

INFORMATION SYSTEMS PLANNING REPORT  
SERVICES SECTOR

DECEMBER 1986



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SERVICES SECTOR

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SERVICES SECTOR

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## I MAJOR ISSUES

### A. DRIVING FORCES

- The services sector is composed of a number of widely varying types of businesses with the common characteristic that they all provide services for a fee or on a contractual basis rather than producing tangible goods. Another common characteristic is that they are all participating in a massive transition in the U.S. from an industrial- to a service-oriented economy. The segments covered in this report include the following:
  - Accounting.
  - Legal services.
  - Architectural and engineering services.
  - Real estate.
  - Business services.
    - Business consulting.
    - Advertising.
    - Data processing and computer-related professional services.



- The services industry has seen higher than average growth over the last decade with employment increasing 250% from 1974 to 1984.
- This sector is driven by people and their ability to render services, so computer applications focus on improving or speeding personal productivity.
- Since the sector is composed of diverse segments, the forces determining the relative prosperity and disposition to automation vary from one segment to the next within the services sector.
  - Accounting. The general economic climate has a relatively small impact on accounting since all businesses need auditors in good times and bad. But the profession is changing due in large measure to the personal computer. The accountant's role is changing to a more sophisticated analytical and advisory role than was the case before personal computers. It will continue to change in this direction as new applications and new hardware configurations make new services possible.
  - Legal services. The legal profession is a well established, conservative occupation and is largely immune to the peaks and valleys of economic cycles. It is being both pushed and pulled by the liability insurance crisis and the current "sue-if-it-isn't-perfect" trend. Lawyers as a group are conservative with respect to technology and often do not perceive the benefits of automating to reduce their unwieldy volumes of paperwork, even though the tasks of keeping legal records and filling out forms are excellent candidates for automation.
  - Architectural and engineering services. Architectural and engineering services are dependent on the general economic climate. Currently, vacancy rates in urban and suburban office space are high, but developers continued to build in 1986 to take advantage of low interest rates and to beat tax reform which they fear will make real estate



development more expensive in the near future. Residential building was also up in 1986, albeit only 6%. In many cases, engineering services include development of software or complete computer systems intended to perform engineering tasks. Demand for these services, like demand for all computer services, is high and growing rapidly.

- Real estate. This segment covers a number of activities related to the management, financing, buying, and selling of real estate. Each of these activities has its own set of automation requirements. Property management firms need to track the status and billing of all leases, while commercial and residential real estate brokers, as well as developers, need to follow the marketplace. What properties are available? Is the market expanding or contracting? Is this the proper time to purchase and develop a particular lot? A few on-line data bases devoted to information on the real estate market are currently available to help answer these questions. The other major market for computer services in real estate is property management software for commercial and residential property. These packages include modules for tracking tenant information and lease status as well as billing and accounting modules.
  
- Business services. The business services segment is also affected relatively little by cyclical changes in the economy. This segment includes data processing services which is a weak spot in an otherwise thriving sector. The demand for processing services has dropped as the price of hardware has dropped, making in-house computing feasible for nearly all companies. The slack in this area, however, has been taken up by increases in demand for software development and systems integration. Major computer services markets in the other two segments of business services--business consulting and advertising/PR--include on-line data bases containing general business and news information, spreadsheets, and graphics/desktop publishing systems.





- The current liability insurance crisis is affecting all segments of the service sector. Many companies are taking, or will take, the defensive action of curtailing high risk services in which an error or omission could lead to a lawsuit (e.g., in architectural and engineering services--faulty design leading to unsafe buildings or products; in legal services--errors in recordkeeping leading to missed statute of limitations deadlines). This results in an environment hostile to innovation and risk and affecting computer services in at least two ways--companies will implement proven applications to minimize human error and will avoid new technology and new products that have not been thoroughly proven by practical use.
- Exhibit I-1 summarizes the driving forces of the services sector.

#### B. ISSUES AND OBJECTIVES

- Again, the relative importance of certain issues and objectives varies from one segment of the services sector to the next, but we can make the generalization that the primary goal of automation in this industry is to improve the productivity of individuals and groups of individuals performing services in the company markets.
- The fundamental IS department issues are as follows:
  - Obsolescence. It is generally accepted that computer hardware becomes obsolete every three years. IS managers should take this into consideration and realize that budgeting for IS is a continuous task rather than a one-shot effort.
  - Hardware connectivity and software integration. Connected hardware facilitates communication of information throughout an organization or



**EXHIBIT I-I**

**SERVICES  
DRIVING FORCES**

- **Growth of Services Industry**
- **Personal Productivity**
- **New Technology**
- **Liability Insurance Crisis**

III-SI-5



between organizations. Integrated software makes data available to a number of applications without duplicated data entry. Perfect connectivity and integration are rare, and the shortcomings of current technology are obstacles to full implementation of the ideal connected system.

- Education. The support and training provided by vendors should be a major consideration in selecting a system. There is always a learning curve with implementation of a new system, and managers must expect an initial decrease in productivity before the benefits of a new system begin to show. The period of decreased productivity can be minimized by effective training and good support.
  - Technology. Technology is changing so quickly that it is difficult for partners, principals, and managers to keep up with the options available to them, but it is important that they be versed in the general direction of developments in computer systems for their industries. This will enable them to understand and identify the possible benefits of new systems.
  - Attitude of management. In many well established companies, management is an obstacle to successful implementation of computers. Some managers simply do not see the potential benefits of automating or do not believe computers can be cost-effective.
- In addition to the above issues, there are some that apply to individual service segments.
    - Accounting, legal services, real estate, and business services all use on-line data bases to speed research. A common complaint among those companies using more than one data base is the lack of a standard command language for conducting searches. Each data base has its own command language, making it necessary for users to relearn each



set of commands for each session. This is a problem for all users except those who use a wide variety of data bases frequently.

- Exhibit I-2 summarizes the major IS issues and objectives for the services sector.

### C. IMPACT OF TECHNOLOGY

- In all service segments, technology has drastically reduced detail work, eased administrative duties, and provided managers with a firmer grasp of the company's activities. In addition, it has made possible certain kinds of analysis (e.g., computer simulation, statistical analyses requiring large numbers of calculations) that were not possible or were extremely tedious and inaccurate in the past.
- New technology will have its greatest impact on those segments of the services industry which will benefit from sharing large volumes of data without having to reenter it. Business consultants, accountants, and lawyers will be the biggest benefactors as routine exchanges of information with clients will increase in speed. The increase in speed will be due to new developments in communications, hardware connectivity, and software integration. For example, accountants typically travel to clients' sites frequently to look at the books and pick up data for later analysis. With the accounting firm's computers fully connected to the client's computers and with spreadsheets ready to accept new data over data lines, accountants will use the time they save to interpret the results of spreadsheet analysis and to take on a more advisory relationship with the client. Accountants will also be able to increase their client base since they will devote less time to each individual client.





**EXHIBIT I-2**

**SERVICES  
ISSUES AND OBJECTIVES**

- **Obsolescence**
- **Connectivity and Integration**
- **Education**
- **Attitude of Management**

III-SI-8



- In the legal services business huge volumes of paperwork can be made more manageable by computers. Standard word processing improves productivity in this text-intensive field, but computers can also be applied to recordkeeping, scheduling, and production of legal forms. In some cases, the liability insurance crisis has been the impetus for implementing automation. Lawyers can be sued for liability if they should miss a statute of limitations deadline or misplace records. Automated office systems including scheduling and record-keeping functions can help legal offices defend themselves against this.
- Architectural and engineering services companies use computers for both administrative and technical tasks. CAD systems improve the quality of work while project management systems simplify the otherwise overwhelming job of tracking the status of all projects in progress.
- Property management software enables large property management firms to track the status of all leases. The real estate business will also benefit from on-line data bases and spreadsheet applications. On-line data bases will help them watch the market and keep up with what properties are available. Spreadsheet applications will enable brokers to perform extensive and complex analyses involving many properties and will make it possible to present statistics to potential clients quickly and accurately.
- Exhibit I-3 summarizes the major technology trends in computer services and their impact on the services sector.



EXHIBIT I-3

**SERVICES  
IMPACT OF TECHNOLOGY**

<b>TECHNOLOGY TREND</b>	<b>IMPACT</b>
<b>Software Integration and Hardware Connectivity</b>	<b>Reduces Redundant Data Entry</b>  <b>Increases Efficiency of Data Analysis</b>
<b>On-Line Data Bases</b>	<b>Simplify and Speed Research</b>



## II APPLICATIONS

- Implementation of new systems in the services sector will involve new configurations of hardware and new ways of structuring software as opposed to development of entirely new applications.
- Micro/mainframe links are being implemented by some companies in the services sector to improve personal productivity. The effect is to combine the flexibility and consistently quick response of a personal computer with the storage capacity of a mainframe.
- Project management applications assist architectural/engineering firms by scheduling the various component tasks of a larger job and by tracking the status of all projects in progress.
- Property management applications maintain tenant information and provide billing and accounting functions for commercial and residential real estate managers.
- On-line data bases are widely used in the services sector. Currently, on-line data bases are available with information relevant to almost any profession or discipline. Most are delivered through telephone modems or dedicated terminals, but many data base providers are considering adding optical disks as an alternative delivery format. Disks would be delivered to clients for use on their own or rented hardware and would be updated periodically.





- Applications for the legal services sector include, in addition to on-line data bases, recordkeeping applications and modified word processing programs which store legal forms electronically and allow lawyers to simply fill in the blanks when preparing legal documents.
- The primary function of data bases in services is to speed the process of locating sources of information on a particular topic. In the cases of real estate, and sometimes law, the data base is itself the needed source, but it is more often used as a tool to compile lists of sources to be found elsewhere.
- Advertising firms are using desktop publishing to prepare ad copy. Although the Apple Macintosh is the most popular vehicle for desktop publishing, this is a rapidly expanding market with many new entrants, so competition will be stiff. The development of the laser printer has broken open the desktop publishing market by making very high quality print and graphics available through microcomputers.
- Exhibit II-1 lists the major applications used by the services sector.



**EXHIBIT II-1**

**SERVICES  
APPLICATIONS**

- **Micro/Mainframe Links**
- **Project Management**
- **Property Management**
- **Desktop Publishing**
- **Billing and Recordkeeping**
- **On-Line Data Bases**

III-SI-13







### III BUDGET ANALYSIS

- The services sector's IS budgets are expected to show stronger than average growth in 1987. This is consistent with stronger than average growth in employment and revenues for the services sector.
- Exhibit III-1 shows the 1986 budget distribution and projects the growth of budget categories in 1987.
- The categories expected to show the greatest growth in 1987 are communications and hardware. This reflects the industry's drive to bring computing in-house and to connect and integrate applications both internally and externally to provide better service to clients.
- The areas of smallest growth are outside processing and minicomputers. Companies are bringing, or have already brought, data processing in-house and are apparently finding no place for minicomputers in their hardware configurations. Micro/mainframe links, local area networks, and increasing power of PCs are squeezing the mini out of its mid-ground niche.
- No respondents in this sector expected IS budgets to decrease, although the majority (57%) expected only slight growth or no growth at all.
- Over 45% of the 1986 budget was devoted to purchasing new hardware. Personnel costs followed hardware, capturing 27.9% of overall expenditures.





## EXHIBIT III-1

**1986 BUDGET DISTRIBUTION AND  
1986/1987 CHANGES IN THE SERVICES SECTOR**

BUDGET CATEGORY	1986 PERCENT OF I.S. BUDGET	1986-1987 EXPECTED BUDGET GROWTH
Personnel Salaries and Fringes	27.9%	2.7%
Mainframe Processors	26.3%	18.8%
Minicomputers	.5%	0%
Microcomputers	8.9%	18.8%
Other Hardware	9.6%	17.8%
<b>Total Hardware</b>	<b>45.3%</b>	<b>18.2%</b>
Data Communications	3.1%	10.9%
External Software	14.1%	8.8%
Professional Services	.9%	2.4%
Turnkey Systems	1.3%	4.2%
Software Maintenance	4.0%	4.5%
Hardware Maintenance	2.7%	0%
Outside Processing Services	.7%	1.7%
<b>Total</b>	<b>100.0%</b>	<b>10.8%</b>



- Approximately 65% of software development staff in this sector will be assigned to developing new applications while the other 35% will be assigned to maintaining and enhancing existing systems.

