work on digital computers dating back to their origins
7. A hand-picked staff consisting of the top 25 percent of qualified people(16)

This image was similar to that of the U.S. Marine Corps "We're Looking For A Few Good Men" recruitment philosophy with the same emphasis on the desirability of belonging to a very select group of people. With the Marines it is physical fitness, a sense of duty, and the challenge of being the very best soldier; with Informatics it was a matter of brains, recognition among professional peers, and the challenge of working on the most technologically advanced and newest of software applications. This dramatic appeal also had the advantage of attracting "live-wire" employees with ambition to grow, and the daring to leave comfortable jobs with big companies for the unknowns inherent in a small company in a brand new field. (There is an accompanying disadvantage--unless they rise rapidly, such people tend to have "itchy feet," and frequently move on to even greener pastures.)

This approach was justified since the company did specialize and was a leader in on-line systems development, and in 1965 this area was the frontier of computer technology and represented the future growth area of computer applications, a desirable field for young programmers to enter. Informatics promoted this fact. For instance, a Control Engineering article, "Informatics, Inc., Makes Software A Growth Tool," cited Bauer's estimate that on-line computing currently accounted for 1 percent of data processing but that it could represent all of it within ten years. The company centered its image around the growth potential of on-line systems and the specialized expertise they required, with 80 percent of its business in 1966 exclusively devoted to this form of programming.(17)

The image became embedded in the operations of Informatics and in the 1960's permeated its personnel and marketing literature. One company information brochure, **Growth Company in a Burgeoning Industry** (circa 1967), exclaimed that "Informatics Inc. is one of the fastest growing companies in the fastest growing segment of the fastest growing industry in the world." After discussing the company's capabilities and the potential growth of the data processing industry, the marine-style philosophy comes forth in the summation, "There can be no limiting factor in such an unlimited market, except incompetence. Manpower shortage? For every rewarding challenge there are always men to accept it." The bottom line was 'Bauer's second law,' "Talent goes where the action is."

Corporate literature also made repeated use of the high level of education and professional organization participation of its management and employees. Perhaps the most creative piece was **A Resume of a 4-Year Old, 47,250 Pound Software Expert** (circa 1966) in which the company is humorously but accurately described as being four years old with 300 dependents (employees) and 679 years of college education amounting to 157 bachelors, 43 masters and 4 doctorate degrees. To customers during early years these descriptions meant that Informatics had the people and the talent necessary for advanced programming work. To programmers looking for a job they meant Informatics was the place to be.(18)

One recruitment-oriented pamphlet, **Career Opportunities**, described the company's appeal thus:

Informatics future promises to be even brighter than its past. Examine our current areas of interest and compare their growth potential with that of other segments of the computer industry. You will find that our markets are among the most rapidly expanding today and hold even greater promise for tomorrow. The creative professional who joins our staff will find a host of challenging projects to tax his talents to the limit and excellent opportunities for advancement.

We are seeking systems designers, analysts, and programmers with expertise and interest in our major fields of activity. . . hard-driving individuals who have the creativity and innovative spirit required to make positive contributions to the growth of our company and our industry. To such people we offer exceptionally attractive permanent career positions.(19)

These efforts apparently worked because Informatics was always able to staff a new contract or, at least, never lost one due to a manpower shortage. The state-of-the-art nature and prestige of its projects definitely aided recruitment. But of equal importance was the fact that all levels of management devoted much of their time to recruiting and personnel matters. The best example of this was the staffing of the IBM Houston contract for the NASA Johnson Space Center as conducted by Frank Wagner. The prestige associated with being involved in Mission Control's programming support for the Gemini and Apollo space missions was an important tool used by Wagner to gain conditional letters of acceptance from job candidates from various sections of the country prior to the actual contract award itself. The letters of acceptance convinced IBM to select Informatics as its subcontractor. Wagner was so successful in this effort that Informatics ultimately doubled its support to IBM when its contract competitor, Computer Applications, was unable to fill the slots it was awarded on the same project. It was not until the middle 1970's that Informatics began to use outside recruiting agencies, or for that matter, had an internal personnel activity run by professionals in the field of human resources.(20)

However, in spite of Informatics ability to find needed people, the company's success in landing bigger and more sophisticated projects drastically

increased its need for manpower (both technical and managerial) and taxed its recruitment and operations support activities during initial years. In its first five years, Informatics grew from four individuals to 424 employees. Bauer's monthly reports to the board of directors continually pointed to an ever growing need for additional employees and facilities to hold them. How often he did so is a measure of the importance of the problem. It is shown on Figure 2-1, along with the size of the company's staff through the years. Long-range recruitment efforts thus became a major operational goal of Informatics defined by Bauer in 1966 when he assigned two vice presidents, Emil Landefeld and Robert Rector, to jointly direct this activity:

A cornerstone of Informatics growth is recruiting. Recruiting not only supplies us with the quantity required to meet our sales goals, but it also provides the quality of our organization as well, and this latter factor is frequently overlooked, it seems. Certainly, our ad hoc recruiting efforts have been commendable; however, we must embark on longer-range plans to complement and supplement the short-range spurts. We can accomplish this by efforts along the following lines: 1) continuing to build a better total corporate image; 2) develop approaches which will give us continuing influx of qualified names; 3) develop a plan to keep what is practically a national compendium of the highest qualified people in the computer business.(21)

To support recruitment efforts, the company, during its early years, initiated various benefit programs to reinforce its appeal. Such benefits consisted of group health and life insurance, profit sharing, reimbursement for tuition, payment of costs of attending professional meetings, and honoraria granted to company personnel who published professional papers. These benefits, discussed in more detail below, were also needed as inducements to employees to remain with the company, boost their morale, and motivate them once they were hired. Morale itself was also mandated as a corporate objective by Bauer:

What is needed most in employee morale is a continuing "propaganda campaign. . . ." Our goal here should be one of a continuing effort to tell employees, especially key employees, of the excellent technical work and of the continuing progress of the company with which they might not come in contact on a regular basis. Informatics employees must be continuously reminded, directly and indirectly, with opinions as well as facts, that they are members of a highest quality organization. . . . IBM and the Yankees have had winning psychology for years. The record shows the result. The right psychology is just as much a contributing factor to winning as vice versa. We have a winning psychology at this time. It is important that we maintain it.

With this declaration, Bauer proposed the formalization of a company newspaper, Informatics Ink, which had previously been an informal letter to employees. This was to be supplemented with personalized form letters from the president to each employee.(22)

NUMBER (a) OF INFORMATICS EMPLOYEES

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	
(b) 6	37	83	210	283	349	432	727															
(c)			156	357	424	924	787	1174	695	--	--	--	--	1802	1797	1981	2381	2434				
(d)										775												
(e)									744	808	954	1222	1802									
(f)																			2458	2706	2710	

FREQUENCY OF REPORTED STARTING NUMBERS (g)

1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
5	8	7	6	2	7	1	2	0	2	2	0	1	0	0	0	2	0	0	0	0

- (a) The discrepancy among the sources of data results from (1) the time of reporting (e.g., year-end vs. mid-year, fiscal vs. calendar year), and (2) the inclusion or exclusion of part-time employees.
- (b) Monthly Reports to Board (taken from months of August and September)
- (c) Annual Reports
- (d) A Presentation on Informatics Inc. for the Board of Directors of Equimatics, Inc., November 28, 1973
- (e) Annual Report, 1975
- (f) Corporate Headcount Report
- (g) Number of Bauer's monthly reports which report the problem to the board of directors.

PERSONNEL STATISTICS

FIGURE 2-1



### 2.2.3 Early Problems in Obtaining Middle Management

The company also realized by 1966 that its future growth was not just dependent on recruiting talented technical personnel but capable managerial and sales people as well. Werner Frank, for instance, addressed a position paper to the Informatics Executive Committee in April 1966 stating that, while the company had found it relatively easy to recruit more than 250 technical professionals up to that time, Informatics business successes depended upon a select group of people who knew how to write proposals and obtain contracts. Frank was referring to the corporate founders, and he argued that the company's main future difficulty would be in the hiring of "outstanding managers who are technically sensitive and entrepreneuring in orientation." Indeed, he considered that a company of 500 people would be extremely difficult to achieve because of the finite number of qualified people in the job market and the numerous small contracts that Informatics worked on were "sapping up" the energies of its management as much as more sizeable contracts would. Frank summarized his perspective with the following:

I have observed the great leveling effect in our L.A. activity, in Houston, and most recently Washington. . . .

I believe this to be the dilemma! Continued growth is limited primarily by the availability of select leaders in the company who are willing and able to build up a business. I observe that when an operating unit reaches the magic size of 75-100, it becomes too big for the one man to keep on top--hence, he must defer capability to the next line of management, where the scarcity lies and limitations are met.

To solve this problem, Frank made three recommendations aimed at minimizing the company's dependence on top-level managerial and professional talent to increase its business in the long term. These recommendations consisted of 1) the real pursuit of large-scale contracts (between \$500,000 and \$2 million), 2) the development of proprietary products, and 3) consideration of the development of a formal sales staff.(23)

Frank's recommendations were shortly adopted wholeheartedly within the Informatics, Inc. Five Year Plan of March 1967:

Software companies have grown rapidly during the past five years. Most all of them show a 50-100 percent per year increase in size and profits although some of the larger ones, of course, are now showing only 20 percent per year increase. They have gained recognition in financial circles. **Most of the larger ones are rapidly diversifying into proprietary products in answer to the often stated reservation about software companies that "the business growth is limited by the number of qualified people who can be attracted."**

Informatics plans to have custom products and services as a sustaining and continuously growing area of business. We reject the idea that there is no more growth there. However,

we accept the point of view that growth gets more difficult with size and is limited not only by the quantity of qualified personnel who can be attracted, but perhaps more seriously by the number of key managers who can build the business in new geographical areas. Therefore, it is the plan to divert resources to the development of proprietary products and services on an ever increasing basis. This will provide a new dimension for growth, more company stability, and higher profit margins.

We are badly in need, however, of large and sustaining operating and programming contracts. . . . We have a very large number of small to modest size contracts. It is costly from administrative and personnel assignment standpoints to carry on this work. We have continued, therefore, to seek out the larger contracts and work toward an award.

Many people of the management group. . . are developing the opinion that in order to take our custom programming services from the \$6.5 million per year to the \$10 million per year, we will need to use professional sales people more than we have in the past. Whereas we are convinced that the technical people are indispensable in closing the sale, nevertheless we believe that benefits can be obtained by getting more market intelligence through full time salesmen calling repeatedly on various customer areas to generate a continuing marketing intelligence data base. This will enable us to seek out the better business opportunities and hopefully will reduce our sales costs and put us in a position to identify and land some of the larger programming contracts.

. . . it seems apparent that we must change our image somewhat. Our image as a software company is one of accepting and working on only the most advanced and challenging data processing problems. We would probably achieve our expanding sales rate more easily if we extend our marketing objectives to the more pedestrian kinds of applications. This puts more of an emphasis on straight marketing activities rather than on technical erudition as a market place technique. . . these remarks should not be construed as implying that we wish to or plan to dilute the technical quality of our staff. . . . Rather, the intent is to more "bread and butter" kinds of software activities.(24)

By focusing the company in these directions beginning in 1967, Informatics total reliance on continued recruitment of the most capable professionals to maintain and generate its growth was gradually supplemented. In the following years software products and proprietary services were successfully developed (frequently through the application of knowledge gained from custom programming contracts), and a professional sales force to market these proprietary items was first established in 1967 in order to sell MARK IV, the company's first software product. This sales force has grown and been strengthened through the years to

become, in 1982, one of the premier software products sales organizations in the world with 50 salesmen in 38 offices and with 18 agent companies. When data services began in 1974, a professional sales organization was formed. It has grown by 1982 to 32 salesmen in 11 offices.

A professional sales staff with sole responsibility for obtaining custom programming contracts, however, had never been developed. Marketing in these areas generally continued to be a function of all levels of management, supported by the professional technical staff of each operating unit and always involved "executive marketing" or sales activity on the part of the division general manager. Early in the 1970's Information Systems and Services Company in Washington recognized the need for a few specialist "federal government marketeers" and hired several such high-level people, and Western Systems Company also tried it for commercial work. These efforts were generally unsuccessful--most of the contracts were and are still won by line managers. A major change occurred with the acquisition of PMI and the establishment of the Professional Services Group. PMI brought with it a sales force skilled at selling to commercial customers. Since 1976 this has evolved into two somewhat differing organizations. In PSOW the sales persons are supervised by a sales vice president; line management participates but does not have primary responsibility. In contrast, PSOE sales persons work under the direct supervision of line management. Both philosophies seem to be equally effective.

#### 2.2.4 Recruiting Problems in the 1970's

However, the percentage of small professional services contracts Informatics performed after 1967 decreased. Whether this was because management concentrated its efforts more intently on winning larger projects as intended or because the company simply became more well known and found it easier to win bigger contracts or because of both of these reasons cannot be answered. However, the number of large-scale projects and services performed or offered by the company grew enormously in ensuing years (as described in other chapters of this history), and efforts on small contracts or projects were only sought if they could possibly lead to the winning of a large follow-on contract or to the development of a new area of business. It is probable that the growing dependence on software product sales and the concentration of company personnel on a few big instead of numerous small contracts, by themselves, did make the need for greater numbers of talented professionals somewhat less critical to Informatics existence in the 1970's as contrasted to its initial years.

After the acquisition of PMI in 1975, the effect on the need for technical talent by the pursuit of "bread and butter" types of applications is even more difficult to judge. Certainly, less complex and more ordinary software projects can be performed by programmers of less skill and experience than applications involving state-of-the-art technology. But to earn an equal amount of revenue from routine business applications as compared to advanced ones will require more people, since "two year COBOL programmers" command lower prices than system programmer "gurus." On the other hand, the total market for people needed is greater in business applications. Certainly, the Professional Services Group depends upon people, but continued growth is much less dependent on availability within the company of the most knowledgeable or expert people as it was with the

Informatics of 15 years ago which pioneered in on-line systems. Professional Services Group has relied heavily on outside recruiting services to produce candidates, but its management still has to devote a significant amount of time to the selection process.

It should be noted that other factors may have affected the company's requirements for high level technical and managerial personnel as well as its ability to obtain them. Since there are many more computer science and business administration programs existing in colleges today as compared to 20 years ago, there are growing numbers of college graduates available to meet the human resource demands generated by the software industry, although a shortage still exists. In the 1960's Informatics was also more centralized and homogenous in its operations than the decentralized structure which emerged after 1968 and eventually included a wide assortment of computer-related activities. The net effect of the decentralization of operations was to make the recruitment of required personnel and capability the particular problem of semiautonomous organizational units performing their own personnel functions. Since each operating unit provides its own specific product or service, its human resource needs are often unique unto itself. The Insurance Applications Division, for instance, has specific needs for insurance industry professionals as well as programmers; Data Services Group, in addition to programming capability, requires computer operators; and Information Services Group requires professional expertise in a variety of fields such as information management, library science, and paralegal personnel for litigation information management services.

Talented and capable people are still necessary, but the skills that are required encompass a diversity of fields, not just computer programming alone, and are more easily found in the current job markets than programmers were when the company began. An examination of Figure 2-1, based on the number of recruitment or employment level problems reported to the board of directors in the president's monthly report to the board, shows a drop in frequency of statements made on this subject on an annual basis starting in 1969 after Informatics focused itself on a strategy of software products and large-scale projects. If this is a valid indicator, then recruitment of top talent or people in general stopped being a major business problem, at least in the eyes of Walter Bauer. Or perhaps he no longer needed to sell the board of directors on the need for new benefits!(25)

The company's human resources requirement for continued growth is thus no longer solely dependent upon and limited by the recruitment of programmers and systems analysts available for advanced custom programming or systems design work. Informatics appears to have overcome what it regarded initially as the primary limiting factor for its growth--hiring qualified people--through a combination of diversification into businesses not requiring as high a proportion of skilled programmers, concentration of management attention on large-scale projects, and provision of superior employee benefits. The latter are discussed in Section 2.3.

### 2.3 INFORMATICS EMPLOYEE BENEFIT PROGRAMS AND INCENTIVES

Once the right people are hired, they have to be kept. The real human resource issue for Informatics, along with the rest of the computer industry today, is an exceedingly high turnover rate of personnel which leads to high recruitment costs and disruption of business activities. Computer and managerial professionals are highly mobile with loyalties directed toward their profession and fields of interest rather than their job or the community in which they reside. The challenge is thus to induce people to stay in their job through the provision of interesting and challenging work, rapport with respected strong supervisors, competitive salaries, and attractive benefits, all supported by professional personnel programs.

The basic working conditions and salaries at Informatics have always been attractive. In 1973 they were described as:

1. Supervision: Careful selection and extensive training to provide supervisors with management skills which merit the respect of the employees.
2. Compensation: Employee salaries competitive with salary levels within the computer industry, and numerous incentive plans, tailored to each specific type of work.
3. Frequent Performance Reviews: Six month salary and employee progress reviews.
4. Leaves, Vacation and Holidays: Two to four weeks annual paid vacation based on tenure of service, seven paid holidays plus employee options for personal leave, and leaves of absence granted for medical, jury duty, military service, educational, and political pursuits.
5. Maintenance of Professional Environment: No time clocks and clean quiet work areas and offices. (There is a terrible problem for people working on the customer's site.)
6. Encouragement of Professional Participation and Recognition: Reimbursement of job related educational costs, paid memberships in industry and professional associations, and honoraria granted for the publication of professional articles.(26)

In addition to the above benefits, which have been supplied by the company since its beginning, Informatics has also developed other benefit and personnel programs through the years. These include group health insurance, life insurance, employee incentive, bonus and profit sharing, retirement, long-term disability, equal opportunity, affirmative action, management incentive programs, and training for employee development. Each of these will be briefly discussed below.

### 2.3.1 Health and Disability Insurance Programs

Informatics initiated its first group health insurance plan in 1967. Prior to 1967 the company was a wholly owned subsidiary of Dataproducts and was covered by its insurance programs. The first group insurance package was purchased from the Travelers Insurance Company with all premiums for employee coverage paid in full by Informatics. The policy covered comprehensive medical items paying 80 percent of all costs. It also included life insurance and accidental death and dismemberment. For a weekly payment of \$2.50 per dependent, employees could cover their entire family under the same policy.

In March 1969 Informatics contracted with the Union Mutual Life Insurance Company to provide disability coverage to all employees. The plan paid 66 2/3 percent of an employee's earnings starting 180 days after disability and up to \$461.89 per week. Both the health coverage and disability insurance programs were transferred to policies issued by The Equitable Life Assurance Society of the United States in 1974. The same benefits were still provided, however, with the company later offering optional dental coverage beginning in December 1979.(27)

### 2.3.2 Incentive, Bonus, Profit Sharing, and Retirement Programs

Informatics established an incentive plan in the spring of 1964 with the "objective of expanding the employee's productivity, efficiency, and cost consciousness." The plan established a specified minimum percentage return on shareholders investment to be achieved before corporate contributions were paid into it. Fifty percent of remaining profits beyond the required return on investment were placed into an incentive fund which was divided into discretionary and mandatory pools. Funds in the discretionary pool were paid out to employees at the discretion of management and its judgment of good performance of individual employees. The mandatory pool was based on a point system directed at professional exempt (salary) employees who were awarded qualifying points to receive incentive compensation according to seniority and salary level. No payments to employees were made in fiscal quarters in which the required return on investment had not been achieved. Also, "loss" quarters during a fiscal year had to be balanced by quarters exceeding the return on investment limit before incentive payments could resume. By tying incentive payments to shareholders return on investment, it was hoped the employees would be motivated to keep the company profitable at levels above what might routinely be expected.

The incentive program was significantly modified in January 1968 when a separate Cash Bonus Plan (equivalent to the discretionary pool) and a Qualified

Profit Sharing Plan (equivalent to the mandatory pool) plans were established. Cash bonus payments were paid to deserving employees during the second and fourth quarters of the fiscal year and were fully taxable. The qualified (by the Internal Revenue Service) profit sharing plan did not make immediate payments to employees, so taxes on it were deferred. It was based on a point system whereby points were awarded to each employee based on salary and years of service. The corporate contribution to the plan for the year was divided among all participants proportional to each one's points. This plan permitted employees to contribute from 2 to 10 percent of their monthly earnings to the plan. Individual contributions were then invested with the returns on the investments also tax deferred and credited to individual accounts of contributing employees. Seventy five percent of the plan's funds was invested in stock and the remaining 25 percent was placed in fixed income investments such as life insurance policies up to an amount of \$50,000. Sums within participant accounts were to be paid at retirement, death, or total disability. In 1972 the plan was further modified to provide 100 percent vesting to an employee's account upon five years of service, which would be paid when the employee left the company.(28)

The above profit sharing plan was superseded in 1974 with the establishment of a formal "defined contribution" retirement plan. Employee accounts from the previous plan were transferred to The Equitable Life Assurance Society of the United States to maintain in trust. Corporate contributions to the new plan were made quarterly at 3 percent of eligible employee earnings. Additionally, an employee could donate up to 10 percent of his income to the plan, which could be withdrawn twice per year. The contributed amounts could be invested at the employee's option into either fixed income or equity accounts or a specified combination of both. The fixed income account initially paid 9 percent on interest-deposited amounts and, subsequently, higher rates. The equity account funds were invested in common stock. Taxes were deferred on employer contributions and on all appreciation. Employees became members of the retirement plan after one year of service and were fully vested after six years.(29)

### 2.3.3 Equal Opportunity and Affirmative Action Employment Programs

On July 1, 1971 Informatics issued an equal employment policy and formally established an affirmative action program to encourage the hiring and promotion of minorities and women. All geographical units of the company were instructed to prepare affirmative action employment plans for their activities.(30) The above effort soon culminated in an affirmative action plan in October 1972 for operations located in Canoga Park, California. The employment levels for that single location consisted of 149 employees composed of 34 managerial, 83 professional and 32 office and clerical positions; the utilization analysis of the plan reported that the company employed 11 minority members (7 percent) and 38 women (26 percent). While the percentages for both categories were low, the company did have women and minorities in key jobs. For instance, Marilyn McCranie served as Informatics assistant corporate secretary and the personnel staff consisted of all women, 50 percent of whom were minorities. Of the company's 11 minority members, 9 were professionals. It should be noted that corporate operations was located in the west San Fernando Valley, a suburb of the Los Angeles metropolitan area which is far removed from minority

neighborhoods. Nevertheless, the plan resulted in considerable improvement during the next few years.

Affirmative Action plans were also developed in the other company locations as well, and these have showed very effective utilization, particularly at Rockville, Maryland (Information Systems and Services Group), where the company directly served NASA and other federal agencies and was subject to quarterly performance inspections. In 1978 the equal employment policy was revised to provide greater incentives for implementation and enforcement of it by group vice presidents. Equal employment responsibility was assigned to each group vice president with achievement of affirmative action plans as part of the criteria for judging their performance under the company management incentive program.(31)

#### 2.3.4 Management Incentive Plan

In the late 1960's the company established its first management incentive plan. The purpose of the plan was to relate the compensation of management to the success of the corporation. Above average performance by management personnel generally resulted in awards to bring total income above normal competitive salaries. The plan was governed by the compensation committee of the board of directors. In 1970 the plan was formalized to be based on profit plan achievement, business growth, and progress towards long-range goals for both the corporation and each unit. "Significant but lesser emphasis" was placed on factors such as the quality of management activities and individual effectiveness.

This plan included an Executive Bonus program directed at corporate officers, general managers, and division vice presidents and a Management Bonus Program directed at managers responsible for local area profitability and growth and who report to those covered by the Executive Bonus program. Under the plan, superior performance would yield up to 50 percent additional compensation in the Executive program and 30 percent in the Management program. Satisfactory individual performance would yield not less than 15 percent and 7 percent additional compensation in the Executive and Management programs, respectively.(32)

Awards in the Management Bonus program were purely subjective. However, the Executive Bonus program was much more objective. It involved providing management members specific levels of participation in the program (between 50 and 100 percent) and assigning them a specific score on their performance. Their bonus was calculated by the following formula: one half of the level of participation times individual salary times composite score equals total award. The composite score was originally weighted in the following manner:

Profit Plan Performance	30%
Revenue Growth & Backlog	25%
Progress Toward Long-Term Goals	25%
Quality of Plans & Business	20%

In the following years the Management Incentive plan was revised to place more emphasis on growth of profits. The current plan no longer refers to the

Executive Bonus program and the Management Bonus program, but places each participant into one of three categories, with the criteria for each weighted differently, as follows:

<u>CRITERION</u>	<u>WEIGHTING FOR PARTICIPATION</u>		
	<u>Category I</u>	<u>Category II</u>	<u>Category III</u>
Profit Growth	0.65	0.50	0.00
Revenue Growth	0.10	0.10	0.00
Goals & Objectives	0.25	0.40	1.00

### 2.3.5 Employee Recognition Program

An Employee Recognition program was established in October 1975. Under this program a well deserving employee who has made a significant contribution to the company is designated "Employee of the Month," has his or her picture presented in the company newspaper, and is presented an award or plaque of some kind. The first "Employee of the Month" was Robert Heckathorne, a systems analyst and technical manager with the company since 1963.(33) The program has since been extended to have an Employee of the Month in each group, and a company-wide Employee of the Year and Manager of the Year.(34)

### 2.3.6 Employee Development

Informatics has provided training for its employees to help in their development. The earliest efforts concentrated on managers, and took place at periodic meetings of management where senior managers lectured on selected topics to members of middle management with occasional outside lecturers.

When Software Products was building up its sales force, it purchased a training package called "Councillor Selling Program," described as:

A four and one-half day workshop for sales, marketing, customer support, and other professionals. Program teaches skills in the four phases of the sales process which are useful not only to sales people but to anyone whose job includes the marketing of ideas to others. Among the competencies taught are: being better able to identify real needs, increasing self-confidence through better understanding of other's point of view, knowing how to build a 'win/win' relationship, enabling trust, projecting image of, and being a real professional.

In 1979 Susan Gould was hired to head up a professional training activity. Since then she has developed and conducted many programs including, for all employees, Time Management, Assertiveness Training, and New Age Thinking for Achieving Your Potential. New Age Thinking is presented on weekends in two phases for employees and spouses. This video-based program helps participants learn how to set personal and job-related goals, and how to take full responsibility and accountability for their performance, job and career.

Great emphasis was placed on management training in the form of the following programs:

### Human Relations Management Workshop

Three-day program for all Informatics managers. Modules focus on the fundamentals of the people side of managing: Role of the manager, behaviour theory and leadership style, communications, new hire interviewing, performance evaluation, coaching, and counseling.

### Human Relations Management Workshop Graduate Program

One day follow up of the above. Modules: Active listening skills, decision making.

### Informatics Management Institute

Two-week program taught predominately by Informatics senior management to top performing newer managers. The objectives are to enable participants to implement their responsibilities by giving them an intensive orientation in the fundamentals of management, Informatics management philosophies and style, Informatics policies and procedures regarding the manager's people and financial responsibilities, and a first-hand identification with top Informatics management.

Topics include salary administration, planning, career planning, basic Informatics accounting concepts and practices, business management practices, the role of the CEO, project management, financial management and business relationships, international marketplace, and the business plan.

## 2.4. INFORMATICS AND ITS PROFESSIONAL PARTICIPATION

The officers and people of Informatics are among the most experienced and successful in the computer industry and computer related professions. When The Equitable acquired the company in 1974, Informatics briefed the board of directors of its parent with the following facts regarding its professional participation:

1. Company officers were twice nominated for the presidency of the ACM (Association for Computing Machinery), the professional society for the information processing profession.
2. Senior officers average 23 years of experience in the 25 year old computer industry.
3. The company had produced ten hard cover books and published a quarterly newsletter.
4. It was an active member in nine industry associations.

5. It sponsored the largest ACM chapter newsletter.
6. The company was cited by the U.S. Department of Commerce for minority subcontracting.
7. Informatics received the 1974 Hall of Fame award from the Information Industry Association.

This was only a brief overview. The professional accomplishments and activities of Informatics have, of course, continued to grow. In fact it is impossible for this historical summary to give a complete listing of all the professional publications, and speeches/papers presented by Informatics because no one has ever kept a complete listing. However, the following relates some of the more important activities and highlights of the published material and presentations by company members to industry and professional associations.

#### 2.4.1 Informatics and the U.C.L.A. Symposia

During its first year of existence, Informatics initiated the practice of sponsoring professional symposia dealing with topics of relevance to computer professionals and the computer industry at large. The purpose was to help disseminate information on a current advanced topic, and in so doing to promote the company's technical capabilities to industry at a time when it was young, small in size, and unable to afford a large advertising budget or sales force. The symposia placed Informatics skills in front of computing professionals and users and thereby made the company known to other businesses and potential customers. They helped the company establish a reputation as an advanced high technology state-of-the-art enterprise, since most of the pertinent subjects of the symposia were also areas of Informatics business interests and expertise, and Informatics personnel frequently chaired or presented papers at the sessions.

The first symposium was sponsored and promoted completely by Informatics and was held at the Hollywood Thunderbird Hotel. Frank Wagner was the chairman. The meeting dealt with the utility of disc files, then a new computer hardware product and the main product offering of its parent, Dataproducts Corporation. The meeting attracted a paying audience of 175 people who had registered in advance. Many others who showed up had to be turned away due to lack of seating. This favorable reception prompted the company to hire Fred Gruenberger to edit the technical papers presented at the conference and arrange for their publication. Gruenberger was a well known and respected industry pioneer whose interest has been computer applications and the field of publishing. In 1953 he was responsible for founding and publishing the second professional computing magazine--Computing News, now defunct. Later, in 1961, while serving as a mathematician at the RAND Corporation, Gruenberger had a research assignment of exploring the potential of the IBM 1620 computer. At the end of a year, Gruenberger had produced a textbook on the subject. Today he teaches computer science courses at the California State University at Northridge.(35)

After the first symposium, a book containing its presentations was soon published through Gruenberger's efforts. The revenue (while small, it more than

offset costs) and especially the resulting interest in Informatics ability from both the conference and book encouraged the company to sponsor professional symposia on a yearly basis. Obtaining support from computing colleagues on the engineering and mathematics faculties at the University of California at Los Angeles, Gruenberger arranged a joint sponsorship of the symposia by Informatics and the University's Extension Program for Continuing Education. The school provided a neutral atmosphere, the endorsement of an institution of higher education, facilities, promotion, and the administration necessary for large conferences, while the company arranged for pertinent topics and sessions, technical speakers, and the publication of the proceedings under the skillful editorship of Gruenberger. Each of the symposia attracted an increasingly larger audience over the previous year, gained more attention for Informatics, and offered first rate industry speakers such as Gene Amdahl (founder of Amdahl Corporation) and Simon Ramo (founder of Ramo Wooldridge) to its interested participants.

Informatics personnel and officers such as Walter Bauer, Frank Wagner, and John Postley also served as speakers or as panel chairmen for discussions. Twelve symposia in all, the last 11 with U.C.L.A., were held with each one resulting in a publication of its technical papers as a book. The symposia were discontinued in 1974 by the University which came to feel a conflict of interest in promoting professional conferences closely tied to a specific industry and having joint sponsorship with a private company. Below is a listing of the 12 symposia, their topics and years they were offered:

- |     |      |                                      |
|-----|------|--------------------------------------|
| 1.  | 1963 | Disc Files                           |
| 2.  | 1964 | On-Line Systems                      |
| 3.  | 1965 | Computers and Communication          |
| 4.  | 1966 | Data Management                      |
| 5.  | 1967 | Fourth Generation Computers          |
| 6.  | 1968 | Expanding Computer Use in the 1970's |
| 7.  | 1969 | Management Information Systems       |
| 8.  | 1970 | Effective vs. Efficient Computing    |
| 9.  | 1971 | Computer Graphics                    |
| 10. | 1972 | Manufacturing Management Systems     |
| 11. | 1973 | Information Systems and Networks     |
| 12. | 1974 | Information Search and Retrieval     |

#### 2.4.2 Informatics Professional Publications

In addition to the 12 hard cover books resulting from the symposia mentioned above, Informatics had over 60 published technical articles and professional papers authored by its staff members by 1974. These and some which have been published since 1974 are listed in Appendix II.(36)

#### 2.4.3 Professional Organization Participation by Informatics

Informatics management and staff members have been highly active in the various industry associations and professional organizations of the computing and information fields, particularly the Association for Computing Machinery and ADAPSO (the Association of Data Processing Service Organizations). Company personnel have served as officers of professional groups and as featured

speakers and participants at numerous industry and professional meetings. A summary of this activity for various organizations follows.

#### 2.4.3.1 The Association for Computing Machinery (ACM)

Among Informatics employees Walter Bauer has been one of the most active and early contributors to the Association for Computing Machinery (ACM). Bauer served as the first chairman of the Los Angeles Chapter of the ACM, the Southwestern Representative to its National Council, and chairman of its editorial board. In 1961 Bauer was nominated for ACM president. Bauer has also spoken at numerous ACM conferences and meetings including the presentation of a major paper--"Software: Historical Perspectives and Current Trends"--coauthored with Informatics manager Arthur M. Rosenberg at the annual meetings of the Los Angeles and San Francisco Golden Gate Chapters of the ACM during 1972 and 1973.

Other executives of the company have also been active in the national organization and local chapters of the ACM. Frank Wagner was elected to its National Council in 1960 and has served as chairman of its Finance Committee. He has also served on the Council of the Los Angeles Chapter, was the founding editor of its newsletter (the Datalink), and has been a featured speaker and panel participant at many different ACM chapter meetings. Werner Frank has served on the National Program Committee of the ACM, was founding chairman of the San Fernando Valley Chapter, and has served as a referee for numerous ACM publications and conferences. John Postley founded the Special Interest Group for Business Data Processing (SIGBDP) of the ACM, and has served as an ACM Lecturer and Visiting Scientist, representing the U.S. State Department in Europe. Next to Bauer, Robert Rector has probably been the second most active ACM member from Informatics. Rector has also been chairman of the Los Angeles Chapter (1962-1964), represented Southern California on the ACM National Council, and served as chairman of the Committee on Chapter and National Lectureship Series, and director of the ACM Visiting Scientist Program. Richard Lemons has served as the chairman of the Washington, D.C. Chapter (while it was the largest ACM Chapter in the country) and as finance chairman of the 1967 National ACM Conference as well as a member of the ACM Special Interest Groups on On-Line Systems and Real Time Computing. Richard Kaylor along with Robert Mallet has served on the ACM Special Interest Committee on Timesharing.

Other Informatics members active with the ACM have been Richard Hill, Robert White, Fred Braddock, Marvin Howard and Herbert Jacobson. Hill, Braddock, and White served as chairmen of the San Fernando Valley Chapter and White additionally has served on the ACM National Committee of Conferences and Symposia and as the ACM official representative to the 1972 Joint Computer Conference. Braddock has served as vice chairman of the San Fernando Valley Chapter (under White) and has been a featured speaker at many ACM functions. Herbert Jacobson has been on the councils of both the Los Angeles and San Fernando Valley Chapters, chairman of the Ad Hoc Committee for Professional Enhancement of ACM Los Angeles Chapter, and a member of the Exhibits Committee of the 16th National ACM Conference in 1961. Jan Matzer of PSOW has been one of the leaders who propelled the San Francisco Bay Area Chapter into its position as one of the best chapters in the ACM.

In addition to the individual contributions of the above men to the ACM, Informatics as an organization contributed to the Los Angeles Chapter in 1971 by computerizing chapter membership records and reports using the MARK IV file management system. This event occurred when the Los Angeles Chapter became the largest ACM chapter with over 1,000 members, and the installation of the MARK IV system became the most efficient chapter record keeping system throughout the entire ACM.(37)

#### 2.4.3.2 American Federation of Information Processing Societies (AFIPS)

Informatics has also been active in the activities of AFIPS. Walter Bauer was general chairman of the 1961 Fall Joint Computer Conference. He gave the principal address at the World Computing Services Industry Congress III in Copenhagen in 1982. Robert Rector was administrator of the 1961 Fall Joint Computer Conference, and general chairman of the 1965 Fall Joint Computer Conference. He later became executive director of AFIPS in 1971. Herbert Jacobsohn was chairman of the Finance Committee for the 1963 Fall Joint Computer Conference. Marvin Howard served as conference administrator for the 1963 Fall Joint Computer Conference. Frank Wagner was the editor of a department in an AFIPS publication, Annals of the History of Computing, and served on its editorial board.

In 1967 AFIPS released a sound film, It's Your Move, on teaching computing to high school students. The film was produced and directed by Fred Gruenberger, then serving as an Informatics consultant, and Robert White, a member of the company's technical staff. The film, which reviewed the experiences of a summer workshop provided to 30 secondary school mathematics teachers, featured interviews of several leading participants including Gruenberger and White who designed and presented the actual workshop on which the film was based.(38)

#### 2.4.3.3 The Association of Data Processing Service Organizations (ADAPSO)

Walter Bauer, Frank Wagner, and Werner Frank were instrumental in the founding of a predecessor organization, SIA (Software Industry Association), and served on its board of directors. It later merged with ADAPSO which is now the sole voice for the computer services industry. It functions through various sections and committees. Bruce Coleman has been a vice president of ADAPSO for Software Issues and a member of the ADAPSO board of directors. He has also been president of the SIA Section. Serving as directors of various sections have been Frank Wagner for the SIA Section and the Professional Services Section and Robert Wallach for the Remote Computing Section. Serving on various committees have been James Porter, chairman of the Business Practices Committee; Robert Wallach, chairman of the Bank Relations Committee; Frank Wagner, chairman of the Professional Staff Committee, Vendor Relations Committee, and a member of the Taxation Committee. Although it is not an official ADAPSO activity, a closely related organization is the (California) Software Taxation Action Group (STAG), in which Paul Connolly has been the leader in obtaining legislation to exempt professional services from sales tax.

#### 2.4.3.4 Other Organizations

Informatics employees have been highly active in other professional organizations in addition to the ACM, AFIPS, and ADAPSO. These are listed in Appendix III.(39) Beyond actual membership participation in professional organizations, company members have been featured speakers at various conferences (in which the company does not belong to the sponsoring organization) and on television programs. Employees have been recipients of industry awards and grants and members of trade commissions. At the end of Appendix III there is a alphabetical listing of a sampling of those activities publicized by the company.(40)

#### 2.5 REFERENCES

1. Informatics, Inc., Interview with Dr. Walter F. Bauer, founder and president of Informatics, Inc., November 24, 1981, December 15, 1981, January 5, 1982, and January 26, 1982.

Dataproducts Corporation, Interview with Dr. Walter F. Bauer, president of Informatics, Inc., January 16, 1979.

Informatics, Inc., Interview with Francis V. Wagner, senior vice president and group vice president of Informatics Professional Services Operations (retired), October 20, 1981, February 16, 1982, and April 6, 1982.

2. Informatics, Inc., Interview with Werner L. Frank, executive vice president of Informatics, Inc., October 1, 1981 and November 5, 1981.

Informatics, Inc., **Capabilities**, 1966.

3. Informatics, Inc., Interview with Richard H. Hill, former vice president of Informatics Programming Services, July 2, 1981.

Informatics, Inc., **Capabilities**, 1966.

4. Wagner interview.

Informatics, Inc., **Capabilities**, 1966.

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

Informatics, Inc., **Capabilities**, 1966.

6. Informatics, Inc., Interview with Richard E. Kaylor, former group vice president of Informatics Data Services, September 25, 1981.

Informatics, Inc., **Capabilities**, 1966.

7. Informatics, Inc., Interview with Wilson R. Cooper, vice president of Informatics Software Products Technology Division, July 21, 1981.
8. Informatics, Inc., Interview with Dr. Robert W. Rector, former vice president of Informatics Aerospace Systems Division, August 6, 1981.  
  
Informatics, Inc., **Capabilities**, 1966.
9. Informatics, Inc., Interview with Richard C. Lemons, group vice president of Informatics Information Systems and Services, August 18, 1981.  
  
Informatics, Inc., **Capabilities**, 1966.
10. Informatics, Inc., Interview with Paul Wrottenbery, former group vice president of Informatics Software Products, June 20, 1981.
11. Informatics, Inc., Interview with Marion L. Bradley, group vice president of Financial and Insurance Systems, May 10, 1984.
12. Informatics, Inc., Interview with Donald A. Toy, operations vice president of Informatics Professional Services Operation East, February 22, 1982.
13. Informatics, Inc., Interview with Paul J. Connolly, operations vice president of Informatics Professional Services Operations West, August 27, 1981.
14. Informatics, Inc., Interview with Bruce T. Coleman, executive vice president of Informatics, Inc., June 30, 1981.
15. "Software Gap--A Growing Crises for Computers," Business Week, November 5, 1966.
16. Informatics, Inc., Corporate and Marketing Objectives, September 30, 1963.
17. Murphy, Michael, J., "Informatics, Inc. Makes Software a Growth Tool," Control Engineering, January, 1965.
18. Informatics, Inc., **Growth Company in a Burgeoning Industry**, circa 196/.  
  
Informatics, Inc., **Resume of a 4-Year Old, 47,250 Pound Software Expert**, circa 1966.
19. Informatics, Inc., **Career Opportunities**, circa 196/-1968.
20. Op. Cit.
21. Walter F. Bauer to File, Re: **Corporate Goals and Objectives**, January, 19, 1966.
22. Ibid.
23. Werner L. Frank to Executive Committee, Re: **The Future of Informatics - A Position Paper**, April 22, 1966.

24. Informatics, Inc., **Informatics Inc. Five Year Plan**, March 1967.
25. Informatics, Inc., **W.F. Bauer Monthly Reports to the Board of Directors**.
26. Informatics, Inc., **A Presentation on Informatics Inc. for the Board of Directors of Equimatics, Inc.**, November 28, 1973.
27. Informatics, Inc., Employee Insurance Plan, circa pre-1968.  
 Informatics, Inc., Long Term Disability Insurance, February 6 1970.  
 Informatics, Inc., Informatics Inc./Dental Insurance Plan, December 1979.
28. Informatics, Inc., Incentive Plan, circa Spring 1964.  
 Informatics, Inc., Profit Sharing Plans, 1968.  
 Informatics, Inc., Profit Sharing Plan, circa 1972.
29. Informatics, Inc., Informatics Inc./Retirement Plan, December 1979.
30. Informatics, Inc., **Affirmative Action Program for Equal Employment Opportunity**, July 1, 1971.  
 Informatics, Inc., **Informatics Canoga Park, California, Affirmative Action Program for Equal Employment Opportunity**, October 31, 1972.  
 Informatics, Inc., **Walter F. Bauer, Equal Employment Opportunity Policy Statement**, July 1975.
31. Informatics, Inc., **D.G. Mahal to W.F. Bauer, A.S. Kaplan, E.B. Randall, F.J. Schulte, Re: Equal Employment Opportunity Policy**, August 30, 1978.  
 Equitable Life Assurance Society of the United States, **John W. Work, Vice President, to David R. Harris, Executive Vice President, Re: Affirmative Action--Informatics, Inc.**, April 4, 1974.
32. Informatics, Inc., **Management Incentive Plan (Executive Bonus Plan and Management Bonus Plan)**, Fiscal Year 1975, January 15, 1975.  
 Informatics, Inc., **Management Incentive Plan (Executive Bonus and Management Bonus Plan)**, Fiscal Year 1977, circa 1977.
33. Informatics, Inc., **Merrilyn McCranie to W.F. Bauer, Re: Employee of the Month Award**, October 8, 1975.  
 Informatics, Inc., **"Heckathorne Receives Double Honor in Employee Award Program," News Release**, October 22, 1975.
34. Informatics, Inc., **Personnel Policy No. 27, Employee Recognition**, January 1, 1980.

**A Presentation on Informatics Inc. for the Board of Directors of Equimatics, Inc., November 28, 1973.**

35. Informatics, Inc., Interview with Fred Gruenberger, editor and organizer of Informatics Symposia, August 1, 1981.  
  
Informatics, Inc., **An Introduction to Informatics Inc.**, circa 1969.
36. Informatics, Inc., A Bibliography of Technical Staff Publications, circa 1968.
37. Interviews with Bauer, Frank, Wagner, Postley, Kaylor, Lemons, and Rector.  
  
Informatics, Inc., **Capabilities**, 1966.  
  
Informatics, Inc., News Releases, May 5, 1966; December 7, 1972; June 28, 1971; August 10, 1972; April 2, 1973; June 20, 1973; and July 9, 1973.
38. Informatics, Inc., "Informatics Staff Appears in New AFIPS Film," News Release, October 9, 1967.  
  
Rector interview.
39. Informatics, Inc., News Releases, October 24, 1966; October 22, 1973; December 26, 1973; April 8, 1974; February 21, 1975; and March 16, 1979.
40. Informatics, Inc., News Releases, July 28, 1966; August 14, 1967; February 16, 1968; January 1968; November 1968; February 18, 1970; September 19, 1973; October 3, 1973; December 5, 1973; October 22, 1975; April 18, 1978; and November 14, 1979.