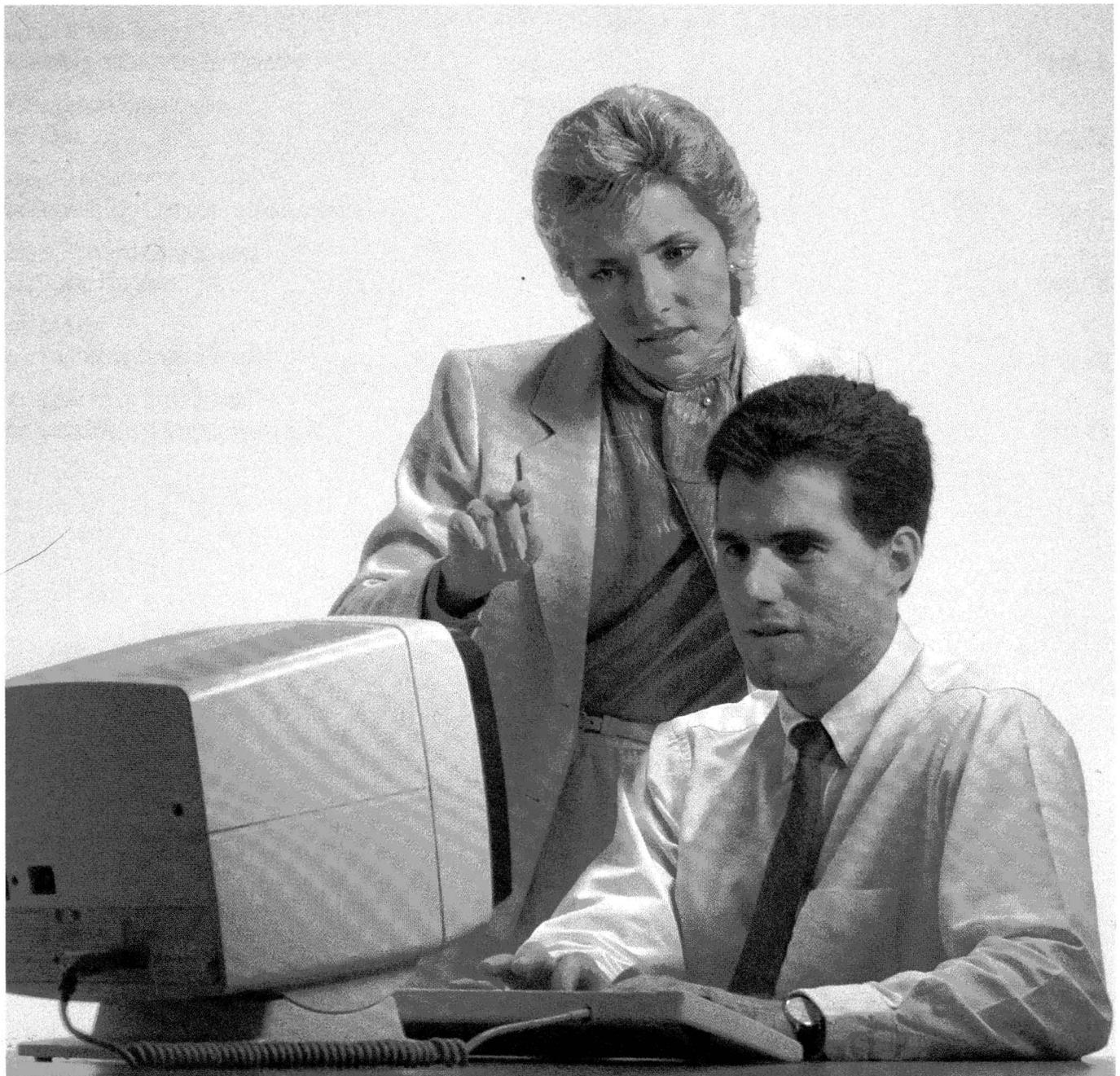

1987

Computer Salary Survey

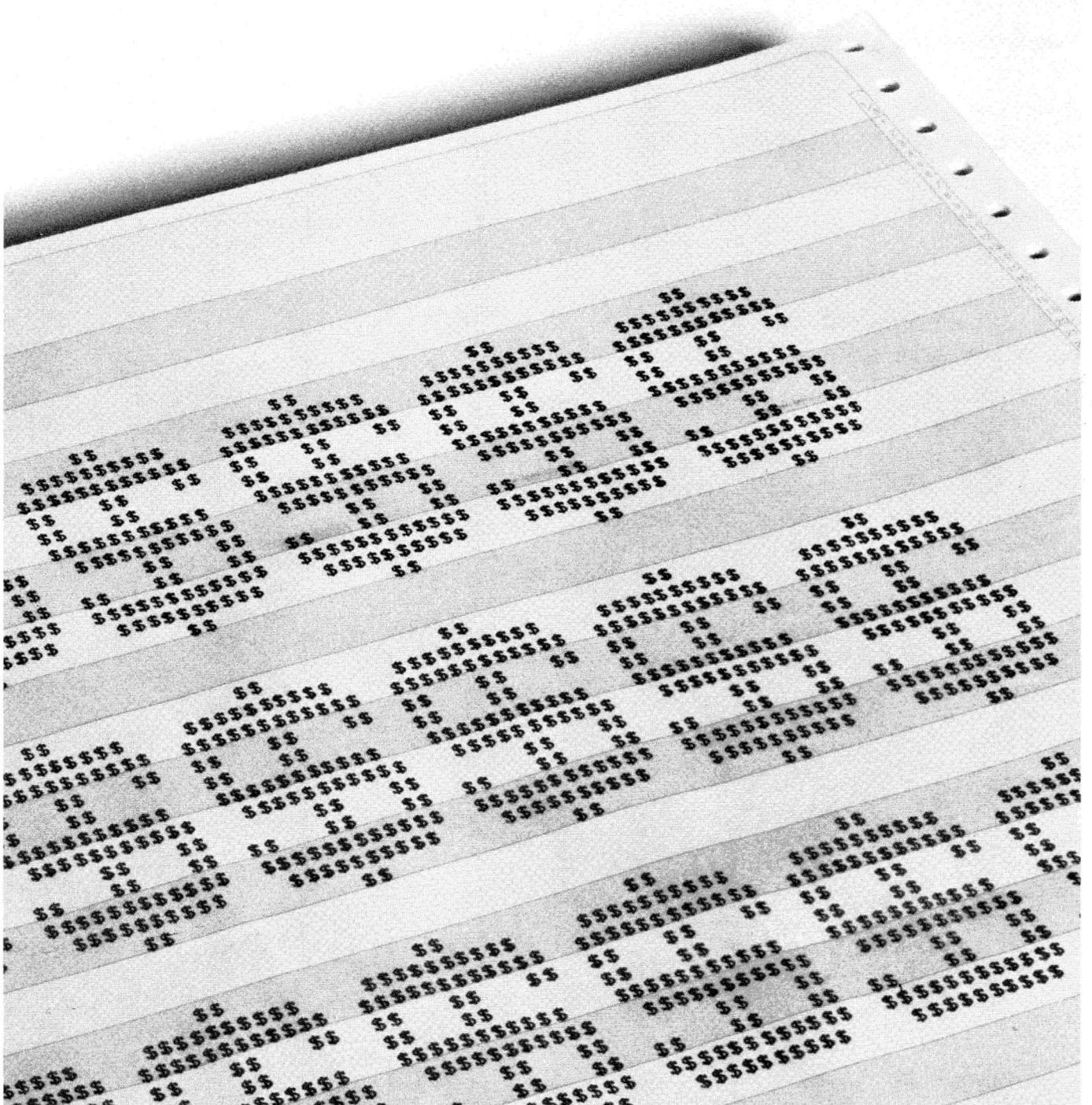
and Career Planning Guide



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A Word About Us and Our Data



Source Edp, the organization that researched and published this material, is a professional recruiting firm devoted exclusively to the computing and information systems fields. Since we began in 1962, we have helped shape the careers of thousands of computer professionals like you across North America. Since we are retained and compensated by the employers of these computer professionals, we provide our services to the individual free of charge.

Our professional staff is composed entirely of people who have attained a high level of professional achievement in the field of information systems and computer technology. We understand computer people and stay abreast of new developments in hardware, software and information systems technology. We also maintain continuous, day-to-day contact with key hiring executives from progressive organizations across the country to monitor changing trends in career paths. Through this depth of placement experience and knowledge of career paths and computer technology, we enjoy a unique perspective that has enabled Source Edp to become the recognized leader in assisting computer professionals in the establishment and achievement of their career objectives.

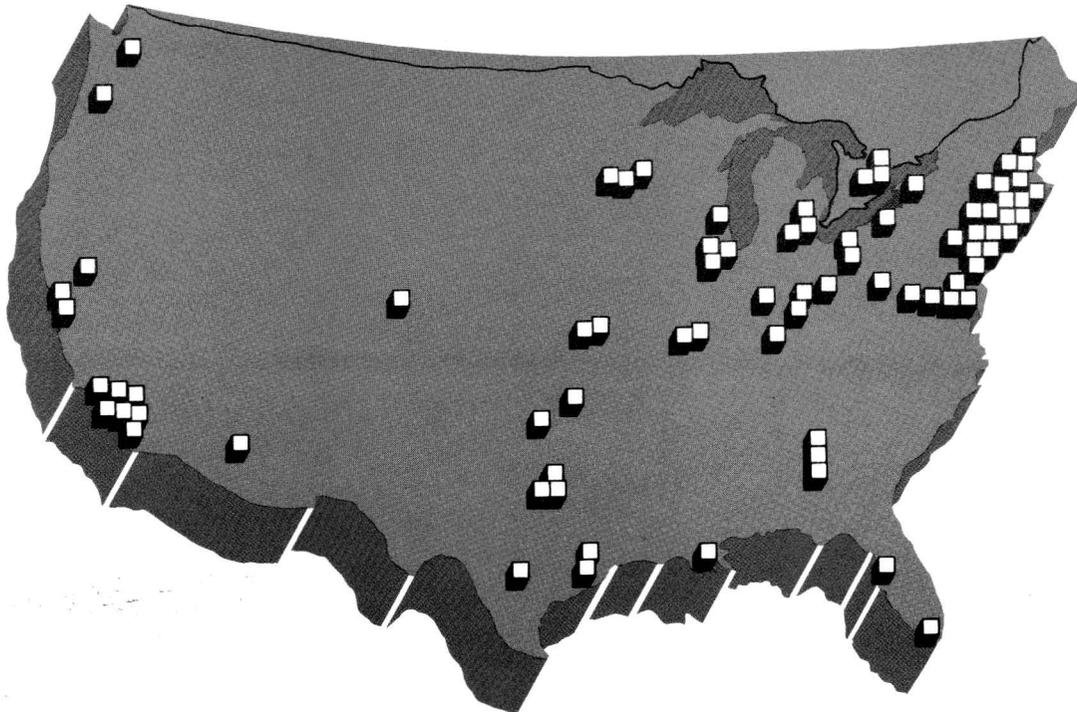
We are a non-franchised firm; enabling us to serve you with the same high level of integrity and effectiveness no matter where you are located, or what your professional, financial and geographic objectives may be. No other recruiting firm has a larger network of offices than Source Edp (you'll find a list in the back).

Much of what we have learned is contained in this Computer Salary Survey and Career Planning Guide. This report will provide insight into all phases of career planning. We will discuss the structure of the computing profession, its typical levels of responsibility, new trends that we see developing, compensation being paid and strategies for improving your career.

All the career planning information you will read in this report is a compilation of the essential elements of strategic career planning in the computer profession that we have developed and refined over the past two decades. The 1987 Survey is based upon a national sample of the thousands of professionals whom we have assisted in recent months.

Note that as you read this report, although the information is comprehensive, we address all pertinent topics in a generalized manner. Since each computer professional is unique in skill level, training, exposure and, above all, ambition, to address the subject of compensation and career planning on a more personal basis is not possible. However, the information contained in this report should be of interest to anyone who wishes to increase their own prospects of success and improved compensation in today's competitive, fast-paced computer environment. Strategies and tactics for career advancement presented here have been successfully applied by most of the leading achievers in the computer profession today.

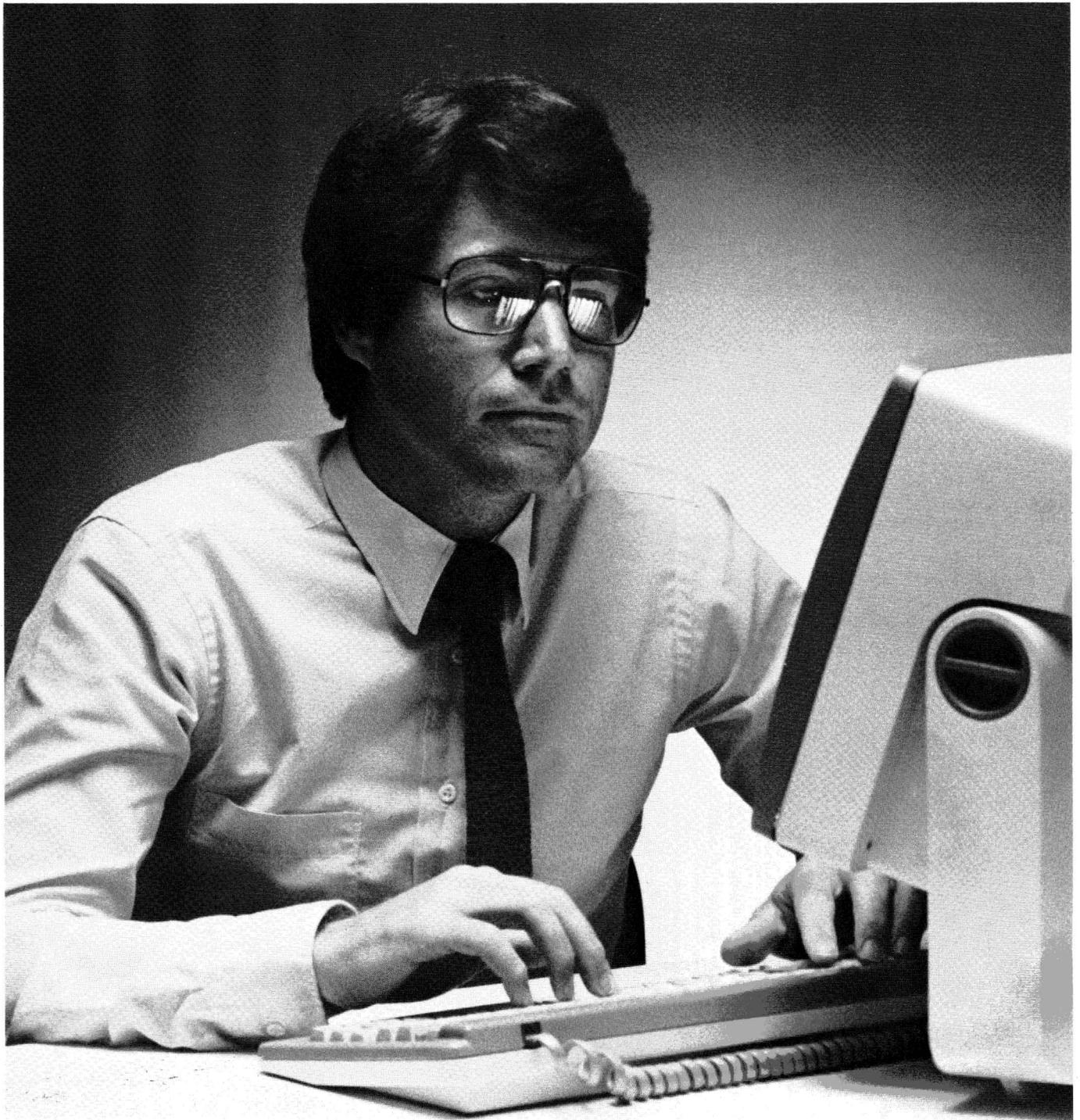
We believe that our look at "the forest" rather than "the trees" will serve, if for no other purpose, to prompt professionals like yourself—who have yet to reach the top—to focus more closely than ever on career development; a subject which is all-too-often neglected or completely ignored in today's "hurry-up, get-it-done" working world.



The Source Edp Network

Source Edp is located in most major metropolitan areas across North America. So no matter where you wish to work, Source® can help. In fact, we're the world's largest recruiting firm devoted exclusively to the computer profession.

The Career Planning Cycle: Developing a Sensible Strategy



Like most computer professionals of worth, you probably think long and hard about your work; striving for improvement. But, how much time do you really devote to your career?

We at Source Edp believe that having a sensible career plan is essential in the computer profession. This section is devoted to a logical, step-by-step method of focusing on your career and increasing likelihood for growth; a concept we term, the Career Planning Cycle.

Career planning is not unlike "thinking through" any important business problem. One must define objectives, develop strategies, monitor progress and take corrective action when and if needed. However, there are several aspects which make career planning unique:

- The organizational structures under which one can work are broad and can expand or shift due to different business needs.
- Much information that affects career planning—such as salary structure, bonus or promotional opportunity—is shrouded in a veil of confidentiality and not always available for general knowledge.
- Once solved, many business planning problems remain that way, whereas career planning is a continuous process requiring periodic reassessment and updates.

For these reasons, it is essential that computer professionals be aware of the steps that will enhance their growth, and fully understand and review them periodically in relation to their own progress. The Career Planning Cycle, presented graphically in Exhibit 1 involves these steps:

Step 1

Understand the Structure

Realistic, long-term career goals can be established only after the structure of the computing profession is understood. This includes thorough knowledge of various position levels of responsibility within the field, experience and training required for each position and logical alternative career paths that exist. You will find an outline of the structure of the profession in the pages following.

Step 2

Establish Goals

The next step involves establishing long-term career objectives which are realistic in terms of the professional environment and consistent with personal ambition. A series of intermediate goals may then be established which, if achieved, will logically lead to fulfillment of long-term objectives.

Step 3

Assess Current Position

It is necessary to evaluate exactly where one stands currently in relation to his or her long-term goal. As we will review later, experience gained and responsibility level achieved to date in relation to current compensation is crucial. In this step, as well as the next, objectivity should not be obscured as a result of personal bias.

Step 4

Assess Needed Exposure

Sharp focus must now be placed upon defining the exact elements of new experience needed to progress along a chosen career path. As we will discuss, areas of new exposure are not restricted solely to the development of technical computing disciplines but include others as well. An accurate appraisal in this step is essential.

Step 5

Develop a Plan of Action

The next step is to develop a plan of action that will result in providing new exposure. This may or may not involve a change in employment, a redirection of career path, an industry shift, etc. Once a plan is developed it must be acted upon in a reasonable time frame or, career progress may be seriously impeded.

Step 6

Evaluate the Results

It is essential to periodically evaluate the results actually achieved compared to intended objectives. Is the new exposure sought actually being gained? Has responsibility level been improved? Is the current working environment conducive to continued progress along the planned career path?

Step 7

Take Corrective Action

If, for any reason, actual exposure has not measured up to your plan, it is necessary to "recycle" the career plan beginning at Step 1.

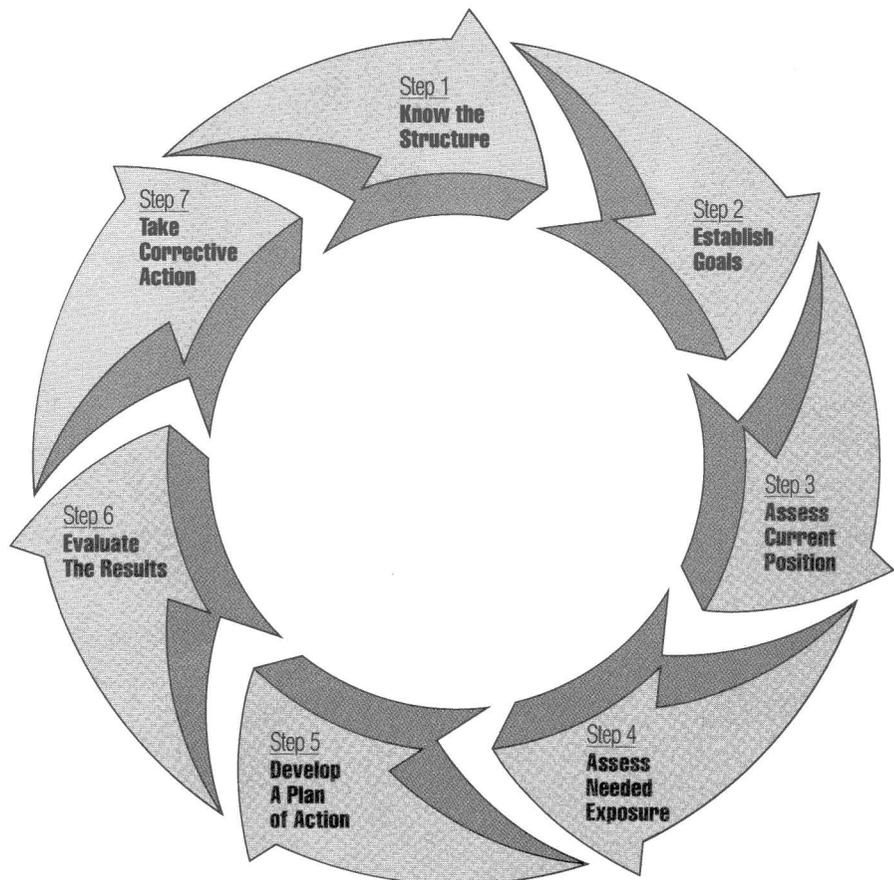


Exhibit 1: Career Planning Cycle

The Career Planning Cycle is an evolutionary process: people must constantly evaluate, plan and replan their careers since organizational structures, rates of salary progression, and the fortunes of one's employer will shift unexpectedly as time goes on. The ability to recognize special opportunities as well as unfavorable trends and react to circumstances taking place around you is essential to thoughtful career planning. The need to frequently step back, and "recycle" is important for development.

A Look at New Trends: Technology and Computer Careers



Announcements like "New Technological Breakthrough!" almost seem a daily routine in computer trade publications; hardly startling. Yet, keeping current with what may seem a little advancement in technology really could impact your career in a very big way.

In this section, we will examine the more significant trends that we see developing and how they will effect computer professionals in the months and years ahead.

With the emergence of new technology, generally we find a shift and expansion in demand for various types of computer skills. Accordingly, career planning must be linked to the regularly changing technology. What may have been a sound plan a year ago may not be entirely valid today.

Because Source Edp is in regular contact with virtually the entire community of employers of computer professionals, no one else is in a better position to monitor trends and interpret their impact upon individual careers. Some of the things we look for are outlined here.

Microcomputers and Personal Computers-New Challenges

New uses for computers—such as small business/commercial applications and distributed processing—are spreading rapidly. While it was once cost prohibitive for smaller companies, today, sophisticated computing power is being realized by even the smallest businesses.

In 1975, there was virtually no market for microcomputers. By 1995, industry experts predict that sales of micros will top \$300 billion.

Large corporations are finding more uses for computing. MIS departments and engineering support system centers have become user-oriented as fourth generation languages and easy to use system tools (including data base software) have proliferated.

Two implications for career planning emerge. First, professionals in "user" environments should gain a working knowledge of computer capabilities as they pertain to their own department functions. Those professionals in technical computer areas must stay current and competent in advanced technologies, such as communications, data base, on-line processing, fourth generation languages, artificial intelligence, office automation, factory automation, etc.

Second, new opportunities are rapidly developing in key disciplines within vendors of mini and microcomputers in the areas of software development, programming, marketing and marketing support. Opportunities are also emerging within service organizations that support manufacturers' systems by providing technical education, packaged ("turnkey") applications and systems, technical and MIS consulting, remote access as well as other services needed to install a "staff-less" computer site.

The Emerging Role of the Specialist

As computing becomes a more integral part of running America's businesses, so have computer professionals reached new levels of importance in many firms. Typically, large organizations who

have sophisticated needs for computing, require expertise in many different areas of computer specialization.

As a result, new hierarchies of career progression have evolved in many larger firms. This includes areas of specialization ranging from systems programming, edp auditing, and data base to quality assurance, security analysis, hardware/software analysis and more. As Exhibit II illustrates, specialization has allowed many computer professionals to advance beyond the traditional limits for compensation and responsibilities; providing the computer specialist with opportunities not normally encountered in many systems environments.

The Shift to Automation

Exciting career opportunities also exist in the arena of industrial automation. As the cost of labor continues to rise, increased demand for automation will occur. Applications of computers designed to help reduce labor costs include fully automated manufacturing plants and research and development facilities. Computer Aided Manufacturing (CAM) systems (including robots) are reducing waste and improving efficiencies and product quality in myriad production environments. The application of computers to the design of complex industrial products and systems has also created an explosion in Computer

Aided Design (CAD). Here, engineers and scientists with the aid of powerful computer driven simulation aids and graphics technology are able to dramatically improve the efficiency of the design process.

We expect that these trends will provide many exciting career opportunities for the astute professional. Not only will systems designers and software developers be in substantial demand, but the need for new automation specialists—systems sales representatives, technicians, graphics specialists, and system implementers—will grow.

The Communications Era and the Office of the Future

Today's advanced technologies—mini/microcomputers, terminal devices and communications networks—have made computer decentralization in business much more commonplace. This is another factor which will magnify demand for computer design and support professionals.

The full impact that networking brings to bear on professionals will be major. Certainly, professionals with expertise in networking and data communications will be called upon to develop new approaches to information handling and management. Those who understand the software technology needed to convey information from computer to consumer will be at the cutting edge.

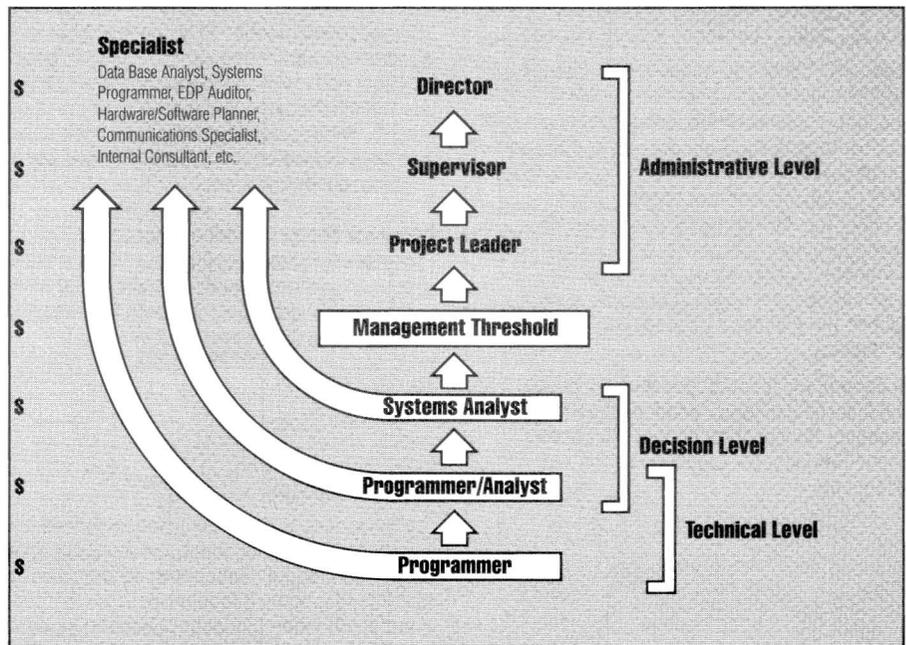


Exhibit II: Career Progression of Today's Computer Specialist

Computer specialists are challenging the traditional salary and career barriers normally encountered when advancing in many systems environments. In many cases, the earnings of the specialist now are able to advance at a rate equal to those in supervisory or administrative roles.

A Look at New Trends: Technology and Computer Careers (Continued)

Commercial Programmers and Programmer/Analysts

Responsibilities: Perform detailed program design, coding, testing, debugging, documentation and implementation of commercially oriented information systems. May also be responsible for overall systems specification and design.

New Trends: More alternatives are open to Commercial Programmers and Programmer/Analysts with on-line data base experience than any other group. Many new openings exist in every type of industry, application, hardware/software and technical discipline.

A continuing trend within user organizations to combine programming and systems functions into a single group provides an excellent learning environment. Most opportunities exist for those with several years of COBOL programming. Those in greatest demand will also have direct exposure to some of the following: large operating systems, job control languages, on-line data base management and direct access techniques, remote accessing, virtual systems, 4th generation languages and data base handlers. Structured systems design, programming and data base techniques are becoming more important. Conversational programming and remote interconnect experience are also valuable.

Demand for professionals experienced in C, RPG III, and PASCAL on small commercial systems will remain strong as the mini/micro explosion builds. A degree in Business, Management Information Systems or Accounting is valuable, but type and depth of experience is more important.

"While millions of dollars have been invested in third generation systems development languages and methodologies, an increasing number of mainframe installations are committing their new systems development to 4GL/Relational database technologies and their associated systems development methodologies. 4GL's have improved significantly to handle high volume transaction processing requirements where previously they were used primarily for lower volume, more complex decision support applications."

In addition, with increasing numbers of production systems and vendor-supplied applications packages, the role of the Support Programmer/Analyst will become increasingly secure and recognized.

Engineering and/or Scientific Programmers and Programmer/Analysts

Responsibilities: Perform detailed program design, coding, testing, debugging, documentation and implementation of scientific and/or engineering computer applications and certain commercial applications that are mathematical in nature. May assist in overall systems specification and design.

New Trends: Demand increasing for people with specific specialities such as communications, graphics and real-time control systems. Requirements include one year minimum with FORTRAN, Assembler or C programming languages. Exposure to the use and integration of microprocessors, into other products or computer systems is extremely valuable.

One segment of the market, military and defense systems development, will depend upon level of federal spending and industry commitment to projects in design automation, aerospace, graphics, factory automation, quantitative methods, etc.

Increased activity is expected from computer-oriented companies, particularly those involved in mini/microcomputers.

On the user side, greatest demand will be in computer control systems made more practical by the improvement of the mini/microprocessors. Requirements include undergraduate engineering or math degree (physical sciences usually preferable). M.S., large scale or mini/micro hardware exposure and systems (software) programming experience desired.

"There is growing evidence that this group of DP professionals will become increasingly active in the use of Artificial Intelligence technologies as they find a home in the resolution of complex scientific and/or business problems. Expert systems in particular will be found in Engineering and Scientific environments."

Personal Computer/Microprocessor Programmers and Analysts

Responsibilities: Perform detailed program design, coding, testing, debugging, documentation and implementation of real-time or interactive systems. Typically use interconnected or networked microcomputer/microprocessors. Program design may consist of application modules or support specific subfunctions such as communication, signal processing graphics control, data acquisition or operating systems interface.

New Trends: An increasing complexity of technology requires significant expertise and skills in software design and development. The highest demand will be for people with experience in PC-to-mainframe interconnect technology and local area networking. Most opportunities will require a minimum of one year experience with one or

more high-level structured languages. Those in greatest demand will also have direct exposure to real-time control/monitoring, operating systems, I/O drivers, compilers, interpreters, diagnostics and application software.

The microcomputer/microprocessor explosion is creating substantial and unique opportunities for machine or Assembly language programming in both established as well as entrepreneurial high technology organizations including firms specializing in turnkey systems from manufacturing and control applications. Many PC Analysts are needed to implement micro packages such as Lotus, dBase and WordStar. Additionally, knowledge of graphics, artificial intelligence and integrated communications (data and voice) are needs that are rapidly increasing in demand.

Minicomputer Programmers and Programmer/Analysts

Responsibilities: Perform detailed program design, coding, testing, debugging, documentation and implementation of on-line or interactive systems typically using dedicated mini hardware. Program design may consist of application modules or support specific subfunctions such as communications, graphics, data base or operating systems interface.

New Trends: Demand remains high as hardware continues to decrease in price and increase in capability and software improves flexibility. Most opportunities will require minimum of one year experience with a high-level language such as Assembler, C, FORTRAN or COBOL. Those in greatest demand will also have direct exposure to real-time programming, operating systems, I/O drivers and data base handlers. The minicomputer environment also provides unique opportunities for Programmers in vendor companies and specialized firms promoting turnkey systems. Additionally, on-line design and data base proficiency skills are also of increasing importance.

Systems (Software) Programmers

Responsibilities: Create and/or maintain operating systems, communications software, data base packages, compilers, assemblers, utility programs, etc. Within user organizations, typically support applications programming, provide hardware/software planning and evaluation, modify existing and create special-purpose software, maintain and modify vendor software packages, develop programming standards, oversee technical education, and insure systems efficiency and integrity.

New Trends: Strong demand exists across a broad front, including computer and peripherals manufacturers, computer service organizations, management consulting firms as well as user organizations. Significant use of micros, minicomputers and emphasis on communicating systems has created a strong demand for Systems Programmers knowledgeable in data communications, network planning and analysis, data base concepts, graphics, terminal systems and vendor evaluation.

Opportunities are also beginning to increase in the emerging field of Artificial Intelligence. Normally, one should have at least a year of Assembly language programming and a B.S. in Computer Science. Current Systems Programmers in greatest demand will have direct exposure to interfacing and/or modifying communications or data base software.

Software Engineers

Responsibilities: Design and develop software to drive computer systems. Develop firmware, drivers, specialized software such as graphics, communications controllers, operating systems and user friendly interfaces. Within vendor environments, work closely with hardware engineers and applications and systems programmers, requiring understanding of all aspects of the product.

New Trends: This is the fastest growing segment of the computer manufacturing community. As the number and variety of systems being developed increases, the demand for experienced Software Engineers will continue to expand. Manufacturers of personal computers, mini and mainframe computers, robotics, terminals and office automation systems will continuously be developing advanced technology offering ever greater and more challenging opportunities for Software Engineers. Usually requires a B.S. in Computer Science, Engineering or related discipline.

Data Base Analysts/Data Management Specialists

Responsibilities: Design and control the use of an organization's data resources. Analyze the interrelationships of data usage and define physical data structures and logical views of data elements. Utilize the facilities of data base management systems and data dictionary software packages to control the data usage. Responsibilities range from the design and creation of data structures to procedures to insure data security, data base backup/recovery, and to eliminate data redundancy.

New Trends: Demand is increasing due to the projected growth in number of data base management systems installations. Needs exist for persons with knowledge of programming and systems methodologies to design data base oriented application systems. Background in systems software is valuable for persons moving into planning of physical data base structures and implementation of security and recovery tactics. A career path leads to Corporate Data Base Administrator; a management position responsible for control of the entire data resource.

Data Base Specialists are also needed by software consulting firms and large data base utilities to support major sophisticated data base systems development. Current Data Base Specialists in greatest demand will have exposure to large complex computer systems and communications technology.

"Relational data base technologies open up new opportunities for large corporations to establish data resource management strategies. These involve the creation of a data architecture that mirrors company operations. The activities that support this need are frequently handled by data management professionals who work closely with senior management to bring about a highly integrated, operational data base environment. The data analysis and data modelling techniques are frequently seen in this area."

Communications Analysts and Technical Specialists

Responsibilities: Perform detailed program design, coding, testing, debugging, documentation and implementation of data and voice communications software. Within a user environment, will evaluate communications hardware/software, modify vendor software for individual company needs, maintain existing software and function as a technical advisor to Application Programmers. Within a vendor environment, will work in a group responsible for new communications software development. May also design networks, evaluate tariffs and interface with common carriers.

New Trends: The industry is showing strong movement toward more data communications with centralized mainframes communicating to remote locations through large networks, distributed data processing and systems with a large number of terminals. An increasing emphasis on concepts such as electronic mail and the "cashless" society indicates a move away from paper communication and towards electronic communication. Current technologies will emphasize microwave and satellite data transmission with emphasis on global networking. B.S. in Electrical Engineering, Telecommunications or Computer Science and at least one year Assembly language are highly desirable.

Information Center/Office Automation Analyst/Decision Support Specialist

Responsibilities: Evaluate, implement, and interconnect microcomputers, word processing and office teleprocessing products to allow various levels of management access to data base management systems, electronic mail, query facilities, spread sheets, and decision support systems. Establish methods and criteria for evaluation of office automation hardware and software. Function as a central source for the selection, training and use of a wide range of "off-the-shelf" software—including 4GL products such as FOCUS, NO-MAD, etc. Determine best uses of Local Area Networks (LAN's) to link microcomputers to each other and to larger computers. Provide user training and support.

New Trends: The explosive growth of microcomputer technology has resulted in a boom in the demand for office automation products designed to integrate word processing, teleprocessing devices, micros, minis, and mainframes.

"Office Automation professionals may bear a variety of titles including Information Center Analyst and Decision Support Specialist. In any case, the underlying purpose of the Office Automation professional is to provide the vehicles and training for all company employees to communicate more effectively with each other and have more timely access to the information they require."

Integration of the various office automation products has been complicated by the incompatibility of the various communication architectures. As a result, people with communications knowledge in addition to mainframe and microcomputer background will be at a premium.

Past distinctions between office automation, telecommunications and data processing will be less clear cut in the future. Also, the proliferation of personal computers will create a corresponding demand for systematic methods to evaluate and implement truly integrated office automation systems. Since these systems are and will be used mainly by nontechnical managers and analysts, there is an expanding need for skilled specialists to assist in systems definition, training and implementation of office automation systems.

A Look at New Trends: Technology and Computer Careers (Continued)

EDP Auditors

Responsibilities: Perform detailed evaluation of systems and operational procedures. Report findings to upper level management along with specific recommendations to insure systems and procedural integrity and accuracy.

New Trends: Growth in size and complexity of systems has resulted in a strong need for EDP Auditors. Broad programming and systems background and exposure to many different computer systems, programming languages, and financial, distribution or manufacturing application areas are sought. Leading CPA firms as well as computer users are finding it essential to evaluate continually the efficiency, accuracy and security of systems and software as well as computer output.

The EDP Auditor will often work for a CPA firm or for the internal audit function within a corporation. This allows Senior Programmers or Analysts to broaden professional direction by moving toward a consulting or corporate management career path. Additionally, Auditors are placing more emphasis on technical evaluations and controls of operating systems, data base management and telecommunications. Minimum requirements usually include two years design and programming of business systems and excellent communications skills. College degree preferred. MBA, CPA, CA, CSA or CISA desired.

Technical Writers and Editors

Responsibilities: Document programs and systems as well as user manuals, marketing brochures and other documentation required to use or promote computing systems. Requires interface not only with the systems and programming staff to determine system functions, but also with users and/or customers to assure understanding of the use of the systems. May participate in systems specification and design.

New Trends: Demand will grow due to a continued broadening and diversification of systems fundamentals, software, and hardware. Positions will require increased knowledge of sophisticated documentation techniques as well as technical knowledge of hardware, applications, and programming languages. A marketing and writing background is an asset.

Senior Analysts, Project Leaders and Consultants

Responsibilities: Typically responsible for user liaison, systems specification, systems design and project control. May also supervise Analysts and Programmers through implementation phase and occasionally assist in programming effort. Provide key link between ultimate user and computing resource.

New Trends: Those professionals in greatest demand will possess in-depth, advanced industry knowledge in manufacturing, insurance, banking, distribution, etc., and actual information systems implementation experience involving data base and data communications. Typical user assignments range from responsibility for development of stand-alone systems to high level staff assignments in hardware/software evaluation, data base administration, or long-range planning.

More organizations than ever before are providing promotion opportunities to line operating functions, because of intimate company and industry knowledge. Also in demand are experts who can provide the quality assurance necessary through audit and evaluation of functional technology and procedures.

Continued growth of management consulting firms and computer services organizations (including facilities management) offer additional opportunities to gain diverse exposure. Likewise, high demand will continue within computer manufacturers (including micros and minis) for systems professionals to move into marketing support roles. Importance of this position level dictates a unique blend of technical, business and interpersonal skills. Minimum requirements usually include two years systems design experience and prior programming with some specialized industry experience desired. College degree preferred. MBA or some graduate study desired.

Computer Operators

Responsibilities: Conduct computer operation functions. Monitor and support computer processing, coordinate utilization of input, output, and interchangeable file media. Distribute output, schedule machine utilization, and oversee control functions.

New Trends: Broad expansion of terminal networking, hardware and software sophistication offer expanded growth opportunities in many industries. The emphasis is on high technology environments as many smaller companies are adapting to the computer age for the first time.

Technical Services Managers

Responsibilities: Direct the technical staff responsible for operating system software, telecommunications and data base systems support, maintenance of software packages and hardware/software planning and evaluation. May have responsibility for computer operations and/or internal technical education.

New Trends: Growth of teleprocessing and data base management have greatly increased sophistication of the technical support function and therefore the size of the technical support group. This growth and sophistication results in a marked increase in the level of responsibility of this group within medium and large user organizations as well as in the creation of new openings as smaller installations grow. Typical experience includes five years systems programming background with demonstrated experience of potential for leadership and in-depth awareness of current computer technology.

Systems and Project Programming Managers

Responsibilities: In larger organizations, responsible for systems development and implementation within a major functional area or areas; in smaller organizations, usually direct efforts of Analysts, Applications Programmers, or Software Engineers in many different areas.

New Trends: Continued emphasis on successful systems implementation, advanced industry knowledge, awareness of current computer technology, intimate understanding of user operations and problems and proven management ability. Position can lead to general management. Minimum requirements are four years of significant systems development experience along with project management.

Data Center Operations Managers

Responsibilities: Direct all computer and peripheral machine operations, data entry, data control, scheduling and quality control. Responsibility for systems (software) programming, software maintenance and/or applications maintenance programming is sometimes included.

New Trends: Continued upgrading of position level due to increased hardware/software complexity. As the production resource for providing user departments with computer output, must interface well at all levels of management and structure an effective and responsive production control and distribution function. Minimum requirements: supervisory operations experience and good knowledge of installed hardware, software and operating systems. Increased emphasis on distributed processing places a premium on those with exposure in large-scale, data base/communications-oriented environment. Degree usually required.

Computer Systems Directors

Responsibilities: Executive who devotes bulk of energies to overall management and direction of all information systems and/or computer processing or development efforts.

New Trends: This position often reports to Chief Executive Officer or financial executive. Demand will remain relatively high as intermediate and smaller organizations continue to upgrade. Profit and loss and budget responsibilities are more important as companies expand or establish independent profit center. Prime candidates hold systems or software management positions in larger organizations.

An increasing number of smaller organizations installing their first computer system offer opportunities for current Systems Analysts, Project Leaders and Software Managers to move up. Such organizations must look to the outside for direction, providing opportunities for those with limited opportunity elsewhere to gain their first management experience and/or assume total responsibility for all computing activities.

Larger organizations require a minimum of two years "second level" management experience, advanced industry and/or technical knowledge, preference for a Master's degree and broad technical, professional and business skills.

Computer Industry Sales Representatives

Responsibilities: Sell computer mainframes, mini/micro systems, software, special purpose systems, peripherals and supplies, facilities management, leasing and/or services.

New Trends: Demand remains high across the board with mini/microcomputer systems, communications interface, and proprietary software and applications package firms providing significant stimulus. Proven track record of quota accomplishment highly desirable, but some organizations are willing to consider technical professionals with an aptitude for sales. This particularly includes Engineers in the microcomputer and communications interface areas.

Computer Industry Sales Managers

Responsibilities: Responsible for management and administration of Sales Representatives. May also have territory or key account direct sales duties.

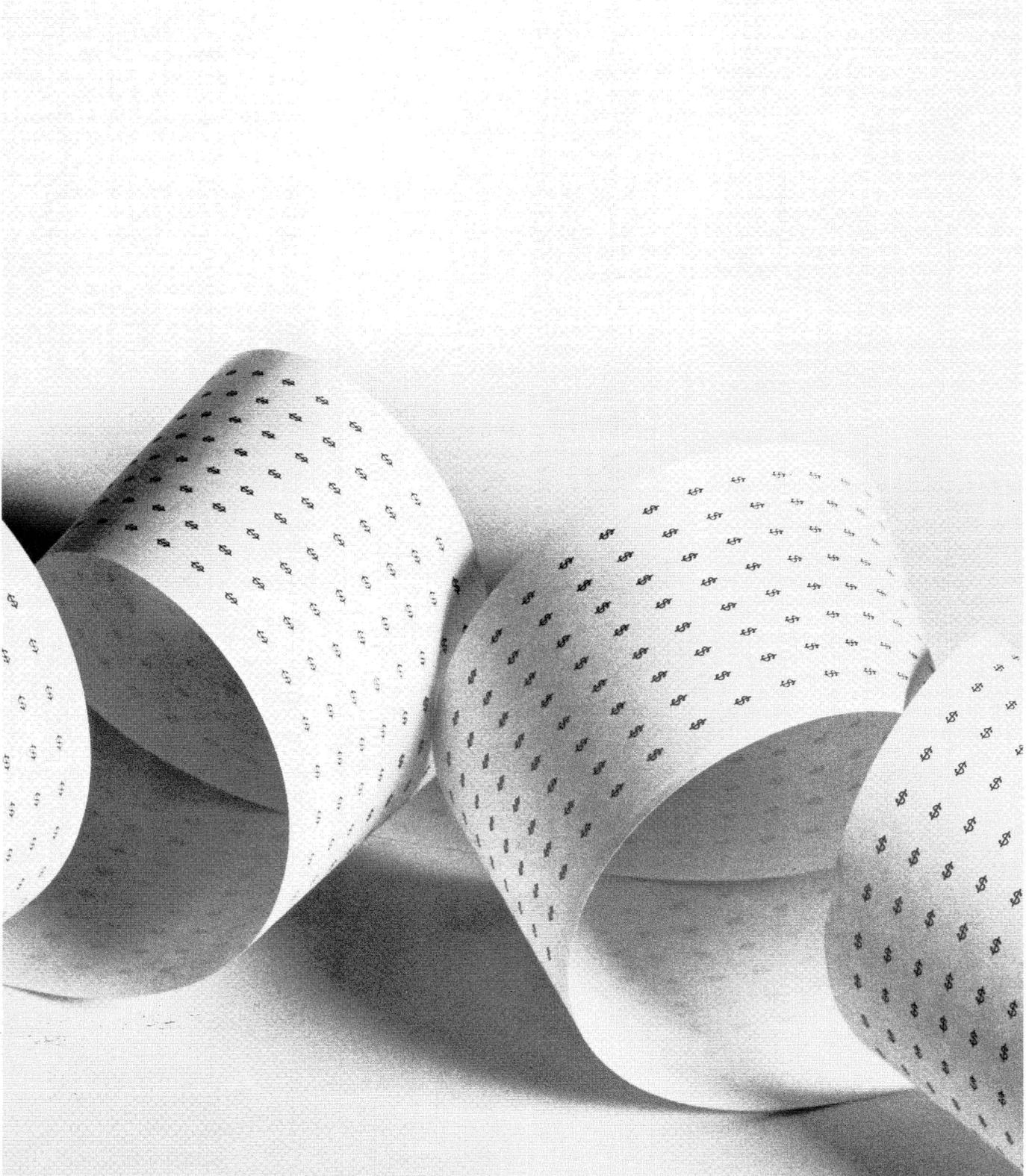
New Trends: High demand for proven sales management experience will continue. Firms will provide opportunities for current Sales Representatives ready to assume first management responsibility in new area start-up situations.

Computer Industry Sales/Technical Support Representatives

Responsibilities: Provide technical support in the sales of hardware and software products and services. Duties include both pre and post-sales support, system studies, feasibility studies, demonstrations and technical presentations. Requires good oral and written communication skills and the ability to interface with clients and to understand their requirements.

New Trends: Demand is increasing as the number of products in the marketplace increases, particularly in the areas of data base management systems, mini and micro systems, visual display units, specialty software and custom systems. Requires the ability to assimilate new product specifications and capabilities rapidly and relate to customer requirements. Technical depth in software, hardware or applications needed. Career path usually leads to sales management, technical services management or consulting.

Professional Compensation: 1987 Data



Keeping up with computer salaries is an important part of our job—and something you must do to realize your full potential. These pages contain 1987 compensation data which will allow you to compare your earnings with what thousands of others like you are making throughout Canada and the United States.

The 1987 Survey (see next two pages) is based upon a national sample of the thousands of professionals who we have assisted in recent months.

Here are a few things you might keep in mind in interpreting the Survey.

Salaries and Position Titles

The position categories, while the most realistic and meaningful we could develop, are of course somewhat arbitrary. You may judge which one best describes your responsibilities by referring to the short position descriptions presented in the previous section.

Position categories are divided into three main sections: non-management, management and sales.

Salaries and Firm/Staff Sizes

Salaries for non-management positions usually depend upon length of professional experience. Salaries for management positions will often depend upon the size of the computer system installed or upon the size of the staff managed in the event that the management function is not directly associated with a computer installation (such as in the case of management consulting).

We have defined installation size in terms of IBM Systems (or their equivalence) as follows:

Small = System 34 or smaller
Medium = 4300 Series, 3031 or System 38
Large = 3033 or 308X Series and larger

We have defined staff size as follows:

Small = Less than 10 people
Medium = 10 to 40 people
Large = Greater than 40 people

Salaries and Geography

Geographic differences can effect salaries considerably. Since Source Edp serves organizations across North America, the compensation levels we quote are norms for the entire geography surveyed.

Source Edp also publishes an annual Local Metropolitan Salary Survey which details compensation levels by major metropolitan areas.

Contact your nearest Source Edp office to discuss how salaries in your area may vary from those norms, and to learn about comparative supply and demand and costs of living factors in different parts of North America.

Salaries and Individual Disciplines

You also may note as you examine the Survey, that there are sharp variations within each job category. Again, firm and staff size have much to do with these variations.

Yet, because each computer professional is unique in skill level and training, much of the differences within job categories are strictly due to the characteristics of individuals whom we sampled in the Survey.

This reinforces the notion that while some factors—such as geography and firm size—are not in your control, your personal skills and abilities do play a major role in how much you will earn.

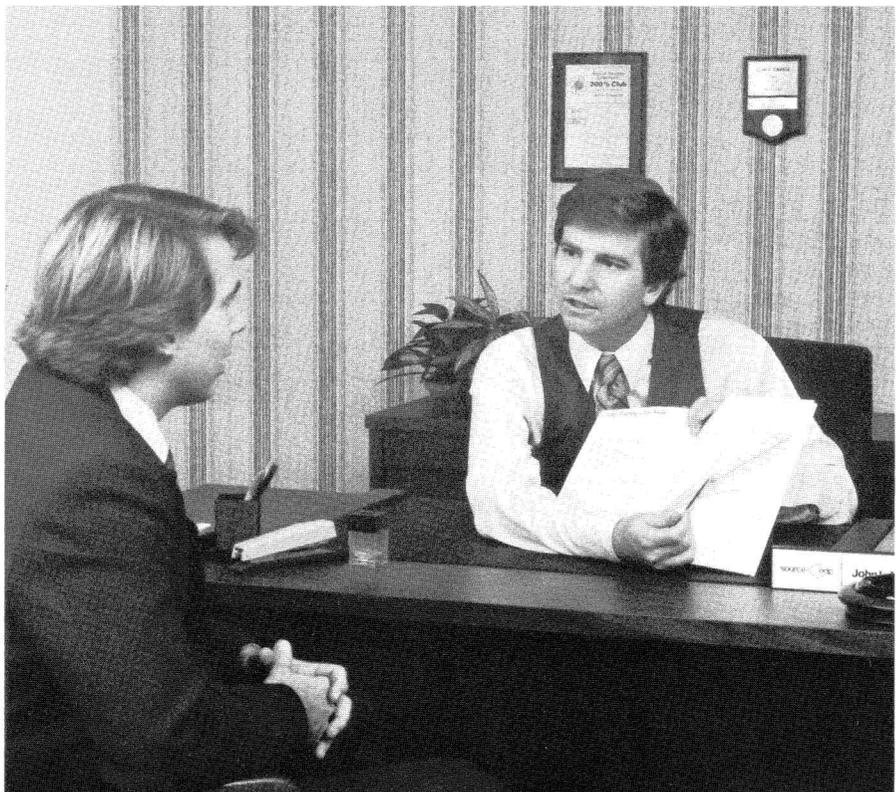
Other Considerations

Compensation figures indicated on the next two pages represent total direct compensation which includes salary, average overtime and normal cash bonus where applicable.

Compensation for direct sales and sales management positions depend on neither size nor tenure.

In order to keep our Survey representative and uneffected by extremes, we have used median rather than mean figures (rounded to the nearest \$100). In addition, we have included the fifteen upper and lower percentiles in each category to provide salary ranges.

The 1987 Salary Survey is presented on the next two pages.



1987 Computer Salary Survey



1. Non-Management Positions <i>(Salary according to length of experience in the profession)</i>	Annual Compensation (\$000)		
	15th Percentile	Median	85th Percentile
<i>Commercial Programmers and Programmer/Analysts</i>			
1 year - 2 years	18.5	22.5	26.5
2 years - 5 years	23.5	27.8	32.0
Over 5 years	28.0	33.0	39.0
<i>Engineering/Scientific Programmers and Programmer/Analysts</i>			
1 year - 2 years	19.6	25.0	28.5
2 years - 5 years	25.5	30.0	35.0
Over 5 years	31.0	38.0	46.0
<i>Personal Computer/Microprocessor Programmers and Analysts</i>			
1 year - 2 years	18.0	22.0	27.0
2 years - 5 years	22.0	28.0	33.0
Over 5 years	28.4	35.0	42.0
<i>Minicomputer Programmers and Programmer/Analysts</i>			
1 year - 2 years	18.0	21.7	27.0
2 years - 5 years	22.5	27.5	33.0
Over 5 years	27.0	33.0	41.0
<i>Systems(Software) Programmers</i>			
1 year - 2 years	23.4	27.2	31.0
2 years - 5 years	27.7	33.0	37.5
5 years - 7 years	32.0	38.0	45.0
Over 7 years	36.0	42.0	50.0
<i>Software Engineers</i>			
1 year - 2 years	22.0	27.0	30.1
2 years - 5 years	27.5	32.0	37.0
5 years - 7 years	31.5	38.0	44.0
Over 7 years	35.0	43.0	51.9
<i>Data Base Analysts/Data Management Specialists</i>			
1 year - 2 years	22.0	26.0	31.5
2 years - 5 years	26.0	35.0	42.0
5 years - 7 years	34.0	40.0	48.2
Over 7 years	37.2	44.5	53.1
<i>Communications Analysts/Technical Specialists</i>			
1 year - 2 years	22.0	26.0	30.0
2 years - 5 years	28.9	37.0	47.0
Over 5 years	33.6	43.0	51.2
<i>Information Center/Office Automation Analysts/Decision Support Specialists</i>			
1 year - 2 years	18.5	24.1	27.1
2 years - 5 years	23.5	30.0	36.0
Over 5 years	29.5	37.5	45.0
<i>EDP Auditors</i>			
1 year - 2 years	22.0	25.0	29.0
2 years - 5 years	26.5	31.0	37.3
5 years - 7 years	30.7	36.0	46.2
Over 7 years	35.0	42.0	51.0

1. Non-Management Positions <i>(Salary according to length of experience in the profession)</i>	Annual Compensation (\$000)		
	15th Percentile	Median	85th Percentile
<i>Technical Writers and Editors</i>			
1 year - 2 years	17.5	22.0	27.5
2 years - 5 years	23.0	28.0	33.0
5 years - 7 years	26.0	31.0	38.0
Over 7 years	27.0	34.0	41.0
<i>Senior Analysts, Project Leaders, and Consultants</i>			
2 years - 5 years	27.0	33.0	39.6
5 years - 7 years	32.5	37.7	44.5
Over 7 years	36.0	42.0	50.0
<i>Computer Operators</i>			
1 year - 2 years	14.0	18.0	20.0
2 years - 5 years	17.0	21.0	25.0
Over 5 years	20.0	25.6	31.5
2. Management Positions <i>(Salary according to size of computer system or staff managed)</i>			
<i>Technical Services Manager</i>			
Small	31.0	37.8	52.0
Medium	40.0	46.0	53.0
Large	45.1	52.5	61.0
<i>Systems and Project Programming Managers</i>			
Small	33.0	40.0	50.7
Medium	39.4	46.7	55.0
Large	45.0	55.0	65.0
<i>Data Center Operations Managers</i>			
Small	24.2	28.0	36.5
Medium	29.5	36.0	45.0
Large	35.0	43.5	58.5
<i>Computer Systems Directors</i>			
Small	35.0	42.0	53.8
Medium	43.0	54.5	67.8
Large	55.0	66.0	87.3
3. Sales Positions			
<i>Computer Industry Sales Representatives</i>			
Services	32.0	48.0	70.0
Hardware Products	31.0	45.0	65.0
Software Products	30.0	49.0	70.0
<i>Computer Industry Sales Managers</i>	52.0	70.0	97.0
<i>Computer Industry Sales/Technical Support Representatives</i>			
1 year - 2 years	18.5	23.0	27.0
2 years - 5 years	25.0	30.5	37.5
Over 5 years	32.0	40.0	48.0

Career Development: Six Steps to Top Computing Management



Although your ultimate career ambitions may lie elsewhere than high-level management, you'll find it extremely beneficial to understand ways in which people "get ahead." We have found that those who stretch their abilities and experiences to the utmost are generally able to achieve their desired goals. Unfortunately, there are also others who are unable to fulfill their potential for a variety of reasons.

In this section, we will define a typical career path from entry level position to the top of computing management.

Before we analyze the steps to success, we will define a typical computer career path—that of the one leading to top management. All computer professionals are encouraged to read the material carefully. The concepts presented are equally valid and applicable for achieving success in other areas such as software technology, computer operations, management consulting, sales and communications, marketing, and others.

The Six Steps to Computing Management

In most computer facilities there are a multitude of grades, levels, and job titles. Upon close examination, however, computer professionals in a user environment may typically be separated into six basic functional areas, each having a progressively higher level of responsibility. Although these groups may overlap to some degree, each has its own unique set of skills which, if mastered properly, will yield maximum career development. (See Exhibit III.)

Step 1

Programming and Programming Analysis

Programmers and Programmer/Analysts represent the initial level of responsibility. Specific duties at this level have been previously defined.

Step 2

Systems Analysis and Senior Programming Analysis

This level includes Senior Programmer/Analysts, Systems Analysts, Systems Programmers, Systems Engineers, EDP Auditors, Data Base Specialists, etc. In addition to performing the duties previously described, these individuals typically provide technical guidance and assistance to junior level professionals and will participate in basic system design feasibility studies, and cost justifications.

Step 3

Project Leadership

This level includes Senior Analysts and Project Leaders. In addition to performing the duties previously described, persons should have the capability of preparing oral and written management presentations and assuming responsibility for supervising the efforts of other professionals. This level represents a key step in career development as the individual begins to develop and exercise supervisory and interpersonal skills needed to qualify for promotion.

Step 4

First Line Management

This level represents first line management, and typically includes such position titles as Project Manager, Programming Supervisor, Systems

Supervisor or Software Manager. These individuals typically assume direct responsibility for implementing major functional systems projects to meet the overall computing objectives established by higher levels of management. Management responsibilities are functional and administrative (including hiring and firing, manpower planning, salary administration and budgeting.)

Step 5

Second Line Management

This level involves supervising other Managers, and typically includes such position titles as Systems Director, Manager or Director of Software Engineering, etc. These individuals are responsible for directing the systems and programming efforts to insure compatibility and integration of all functional application areas (e.g.,

engineering manufacturing, finance, administration, sales) or technical components (e.g., operating systems, databases, I/O drives and communications). In addition to the management duties defined in level 4, the ability to define corporate information and computer systems objectives, including long-range planning and hardware/software selection is mandatory.

Step 6

Top Computing Management

This top level is represented by the individual who assumes total responsibility for the optimum use of the computing resource within an organization. In addition to control over the information systems and/or computing function, he or she will participate with other key company line and staff executives in shaping policy, plans or products.

Step 6

Top Computing Management

Step 5

Second Line Management

Step 4

First Line Management

Step 3

Project Leadership

Step 2

Systems Analysis & Senior Programming Analysis

Step 1

Programming & Programming Analysis

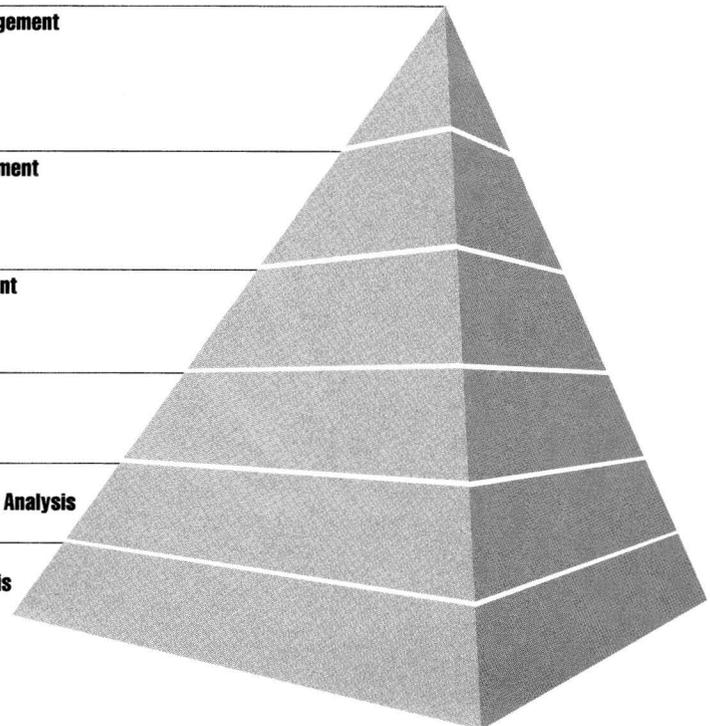


Exhibit III: Career Path to Top Computing Management

At levels 1 and 2, individual career success is almost exclusively dependent upon technical competence. At level 3, success will be evaluated not only on technical competence, but also on ability to communicate, motivate and direct the efforts of other professionals.

A basic shift in career emphasis must occur in order for a computer professional to achieve maximum personal development. The computer professional must begin to relate his or her computer expertise to the "needs of the business." As a career develops from level 3 through 6, this factor assumes increasing, and finally dominant, importance. The computer professional must gain a thorough knowledge and understanding of the organization's objectives, plans, operations, problems, competition, etc., in addition to remaining abreast of information systems technology. In short, one should evolve, at each successive level, into more of a "management generalist" as opposed to a "computer technician."

Career Planning Case Studies: Pitfalls and Progress

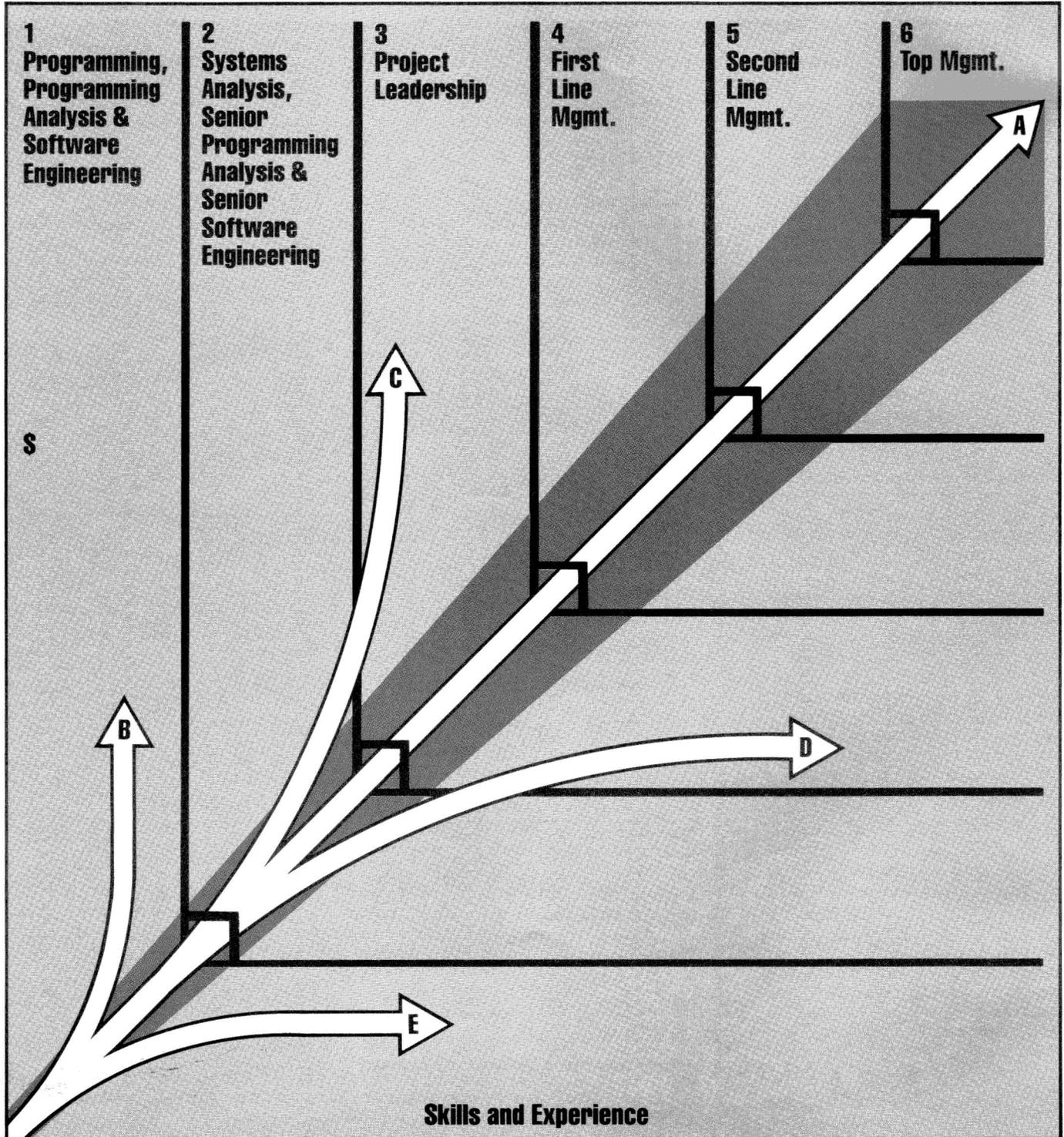


Exhibit IV: **The Career Planning Chart**

The Career Planning Chart illustrates the relationship between compensation level, skills gained and experience in the field. Depicted are the points in time, the transitional "windows," at which an individual typically passes from one responsibility level to the next. The key to career advancement is to recognize when that time has arrived and to move through the next window. Once specific skills of a certain level have been mastered one must move ahead. To do so too late can result in career stagnation or worse.

It is apparent that those persons who achieve the highest levels are those who recognize periods in their careers when the transition to the next responsibility level is needed. That is, there are transitional "windows" one must pass through in order to achieve success. The shaded area on the Career Planning Chart in Exhibit IV represents the ideal relationship between experience level and compensation. Persons within this area are in the mainstream of career development. The further one strays from this area, the more difficulty they will have in achieving success.

Person A on the Chart depicts the career of an individual who has passed through each transitional "window" at the proper time. This person successfully prepared for each succeeding step and then took the necessary action to achieve a move to the next level. In contrast, Persons B, C, D, and E, represent those who have made career planning errors typical of many professionals.

Persons B and C achieved an income level in excess of their marketable skills. Individual B deviated early and never reached the first transitional "window." Individual C, on the other hand, did not deviate until well into the senior levels. Although entering the level of Project Leadership, this person is now at an income level prohibitive of future management development. In both cases, the individuals involved at this point in time are worth more to their present employers than they are in the "marketplace." It is difficult for B and C to correct their situations, since doing so involves at best a lateral salary move. The result often means being dead-ended early on.

Typically, such situations occur due to overspecialization, and happen when companies recognize the critical skills of professionals at a particular point in time and compensate accordingly. It can also happen when individuals are "bought" by other companies for the same skills. B and C should have recognized the threat of overspecialization and taken proper steps to increase their exposure. While it seems important to be the "expert" in one or more professional skills, once a certain level of proficiency has been achieved, it is wise to seek more broadening experience at a time when salary level permits exploration.

The compensation of B and C may consist of:

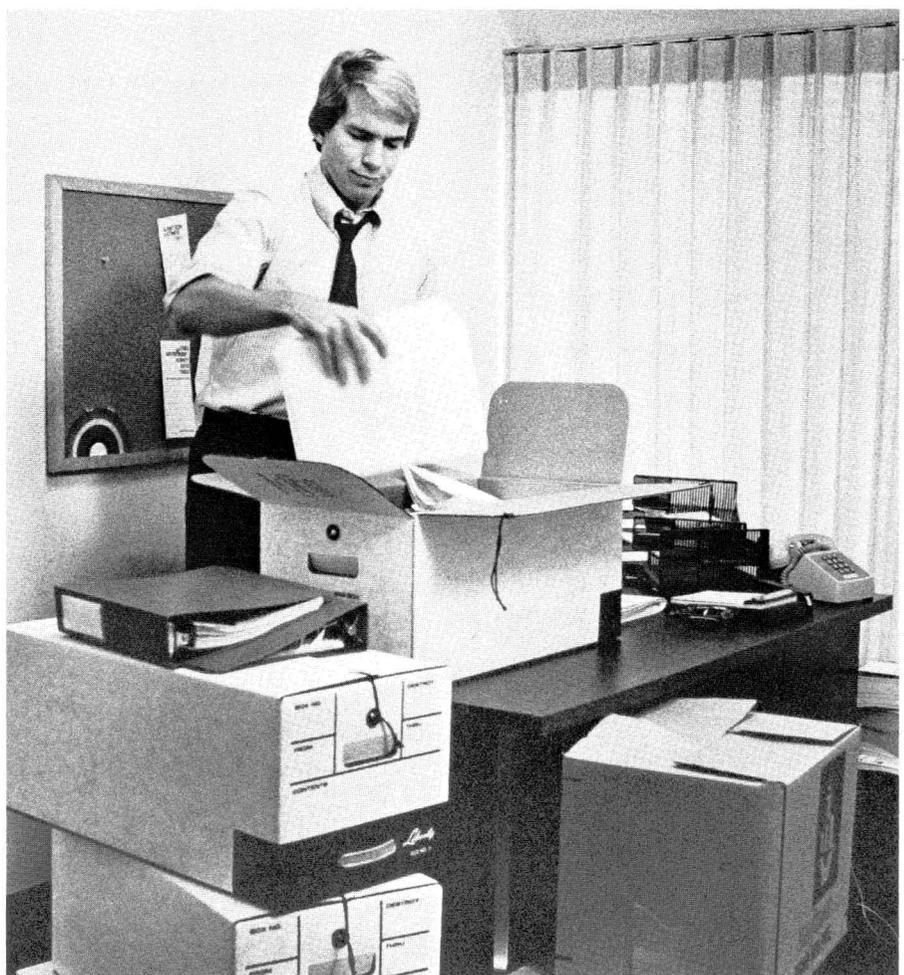
- "Intrinsic Value," which is roughly equivalent to the compensation available for their specific skills on the open market;
- "Specific Value," which is the added value they have to their organizations as a result of certain knowledge they have gained of their specific company environments;
- "Insurance Money," which volatile companies pay to attract and keep people who would not otherwise stay in typically insecure environments; and
- "Golden Handcuffs," where companies pay a special premium to highly valuable employees whom they feel they cannot afford to lose. Generally the latter two elements of salary structure result in taking a computer professional away from career progression.

Persons D and E have allowed themselves to stagnate; having repeated the same non-critical experiences many times over. E continued coding long after he or she should have moved into systems analysis. Consequently, the first "window" was not reached. The classic example of this is people who allow themselves to become permanently involved in maintenance programming. (Certainly maintenance programming is important and must be done, but as a permanent activity it will stifle career growth.)

D, though moving well through early levels has not developed necessary project control and supervisory skills to qualify for first-line management. D and E typically occur when an individual overstays a current position and feels that job security depends upon longevity or is generally apathetic about career progress. This condition is often found in the person who remains with an organization that is not growing or is shrinking. Such environments create "limited headroom"

since there are rarely positions created that represent promotional opportunities. Similar situations can result when a computer professional is passed over for promotion. Promoting the wrong persons may mean a long wait before the mistake is rectified, and during this delay valuable exposure is lost. Closely parallel to this is the case of a change in the organization's top computing management who may bring key assistants to fill positions which otherwise would be logical promotions for existing employees.

Finally, an additional hazard—economic recession—faces professionals not in the mainstream of career development: the threat of layoff. Critical skills possessed by B and C suddenly become in great supply on the open market and at lower cost. Likewise, since D and E have demonstrated either disinterest in their careers or the inability to progress, their duties may be assumed by others in the organizations who are more "career-oriented."



Source Edp: Your Partner in Career Planning



Even if one never makes a move outside his or her company, one must continually monitor personal development to ensure that he or she is in the mainstream of career development.

We believe that our counsel in career development—whether you should make a move or whether you should continue getting exposure where you are—is invaluable. Which is why we want you to know about us, and our services.

Source Edp has built a solid reputation in the computing profession for our broad knowledge, selectivity, and successful recruiting for our client organizations. We are an independent, non-franchised firm having contacts throughout North America via a network of more than 75 offices. We are pledged to a strict code of ethics and confidentiality enabling us to serve you in accordance with the highest standards of professional competence and integrity.

Most importantly, at Source Edp, you will talk with people who know what it's like to work in the computer field—people who can help you get where you want to go because they have been there themselves. Every Source Edp staff member has five to ten years or more of proven, diversified computing experience. Our backgrounds vary from software to management consulting; from marketing to systems and/or MIS management. Thousands of years of experience are available at Source Edp.

This experience and knowledge can make a big difference in your career. Source Edp can provide expert advice and assistance during every step of the Career Planning Cycle and help you evaluate where you are on The Career Planning Chart.

We believe that a computer professional must strive to remain in the mainstream to ensure maximum long-term growth. This is true whether a professional aspires to top management or some other level of responsibility or challenge.

Our computing knowledge combined with our day-to-day dialogue and interchange with hiring executives across the country allows us to remain abreast of the ever-changing structure of the profession. And we can help you define your position and goals within that structure.

After we get to know you—your background, skills and interests as well as your personal and professional goals—we can help you decide what would be best for you in the long run and advise you of any intermediate steps you might need to achieve your goal. We can assess your current position and define exactly what new exposure is needed to move forward. You will come to understand (and may be surprised at) some of the exciting career paths that may be open to you and what strategies in career planning can help you meet your goals.

Should a job change be indicated we can maintain your confidence while patiently and selectively evaluating new positions as they become available on the market—positions that will keep you in the mainstream of career development.

And throughout the entire process, we will maintain an objective viewpoint—not only in terms of evaluating and assessing your current status—but also helping you weigh and evaluate career options.

You need a sounding board in career planning and it should be an informed professional rather than a friend or spouse.

If you're thinking of making a move or just want to discuss your career prospects, simply call your nearest Source Edp office. You are never under any obligation, and since all expenses are paid by our client organizations, there is never any charge to you. All inquiries are held in strict confidence. Furthermore, if you don't have a resume prepared or yours is out-of-date, we'll be happy to develop one with you—also without charge.

We Speak From Experience: Our Executive and Management Staff

Leo Abramowitz is Managing Director of the New York City/Downtown office. He holds a B.S. in Mathematics from City College of New York. Prior to joining Source Edp, Leo served as Project Manager at the Federal Reserve Bank of New York. He gained his initial experience as a Programmer with Brooklyn Union Gas.

Raymond Anselmi is Managing Director of the Rochester, New York office. He holds a B.S. in Business Administration from Monmouth College. Prior to joining Source Edp, Ray served with Electronic Data Systems in a variety of positions including Programmer, Systems Analyst and Project Leader.

Margaret Bacon is Managing Director of the Los Angeles, California offices. She holds a B.A. in Economics from Douglas College. Prior to joining Source Edp, Marge was with Transaction Technology Incorporated as Project Manager and Group Manager. Previously, she was with Pacific Telephone and Telegraph as a Systems Analyst and Staff Analyst. She gained her initial experience with Control Data Corporation as a Programmer.

Carol Bates is Associate Director of the Torrance, California office. She holds a B.A. from Glassboro State College. Prior to joining Source Edp, Carol was Marketing Representative for Nixdorf Computer Corporation. Previously, she was a Sales Representative with Pertec Computer Corporation and a Sales Representative/Marketing Director for Collingswood Computer Corporation.

Barbara Beard is Managing Director of the Louisville, Kentucky office. She holds a B.A. in Mathematics from Vassar College. Prior to joining Source Edp, Barbara was Systems Project Manager for Kentucky Fried Chicken International. Earlier experience included positions as Supervising Senior for Peat Marwick Mitchell & Co. and as a Systems Analyst for MetriData Computing.

Dean Becker is Managing Director of the King of Prussia, Pennsylvania office. He holds a B.A. in Psychology from Franklin and Marshall College. Prior to joining Source Edp, Dean served as a Marketing Representative for Intel Corporation's Computer Systems Division and for IBM's Data Processing Division.

Douglas Bernard is Associate Director of the New Orleans, Louisiana office. He holds a B.S.B.A. degree in Economics from the University of Southwestern Louisiana. Prior to joining Source Edp, Doug served as Senior Sales Representative with Sperry Univac. Earlier experience was with Automatic Data Processing where he held various marketing and sales management positions.

John Blocher is Associate Director of the Tulsa, Oklahoma office. He holds a B.S. in Mathematics from Emporia State University. Prior to joining Source Edp, J.B. served as a Marketing Representative for Four-Phase Systems. Earlier experience was gained as a Sales Representative with Burroughs Corporation.

William Bostrom is Associate Director of the Syosset, New York office. He holds an M.B.A. in Management from Adelphi University and a B.S. in Electrical Engineering from Polytechnic Institute of New York. Prior to joining Source Edp, Bill was with IBM as a Marketing Manager. Previous positions with IBM include Regional Advisory Marketing Representative and General Systems and Data Processing Division Marketing Representative.

Gregory Bumgarner is Managing Director of the Downtown Dallas, Texas office. He holds a B.S. in Business Administration from Pittsburgh State University of Kansas. Prior to joining Source Edp, Greg was a Marketing Representative for Computer Sciences Corporation. Previous positions include Customer Systems Representative for CSC, and Programmer/Analyst for General Dynamics.

Ronald Burgy is Managing Director of the Englewood, Colorado office. He holds a B.A. in Political Science from The Citadel. Prior to joining Source Edp, Ron was Marketing Manager for Intercomp Incorporated. Previously, he was with Electronic Data Systems Corporation as a Sales Representative and Marketing Manager.

We Speak From Experience: Our Executive and Management Staff (Continued)

Robert Earl is Managing Director of the Irvine, California office. He holds a B.S. in Business Management from California State Polytechnic University. Prior to joining Source Edp, Bob was in Data Processing Management with Allstate Insurance Company. Previous experience was gained at IBM as a Systems Engineer and Marketing Representative.

Joseph Eiseman is Associate Director of the Morristown, New Jersey office. He holds a B.S. in Accounting from Brooklyn College. Prior to joining Source Edp, Joe was the Assistant Vice President and Director of MIS for Integrity Insurance Company. Earlier experience includes positions as Systems Analyst for SIAC and Financial Analyst for Bache, Halsey, Stewart.

David Fell is Managing Director of the Pittsburgh, Pennsylvania office. He holds a B.A. in Economics from Nottingham University, England. Prior to joining Source Edp, David was a Marketing Representative for National CSS. Earlier experience included positions as a Marketing Consultant and Senior Systems Analyst with Mobil Corporation.

David Flansbaum is Associate Director of the Walnut Creek, California office. He holds an M.B.A. from Pepperdine University and a B.S. in Industrial Management from Georgia Institute of Technology. Prior to joining Source Edp, Dave was Director of Systems Development for the Transportation Divisions of Itel Corporation. Earlier experience included positions as Systems Project Director with Decimus Corporation, Project Leader for Stauffer Chemical Company, and Systems Engineer with Electronic Data Systems.

Thomas Freeh is Managing Director of the Northwest Atlanta, Georgia office. He holds a B.S. in Management and a B.A. in Psychology from Purdue University. Prior to joining Source Edp, Tom was a member of the Regional Customer Support Staff for IBM's Data Processing Division. Earlier experience was gained at IBM as a Systems Engineer.

Gerald Gonyo is Managing Director of the Edison, New Jersey office. He holds an M.B.A. from Seton Hall University and a B.A. in Economics from the University of Virginia. Prior to joining Source Edp, Jerry served as a Senior Consultant for Olivetti, Systems Manager for Fedders, Project Leader for PICA Data Systems and Programmer/Analyst for American Can.

Jerry Goodman is Managing Director of the Princeton, New Jersey office. He holds an M.B.A. from Fairleigh Dickinson University and a B.A. in Sociology from Syracuse University. Prior to joining Source Edp, Jerry served as a Project Manager, Project Leader and Systems Analyst with Johnson & Johnson.

Mark Gordon is Managing Director of the Paramus, New Jersey office. He holds an M.B.A. in Computer Methodology from Bernard Baruch Graduate School of Business and a B.A. in Mathematics from Fairleigh Dickinson University. Prior to joining Source Edp, Mark served as a Senior Systems Analyst for Exxon Chemical Company. Earlier, he was a Systems Analyst for Keane Associates and for Panasonic.

Hank Grant is Associate Director of the Clifton, New Jersey office. He holds a B.S. in Business Administration from the College of Insurance. Prior to joining Source Edp, Hank served as Director of Corporate Data Processing at Brown and Williamson Industries. Earlier, he was Project Leader with Blue Cross/Blue Shield, Senior Analyst with American International Group and Programmer/Analyst with Royal Globe.

Herbert Green is Associate Director of the Baltimore, Maryland office. He holds a B.S. in Industrial Relations from the University of Maryland. Prior to joining Source Edp, Herb served as Branch Sales Manager and Marketing Representative for Honeywell Information Systems. Previously, he held various marketing positions with Burroughs Corporation including Account Manager, Zone Manager and Product Manager.

Martin Grolnic is Managing Director of the McLean, Virginia office. He holds a B.S. in Accounting from Temple University. Prior to joining Source Edp, Marty was District Manager for Advanced Systems, Inc. Earlier experience was gained with Honeywell, Inc. as a Sales Representative and Marketing Manager and with RCA Corporation as a Systems Supervisor and Product Planner.

Jim Grossman is Associate Director of the Wichita, Kansas office. He holds an M.B.A. from the University of Missouri and a B.A. in Political Science from the University of Kansas. Prior to joining Source Edp, Jim served as a Marketing Representative and Territory Manager for Burroughs Corporation.

Doug Hartwick is Managing Director of the Nashua, New Hampshire office. He holds a B.S. in Mathematics from Villanova University. Prior to joining Source Edp, Doug was a Branch Manager and Marketing Representative for Wang Laboratories. Earlier, he was a Project Leader and Programmer/Analyst with Nashua Corporation and Programmer/Consultant with Peat Marwick Mitchell & Co.

Robert Hartzler is Associate Director of the St. Paul, Minnesota office. He holds a B.A. in Economics from the University of Michigan. Prior to joining Source Edp, Bob was a Systems Marketing Representative with the Service Bureau Company. Previous experience was gained as a Systems Analyst with the First National Bank of Minneapolis.

Robert Hefner is Managing Director of the Hartford, Connecticut office. He holds a B.S. in Insurance from the University of Rhode Island. Prior to joining Source Edp, Bob was with Electronic Data Systems as Account Manager, Project Leader, Systems Engineer, and Programmer/Analyst.

Edward Johnson is Associate Director of the Willowdale, Ontario office. He holds an Honours B Math degree from the University of Waterloo. Prior to joining Source Edp, Ed was a Sales Representative and Applications Consultant with Tymshare Canada. Previously, he was a Technical Consultant for SDL.

Stephen Kelly is Associate Director of the Nashville, Tennessee office. He holds a B.S. in Industrial Engineering from Tennessee Technological University. Prior to joining Source Edp, Steve was a Sales Engineer for Tennessee Electric Motor. Previously, he was a Marketing Representative with Burroughs Corporation and Industrial Engineer with Ross Gear, a division of TRW.

Dianne King is Associate Director of the Mississauga, Ontario office. She holds an M.B.A. from York University and a B.Sc. in Mathematics from McMaster University. Prior to joining Source Edp, Dianne was associated with IBM Canada in a variety of positions including Marketing Representative, Systems Engineer, Systems Analyst, Programmer/Analyst, and Computer Operator.

Dennis Klembara is Managing Director of the Northwest Dallas, Texas office. He holds an M.S. in Industrial Management from the Georgia Institute of Technology and a B.S. in Mathematics from Youngstown State University. Prior to joining Source Edp, Dennis was a Data Processing Management Consultant for Ernst & Whinney. Earlier experience was gained as a Systems Engineer with Electronic Data Systems.

Mark Kochenderfer is Managing Director of the Phoenix, Arizona office. He holds an M.A. and a B.S. in Marketing from Ball State University. Prior to joining Source Edp, Mark was General Manager and MIS Manager of Master Craft. Earlier experience was gained as Manager of Corporate Systems Development with Samsonite Corporation.

J. Blake Lewis is Managing Director of the Houston, Texas office. He holds a B.B.A. from the University of Houston. Prior to joining Source Edp, Blake served as Manager of Systems Planning for Johnson-Schlumberger. Previously, he was a Manufacturing Systems Analyst for Texas Instruments and a Programmer at Earth Science Computing.

John Long is Managing Director of the Tampa, Florida office. He holds a B.S. in Industrial Technology from Mississippi State University. Prior to joining Source Edp, "Buster" was associated with Sperry Univac, most recently as Sales Manager and earlier as Systems Manager. Previous experience was gained with RCA Corporation as District Systems Manager and Systems Representative.

Robert Macaluso is Managing Director of the Stratford, Connecticut office. He holds an M.B.A. from the University of Connecticut and a B.S. in English from Fairfield University. Prior to joining Source Edp, Bob served as Manager of Information Services at Raybestos-Manhattan, Manager of Systems and Programming at Famous Artists International, Systems Analyst at Olin-Winchester Group and Project Leader at the Armstrong Rubber Company.

Christine Magraken is Managing Director of the Toronto, Ontario office. She holds an M.B.A. and a B.A. in English from the University of Toronto. Prior to joining Source Edp, Chryse served with IBM as a Systems Engineer. Earlier experience with IBM was gained as an Information Systems Specialist.

Thomas Mayer is Associate Director of the Cleveland, Ohio office. He holds a B.S. in Economics from Bowling Green State University. Prior to joining Source Edp, Tom held positions as Account Executive at Tigor Mortgage Insurance and Sales Representative at Hewlett-Packard. Earlier experience was gained at Burroughs Corporation as a Territory Manager and Technical Representative.

Steven McMahan is Managing Director of the Boston, Massachusetts office. He holds a B.A. in International Politics from Boston College. Prior to joining Source Edp, Steve served as a Marketing Representative for both Itel Corporation and IBM.

Blaine Millet is Managing Director of the Seattle area office located in Bellevue, Washington. He holds an M.B.A. in Marketing/Finance and a B.S. in Biology from the University of Utah. Prior to joining Source Edp, Blaine was a Marketing Representative with IBM's Data Processing Division.

Mike Mindel is Associate Director of the Greenbelt, Maryland office. He holds an M.S. in Applied Mechanics from the University of Pennsylvania and a B.S. in Engineering Mechanics from Johns Hopkins University. Prior to joining Source Edp, Mike was a Senior Account Manager with Martin Marietta Data Systems. Earlier, he was a Branch Support Manager for Computer Sciences Corporation.

Larry Moore is Managing Director of the San Francisco, California office. He holds a B.S. in Finance from the University of Idaho. Prior to joining Source Edp, Larry was Branch Marketing Manager with Boeing Computer Services. His initial experience was gained as a Customer Support Representative with NCR and as a Programmer/Analyst with Boeing.

Steve Moore is Managing Director of the Indianapolis, Indiana office. He holds a B.S. in Business Administration from Ohio State University. Prior to joining Source Edp, Steve was Data Processing Manager for IRD Mechanalysis, Inc. Earlier, he was a Systems Development Manager with Kobacker Stores, Inc. and a Systems Analyst with Arthur Teachers Corporation.

Cynthia Nelson is Associate Director of the Akron, Ohio office. She holds a B.S. in Marketing and Management from Miami University of Ohio. Prior to joining Source Edp, Cindy was an Account Representative with Wang Laboratories. Previously, she was a Marketing Specialist for Burroughs Corporation.

Arthur Nemiro is Associate Director of the North Miami Beach, Florida office. He holds a B.S. in Accounting from Strayer College. Prior to joining Source Edp, Arthur was the National Sales Manager of Auto-TRAK, Inc. Earlier experience included positions as Product Marketing Manager for Datatel, Inc. and Eastern Area Manager with Dyatron Corporation. He gained his initial experience as a Systems Analyst with the Singer Corporation.

John O'Hara is Managing Director of the New York City/Grand Central Station office. He holds a B.S. in Chemical Engineering from Manhattan College. Prior to joining Source Edp, John was with IBM as General Systems Division Program Manager.

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We Speak From Experience: Our Executive and Management Staff (Continued)

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