U.S. INFORMATION SERVICES
MARKET ANALYSIS PROGRAM

Accounting

Information Services Opportunities in Cross-Industry Markets

1992-1997

INPUT®

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EXCERPT

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Abstract

This document extracts Chapter III, *Accounting*, from INPUT's full report, *Information Services Opportunities in Cross-Industry Markets, 1992-1997*. The excerpt contains the *Introduction* (Chapter I) and *Accounting* (Chapter III) chapters from the full report, and also provides Appendix A, *Definition of Terms*, and the market-specific financials from Appendix B, *Forecast Data Base*.

The excerpt does *not* contain either the *Executive Overview* or *Conclusions and Recommendations* chapters from the full report, since these sections address all cross-industry market sectors at an overview level.

The extract is intended for readers who have an interest in a single cross-industry market sector. If data and analysis of other cross-industry market sectors is required, it can be obtained by purchasing the full report, *Information Services Opportunities in Cross-Industry Markets, 1992-1997*.

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Exhibits

Introduction

A
Purpose and Organization

This report is part of a series of market analysis reports written each year by INPUT on industry and cross-industry sectors of the U.S. information services industry. This report analyzes the cross-industry sectors of the U.S. information services industry.

1. Purpose

The objectives of this report are to:

- Forecast user expenditures during the next five years on information services for each of the seven cross-industry sectors
- Identify and discuss user department directions as they relate to each of the seven cross-industry sectors
- Identify technological issues and trends that are driving the use of information services for the cross-industry sectors
- Discuss the competitive environment and profile leading vendors in each of the cross-industry sectors
- Summarize findings through comparing and contrasting the cross-industry sectors

The report provides readers with insights and information that will help them:

- Review the forces shaping their markets
- Develop internal corporate financial projections

- Identify new markets and product and services opportunities
- Assess the competitive trends
- Determine potential market directions
- Assist in prioritizing investments

2. Organization

This report is organized as follows:

- Chapter II is an overview of the cross-industry sectors of the information services market.
- Chapters III through IX are individual discussions of each of the seven cross-industry sectors. Within each chapter there are five sections.
  - Section 1, *Definitions*, introduces and defines each of the cross-industry sectors.
  - Section 2, *Information Services Markets*, presents the information services market forecasts by delivery mode and submode for each of the seven cross-industry sectors.
  - Section 3, *User Department Directions*, discusses and analyzes interviews with end-user organizations representing the seven cross-industry sectors.
  - Section 4, *Trends/Technology Ratings of Importance*, provides vendor and user respondent ratings of the relative importance of eight technologies.
  - Section 5, *Vendors and Competitive Environment*, discusses the competitive environment for information services within each of the cross-industry sectors and profiles leading and emerging vendors.
- Chapter X summarizes the conclusions of Chapters III through IX.
- Appendix A—*Definition of Terms*—provides definitions and descriptions of market structures and terms used throughout INPUT's reports.

- Appendix B—*Forecast Data Base*—provides a detailed forecast by delivery mode for each cross-industry sector. It also contains a reconciliation to the previous year's cross-industry sector reports.

B
Scope and Methodology

This report addresses the U.S. information services industry in seven cross-industry sectors. It includes only user expenditures that are noncaptive (generally available to vendors). Many large organizations have portions of their information services requirements satisfied by internal divisions. The resulting expenditure is not available for competitive bid by the general vendor community and is not included in INPUT's projections.

1. Cross-Industry Sector Definitions

INPUT defines cross-industry information services as packaged functional application solutions that are used by multiple industry sectors. In other words, these application solutions are not verticalized. For example, accounting, and planning and analysis are functions that are similar enough across all industries to be considered markets in their own right for nonverticalized application solutions.

The seven cross-industry sectors identified by INPUT are:

- Accounting
- Human Resources
- Education and Training
- Engineering and Scientific
- Office Systems
- Planning and Analysis
- Sales and Marketing

2. Delivery Mode Definitions

Cross-industry information services are delivered via applications software products, turnkey systems and transaction processing services. Management support information services such as systems operations, systems integration and professional services, information delivery services and systems software are excluded from cross-industry consideration.

For a more complete discussion of INPUT's information services industry structure and market sector definitions, please refer to the separate volume, INPUT's *Definition of Terms* found in the volume I binder of the 1992 Market Analysis Program reports.

3. Methodology

Data was collected and analyzed from in-depth telephone interviews with 37 vendors and 18 user departments representing all cross-industry sectors. In addition, INPUT's library was used as an information resource, as were the results of previous INPUT reports on key aspects of the information services industry.

C
Forecast Assumptions

In developing the five-year forecasts, INPUT has incorporated current economic assumptions regarding the outlook for the U.S. economy as a whole.

- The GNP and GNP deflator growth rates used in INPUT's market projections are from the CONSENSUS forecast of the Blue Chip Economic Indicators of Sedona, Arizona. The Blue Chip CONSENSUS forecast is derived from a panel of economists representing leading financial, industrial, and research firms across the U.S. and has a 13-year track record of balanced and accurate projections.

- The economic situation is showing signs of improvement and its impact on the information services market will be more favorable in 1992 and beyond than it was in 1991.

1. Economic Overview

The year 1991 was one in which the recession was expected to end, the recovery to start, and the ambiguities of an uncertain economy to gradually disappear. The end of the Middle East crisis brought a brief euphoria, as American troops, victorious in Iraq, returned home to hopes that the end of the conflict would "jump-start" the economy. Some encouraging signs were seen, but by year-end 1991, the U.S. economy was still sluggish, with no clear signs of a near-term sustainable recovery.

Phrases such as "all the necessary pieces to initiate and sustain a recovery are in place" have been common in the media, but as late as May 1992, the hoped-for sustainable upturn in the economy is just starting to be seen. Few disagree that a return to economic growth will happen, but opinions vary widely as to when a steady, sustainable turnaround will be solidly assured, how quickly the economy will rebound, and what the new growth rates will be for the country, the various industries and the financial resources that fuel the economy.

At present, economists are expecting an inflation-adjusted gross domestic product (GDP) to increase 2.8% from the fourth quarter of 1991 to the fourth quarter of 1992, and about the same increase in 1993. This will be the best economic performance in four years, but it is only half the average pace recorded in the initial years of previous recoveries.

2. Economic Impact

Official or unofficial, recession in the U.S. finally ended a decade of largely uninterrupted economic growth.

Economic growth is significant because the economy, as well as the overall size of the information services industry, is a significant factor in the user expenditure level for information services and software products. For example:

- The inflation rate of the past few years has been much more modest than in the mid-1980s and, as noted above, is expected to continue at modest levels. Because INPUT's forecasts and market sizes are in current dollars, lower inflation means lower growth.

- Real economic growth had been modest over the few years prior to the economic slowdown. As a result, deferred and canceled expansion plans in all industry sectors have slowed the expansion of information services expenditures. A 2.8% increase per year in the GDP for 1992 and 1993 is not likely to change this condition.

- The trend toward shifting information processing to smaller computers lowers the software products investment, based on current pricing practices. Thus, the quantities of software products sold increase, but revenue levels grow at a more modest rate.

The net economic influence on the cross-industry sectors for information services is that the slowdown in growth and constraints on budgets seen over the last two years will not appreciably change over the next two years.

Businesses that use cross-industry information services will still be dealing with their own market, product and organizational uncertainties, and although such an environment offers many opportunities for the use of new products and technologies, users are expected to continue their tendency toward cautious change and growth, and strong expense controls.

D
Related Reports

Related reports of possible interest to the reader include:

1. U.S. Markets

- *U.S. Application Solutions Market, 1991-1996*
- *U.S. Processing Services Market, 1991-1996*
- *U.S. Industry Sector Markets, 1991-1996* (15 reports on all major industry sectors, e.g., insurance)

2. European Markets

- *The Western European Market Forecast for Computer Software and Services, 1991-1996*
- *Trends in Processing Services—Western Europe, 1991-1996*

Accounting

A
Definitions

The accounting cross-industry sector consists of products and services bought by multiple industry sectors to serve functions such as the following:

- General ledger
- Accounts payable
- Accounts receivable
- Billing/Invoicing
- Costing
- Fixed assets
- International accounting (currency conversion, value-added taxation, and consolidation)
- Purchasing
- Taxation

Related applications covered in other sectors include:

- Financial modeling (see the planning and analysis cross-industry sector, Chapter VIII)
- Sales management and order entry (see the sales and marketing cross-industry sector, Chapter IX)
- Payroll and personnel (see the human resources cross-industry sector, Chapter IV)

Accounting products and services that are developed and sold to specific industries are included in specific industry sector reports such as banking and finance, telecommunications, or insurance.

B

Information Services Markets

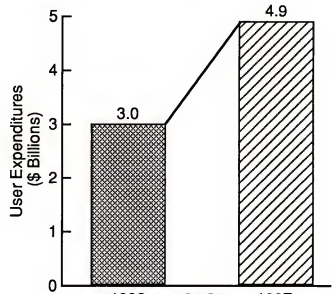
Accounting is the largest cross-industry sector, representing some 20% of the total of all expenditures on cross-industry information services. Two reasons for this large size are:

- The accounting function lends itself easily to computerization and was among the first business functions to be computerized.
- In-house development of accounting applications software was a more viable option in the early 1980s and before than it is today. Now developing a full-fledged accounting solution from the ground up is prohibitively expensive to do in-house, and the issue has become whether to purchase a cross-industry package or an industry-specific package.

INPUT's overall forecasts for accounting cross-industry sector information services (Exhibit III-1) and each of the delivery modes (Exhibit III-2) are the same as last year's forecasts.

EXHIBIT III-1

Accounting Cross-Industry Sector Information Services Market, 1992-1997



Growth for the accounting cross-industry sector will be driven by the following factors:

New product availability—Compared to last year, INPUT observes more vendor activity in developing and introducing new downsized financial and accounting solutions that take at least part of the accounting function off the mainframe, which means replacement of existing products.

Client/server activity in the accounting cross-industry sector has become more evident over this last year as well. Various versions of client/server software products are under development and are beginning to be offered by the major players. Several examples are described in Section E of this chapter.

User reluctance to migrate to new solutions—Users need new accounting solutions, but they have been slow to buy them (see Section C of this chapter). For years, people have been wary of changing what is often considered the foundation of their business systems. Because accounting is such a pervasive function, changing an accounting system impacts virtually all aspects of a corporation's information environment.

Companies that are in rapidly changing competitive environments and markets, or that are undergoing restructuring, may be more likely to update accounting systems first. Companies that are undergoing international expansion are also most likely to purchase new multinational accounting applications software products.

The transition to new accounting solutions will be painful. INPUT believes that well-conceived product migration strategies are a key to continued healthy growth in expenditures throughout the 1990s. Another key to growth and vendor success is providing assistance to customers in the form of systems integration, education and re-engineering services.

New pricing schemes—Client/server and downsized products will usher in new pricing schemes, including pricing based on number of users rather than size of platform. INPUT believes that new pricing schemes may have a negative impact on the forecasts. On one hand, new and more products will be sold, but on the other hand, they are likely to be lower priced. Given the reluctance of this cross-industry sector user base to migrate to new solutions, there may not be enough new sales in the short term to make up for the lower prices.

Market specificity—Although overall expenditures on cross-industry accounting and financial applications software products are at least twice as large as industry-specific solutions, according to vendors specialized packages are the faster growing area, primarily because individual vertical sectors are less saturated.

- Many vertical-industry accounting packages exist that are targeted for one—and only one—industry sector. An example is a hotel accounting software solution that includes functions for front-desk reservations, credit card acceptance, settlement, authorization, and back-office bookkeeping.

- Industry-specific accounting packages will continue to be in demand, especially where there is much—or unusual—regulation, such as in defense contracting and nonprofit organizations. New government accounting software products have been introduced this last year by Ross Systems, for example; American Software also has accounting systems specific to local and state agencies.

- Banking is another area requiring industry-specific accounting solutions; strict regulations and specific operational requirements force most institutions to purchase specialized industry-specific software.

INPUT believes that the need for specificity and customization of accounting applications software products will increase and that this could potentially be an inhibitor to expansion of user expenditures for accounting cross-industry products.

As shown in Exhibit III-2, of the three delivery modes considered within the accounting cross-industry sector, applications software products is not only the largest delivery mode but will exhibit the healthiest five-year growth rate, even given the market challenges described above. In real terms, user expenditures on accounting cross-industry processing services will decline, as will expenditures on turnkey systems.

1. Applications Software Products

Exhibit III-3 shows growth expected for accounting cross-industry applications software products by platform size.

Mainframe—User expenditures on mainframe-based accounting packages are forecast to grow at about the rate of inflation from 1992 to 1997. New DB2 and enhanced versions will be purchased in the short term. However, during the last half of the forecast period, much of what would have been expenditures on upgrades will be spent on new client/server products. Thus, what would have been all mainframe expenditures will be divided between mainframe and other smaller platform-based applications software products.

Minicomputer—Minicomputer-based accounting applications software products will continue to experience moderate growth.

EXHIBIT III-2

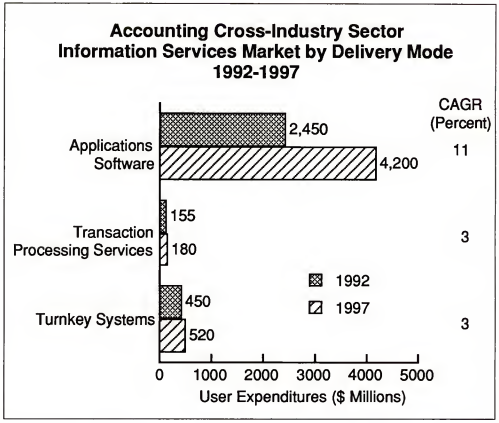
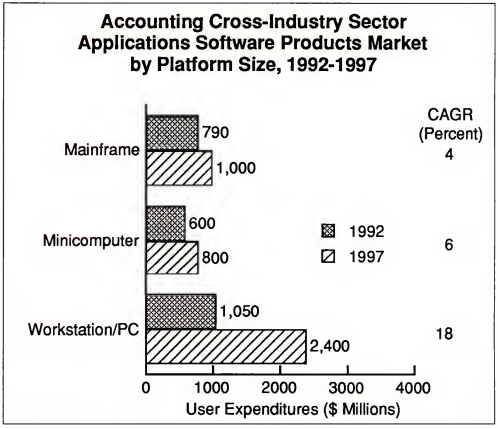


EXHIBIT III-3



- Midsized businesses and divisions of large corporations continue to buy minicomputer-based accounting packages. Because users have made considerable investments in midrange hardware over the last three to four years, solid—albeit modest—growth is therefore still expected as vendors and users complete their product suites.

- Additionally, vendors are beginning to provide client/server products, positioning the minicomputer as the server. They are also beginning to introduce UNIX versions of accounting software for minicomputers.

Workstation/PC—Growth in client/server computing, positioning workstations or PCs as both clients and servers, as well as standalone and networked PC solutions will fuel accounting packages for this platform size.

- Vendors such as Ross have begun to introduce applications software products running on smaller client platforms for portions of the accounting function such as budgeting.

- Small businesses will continue to expand as a market for standalone PC-based accounting and financial systems. Nonetheless, even though prices for these products are low to begin with, prices are on the decline. Part of the reason for the continued price cutting is a distribution channel transition to mass merchandising, including the rise of computer superstores.

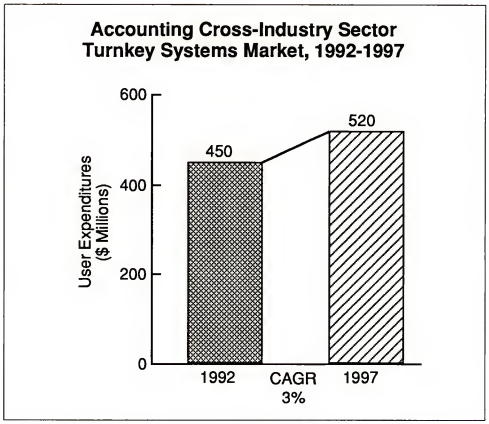
2. Turnkey Systems

Exhibit III-4 shows growth expected in cross-industry accounting turnkey systems.

Turnkey vendors and VARs sell accounting systems predominantly to small and midsized businesses, e.g., businesses under $25 million in sales. These vendors are an affordable alternative to what larger companies get from separate hardware vendors, software products vendors and systems integrators. However, accounting cross-industry turnkey systems are a small and declining market.

- The original accounting turnkey systems were products developed by accounting processing services vendors. Because the markets for their services were being eroded by growing availability of packaged software, they provided an in-house alternative for their customers in the form of minicomputer-based turnkey systems. Although many were installed and some are still being maintained, there are no new sales of these systems.

EXHIBIT III-4



- Because accounting is the backbone application for many businesses, VARs and turnkey systems vendors often start with an accounting package and integrate it with industry-specific operational solutions, creating an integrated industry-specific solution rather than a cross-industry solution.

Therefore, although a large market still exists for accounting turnkey systems, these products are increasingly industry-specific. Additionally, retail sales of cross-industry accounting applications packages and PCs detract from the need for and higher expense of a turnkey system.

3. Processing Services

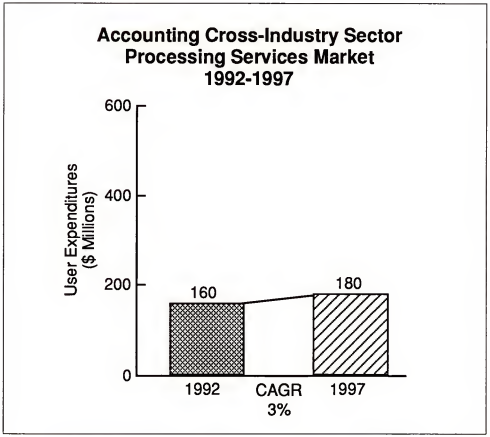
Accounting cross-industry processing services do not include tax processing services sold to accounting firms. Nor do they include payroll processing services (which are in the human resources cross-industry sector), or processing services in support of banking and finance functions such as back-office banking, electronic funds transfer, and retail point-of-sale applications.

There will continue to be a market for data entry of accounting data, such as from time cards, but this is also not considered to be a cross-industry (or industry-specific) transaction processing service.

There are no processing services firms today that perform all aspects of the corporate accounting function. However, many of them offer parts of it, such as the preparation of corporate income tax returns. (If a firm does not provide complete preparation, then it usually performs portions of it, such as gathering data to support what an accounting firm/CPA will do.)

Exhibit III-5 shows the expected expenditure level and growth in accounting cross-industry transaction processing services.

EXHIBIT III-5



Accounting processing services are a small and declining portion of the whole processing services industry. For processing services firms, it has become more a matter of holding onto the existing customer base than of adding new clients. For example, former Bank of America Business Services (recently acquired by ADP), although it provides general ledger and accounts receivable and payable services, does not actively sell or promote these services.

The reasons accounting processing services, cross-industry or otherwise, have become such a small proportion of the total industry are:

- Accounting was one of the first functions to be computerized by corporations because it is relatively static compared to, for example, payroll processing.

- Accounting functions are part of the day-to-day business of any company, as opposed to some of the other large processing services, which are cyclical in nature.

- Companies are less inclined to turn over their operating records to an outside services firm because of security concerns.

- Packaged applications software products that run on personal computers and workstations are available at relatively low cost, which makes it possible for small firms as well as large firms to do their own accounting. Vendors estimate that during the timesharing days, when computing environments were not affordable for many corporations, 20% to 25% of timesharing applications were accounting/financial. But now there is no contest between make versus buy, and almost all accounting application solutions have been brought in-house, typically through the purchase of an accounting software package.

- Accounting as a function is more likely to be differentiated by vertical sector than some of the other cross-industry functions, such as human resources, office automation or engineering/scientific applications; vertical specialization is too complicated and costly for most processing services firms to undertake.

The only real source of new expenditures for accounting processing services is companies that are downsizing and that need transition management of offloaded applications, which may include accounting applications software.

C
User Department Directions

Companies interviewed by INPUT are approaching change in their accounting and financial systems as an evolutionary process. They are adding new functionality and streamlining current operations on an ongoing basis without necessarily incorporating new information technology.

- The controller of a large cement and construction firm was not sure client/server would be of benefit. The finance department may ultimately implement client/server only because its primary vendor is going in this direction.

- DOS is well-entrenched in the company and the controller has no interest in UNIX. One of the company's IS projects this year is to continue to get the bugs out of its network so that financial and statistical data can be consolidated on a regional, national, and North American basis.

- Rather than downsizing (offloading a centralized CPU), the U.S. office of a large international bank is centralizing operations as back-office functions are being pulled back from the regional offices.

- Prior to its acquisition by a Japanese firm, a California-based semiconductor company tried to upgrade its accounting systems, but lacked direction and resisted change. With stronger direction, more reporting requirements, and a need to standardize practices on a worldwide basis, the company purchased an international accounting package from a European vendor.

Companies interviewed are either beginning to implement or have expressed the need for the following:

- Industry-specific functionality—The U.S. operations of a large international bank has needs that are too specific—for example, foreign currency transaction tracking, loan services, capital markets, external pricing services—for most cross-industry accounting software. However, it is using a cross-industry product primarily because of its exceptional report-writing capabilities and the fact that the vendor is able to interface its product with the bank's other financial and accounting systems.

- Flexibility—The semiconductor firm had looked at U.S. vendors' products but found them lacking in flexibility that allows for easy customization of reporting capabilities and integration and multinational accounting capabilities. The European product purchase was made one year ago.

- Standardization—A cement and construction company purchased a new accounting system in 1989 in order to standardize financial and accounting functions across operations that had previously been run as separate companies.

Other needs currently not being adequately met are:

- Ways to more easily extract and summarize expense data and provide status reports to management. This need involves taking transactional data and making it useful for executives through the use of relational data base technology and decision support tools.

- The ability to do budgeting and operations planning and cash forecasting (rather than having access to just historicals) within a single integrated accounting system.

To summarize, these respondents indicated they are not eager to downsize the accounting function or to move operations to a client/server architecture. It appears that they are, however, improving what they already have and are approaching change from the standpoint of features and functions that don't require dismantling what they already have. A need expressed several times, for example, was for more easily customized reporting capabilities. Another need—which is a growth promoter for this sector—is the need to standardize across divisions and across countries.

D

Trends/Technology Ratings of Importance

Respondents within all cross-industry sectors, vendors as well as users, were asked to rate various trends and technologies on a scale of one to five, where one is unimportant or having little impact and five is very important or of significant impact.

The technologies listed in Exhibit III-6 were selected because INPUT believes they will receive the most attention from vendors and users over the next five years. In addition, INPUT believes that their impacts on vendors and users will be profound. Users who deploy these technologies will be re-engineering their business functions. And vendors will need to change not only their products but also the ways in which they price, sell and support them.

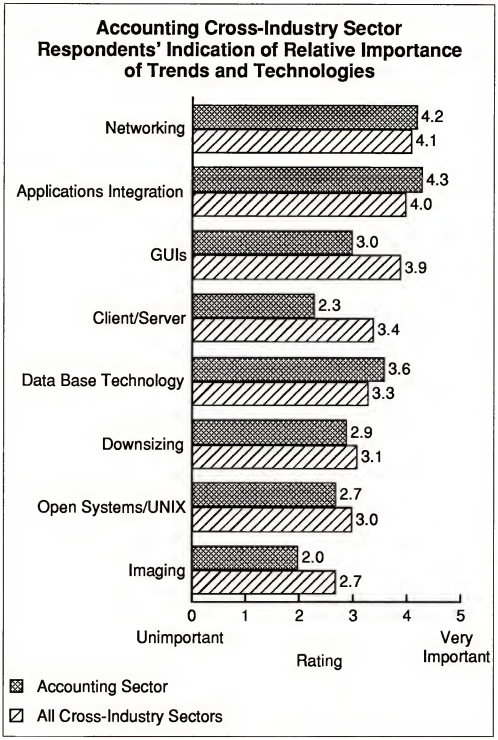
Exhibit III-6 shows the composite rankings of the accounting cross-industry sector compared to the ratings of all cross-industry sectors combined.

As is true with all cross-industry sectors combined, the accounting sector rates networking and applications integration the most important, and imaging the least important.

After the top two, however, accounting sector ratings are generally lower than the ratings of all cross-industry sectors combined. Note especially the low ratings given to client/server architecture and GUIs. These lower ratings confirm that this sector is relatively slow to adopt new technologies.

The fact that data base technology ranks higher than the ratings given by all cross-industry sectors combined confirms that this sector still considers the development and implementation of data bases—a technology that has been around for many years—a priority. In fact, as indicated in the next subsection, new DB2 implementations are still a major vendor activity. It also confirms the traditional centralized mainframe orientation of the accounting sector.

EXHIBIT III-6



The ratings also confirm that the accounting sector, although it wants new features and functions (described in subsection 3 above), does not care what the underlying technologies are.

Respondents for all cross-industry sectors were also asked to rank the technologies and trends in terms of importance five years from now. All technologies for all cross-industry sectors increase in importance over the five-year period.

For the accounting sector, client/server architecture and GUIs will increase in importance so that by 1997 their ratings will be about the same as the ratings given to these technologies for all cross-industry sectors combined. Users and vendors agree that client/server architecture, GUIs and downsizing are future directions. The question that begs to be asked is, when will users be willing to move en masse to downsized and client/server solutions? Existing vendors must be prepared to offer new solutions when the market is ready to buy or new vendors will move in.

As is true with all cross-industry sectors, within the accounting sector vendor ratings are generally slightly higher than user ratings. The largest discrepancies are for open systems, downsizing and GUIs, where vendor ratings are between 2 and 2.5 times higher than user ratings.

E
Vendors and Competitive Environment

1. Vendor Characteristics and Trends

Leading vendors in this cross-industry sector are also likely to participate in the human resources cross-industry sector. For example, Dun & Bradstreet Software, Computer Associates, Integral, Lawson, Oracle, and Ross all compete in both sectors. And PeopleSoft, strong in the human resources sector, is introducing a financial software product suite. Overall vendor trends and reactions are similar, if not the same, for both cross-industry sectors. The major distinctions between the two are that accounting has traditionally been more mainframe-based and therefore has more DB2 implementations, and that international capabilities are more important for the accounting sector.

Below are brief descriptions of vendor trends:

DB2 implementations—Because accounting has traditionally been a centralized mainframe-based application, vendors selling in this sector follow IBM's lead. Thus DB2 implementations are still at the forefront of new product introductions.

- American Software continues development and introduction of DB2 implementations.

- As a short-term strategy, Dun & Bradstreet Software continues to enhance its DB2-based M and E series products.

The DB2 versions have been slow in coming because they require complete rewrites; some of the early versions were reportedly written hastily and were flawed. The fact that DB2 versions are still coming indicates that vendors believe that a significant portion of the accounting function, at least over the next several years, will remain mainframe based.

Client/server—Client/server activity in the accounting cross-industry sector has become more evident over the last year. Various versions of client/server software products are under development and are beginning to be offered by the major players. Notable examples are the following:

- Dun & Bradstreet Software continues its development of an entirely new accounting product line based on OS/2. Initial products will be available by year-end 1992. The company recently announced its first client/server product line (see company profile below).
- American Software's underlying product architecture positions the company strongly to move and expand into client/server.
- Ross Systems introduced a client/server budgeting product in 1991.
- PeopleSoft has announced a client/server financial package.
- Integral has recently announced client/server solutions for distributed human resources and financial computing.

Although accounting applications are among the first to be ported to client/server configurations, as indicated earlier INPUT believes there is more user resistance to implementing accounting client/server products than some of the other applications such as engineering/scientific or even human resources applications. Vendors may therefore be disappointed in preliminary results from client/server products.

Effective vendor migration strategies will be of equal importance to the product offerings themselves. New product introductions will be accompanied by new (and attractive) pricing schemes, new distribution strategies, and strategies for migrating customers to the new product lines as effortlessly as possible.

Another important success factor, and one which is more evident this year than last year, is that vendors will have to offer very strong service, support and training assistance as part of their product migration and sales strategies.

Pricing strategies—Pricing strategies are still on the drawing boards. Some of the pricing schemes being considered are:

- Offering client/server solutions as product upgrades to already installed systems and not charging existing clients extra for them
- Offering client/server as an add-on to an already installed solution
- For new customers, pricing according to number of users simultaneously accessing the system rather than according to platform size

Users will expect downsized solutions to be lower in price. It is unclear, however, that client/server implementations will offer less costly solutions; users will have to invest in new hardware, will need LAN integration and network management expertise, and will require new systems software to support and administer client/server applications software products. Therefore, it is imperative that vendors position the new products as much more functionally attractive than existing installations.

Open systems/UNIX—Although vendors that have traditionally been IBM shops were not yet incorporating UNIX into their product development efforts last year, they are beginning to do so now.

- Whereas Dun & Bradstreet Software was "watching UNIX carefully but not doing anything yet" last year, now the company is porting its entire Millennium product line to UNIX. (This product will be, at least initially, only offered in Europe.)
- Ross is moving toward a UNIX strategy rather than an Ultrix (DEC) strategy and has plans to support two or three versions of UNIX.
- Lawson, an early UNIX adopter, ported its Accounting System software to the IBM RISC System/6000 platform earlier this year.

Multinational products—Even though the importance of a multinational product line has been evident in the accounting sector over the last several years, its importance has become more apparent over this last year. Vendors are globalizing their accounting systems so that a single footprint can be used in a multiple language and multiple currency scenario. European companies such as Coda, SAP and Systems Union are making their presence more strongly felt in the U.S. multinational corporation marketplace.

- Systems Union's SunAccount combines a ledger accounting and reporting package with automatic translation and consolidation of multicurrency accounts into a single base currency.

- SAP sells an integrated and global accounting system, R/2, that also handles other business functions, including inventory control, production planning, and order processing.

- Oracle FINANCIALS is positioned as an international accounting solution.

Applications Integration—Because accounting cuts across so many parts of a corporation, seamless integration is a more critical requirement than it is for some of the other application solutions.

Vendors have placed a great deal of emphasis on integrated functions in the following ways:

- Ease of integrating accounting modules with one another

- Integration of accounting modules with other functions such as inventory control, purchasing, fixed assets, and human resources

Increasing emphasis on integration creates challenges for vendors whose product lines consist of many applications that have been acquired (rather than "homegrown") along the way, and for vendors that do not have a complete suite of accounting modules. The fact that D&B Software will be replacing its various separate product lines with a single client/server implementation is an example of the importance vendors are ascribing to integration/single product families.

2. Leading and Emerging Vendors

Exhibit III-7 is a listing of leading accounting cross-industry sector applications software products vendors.

New vendors will enter this market, as the cost of entry is relatively low for a new entrant that does not have a customer base it must move to a new solution.

- PeopleSoft, mentioned above, is an example of a new competitor in this cross-industry sector.

- Oracle is also a relatively new competitor.

- In addition, Dodge Group (Boston) is building a client/server financial system.

- Microsoft has announced its intention to enter this sector. Microsoft's presence will be a competitive threat to many of the smaller PC-based vendors that populate this sector.

EXHIBIT III-7

Accounting Cross-Industry Sector
Leading and Emerging Applications
Software Products Vendors

Vendor	Mainframe	Minicomputer	Microcomputer
American Software	X		
Armor Systems			X
Collier Jackson		X	
Computer Associates	X	X	
D&B Software	X		X
Global Software	X		
Integral Systems	X		
J.D. Edwards		X	
MCBA, Inc.		X	X
Oracle		X	
Ross Systems Inc.		X	
Software 2000		X	X
Walker Interactive	X		

Small applications software products and turnkey systems vendors that cannot afford to rewrite software products for smaller hardware platforms, client/server architectures, or UNIX may switch to more of a professional services role, such as providing software development and software maintenance. They thereby exit the product side of the applications software products market. Or they may become distributors for independent software vendors' applications software products.

Smaller vendors also face the possibility of being acquired by their larger, well-capitalized competitors.

The major processing services vendors are ADP—which recently acquired Bank of America's Business Services Division—Litton Computer Services, and Control Data Business Management Services. However, accounting processing services represent less than 5% of these firms' revenues.

INPUT was unable to identify any large turnkey vendors selling accounting cross-industry solutions. Although a small percentage of turnkey systems are cross-industry, the vast majority are integrated with vertical packages and are therefore considered industry-specific.

3. Vendor Profiles

a. American Software

American Software was originally a single-vendor, single-platform (IBM mainframe) applications software products vendor. The company's strategy now is to offer software solutions across multiple hardware platforms (still IBM). Order processing and accounts receivable products that now run on the OS/2 platform are identical in feature and functionality to its CICS VSAM versions. The company offers products on a scalable range of 370-based and AS/400 products, and has the ability to interconnect these environments.

Over the last year, American Software has introduced Integrated Planning Works for OS/2 and an inventory planning and distribution and requirements planning package that can run independently on a PC or can cooperate with a host. American has also introduced a client/server version of Warehouse Management System in which OS/2 is the client and an ES/370 or AS/400 is the server.

The company is progressing in its development of a new client/server model; its original client/server model dates back to 1986.

American Software has expanded its data center operations and now provides systems operations services to customers who are either in the process of downsizing and want a temporary place to put their mainframe software and data processing, or who have adopted an outsourcing philosophy. So far the company has spent $4 million for computer equipment and communications software for this endeavor.

Fiscal 1991 (4/91) revenues reached $92.8 million. Net income was $17.5 million, compared to $19.5 in fiscal 1990. Revenue from professional services was 40% of total revenues.

The company now derives 50% of its revenues from applications software products for the AS/400 platform. Ten percent of revenues came from outside the U.S. in fiscal 1991, compared to 17% a year earlier.

b. Dun & Bradstreet Software

In the short term, Dun & Bradstreet Software (DBS) will continue to enhance its M Series and E Series of accounting and financial applications software products that run primarily on IBM mainframes. It is also moving forward aggressively on a client/server strategy. Products are

scheduled to be available by year-end 1992. One of the challenges this company faces is introducing its new product line in a timely manner while at the same time not losing its customers to other vendors.

In March, DBS announced its first client/server product. This product is really just a glimpse of what will be forthcoming. Financial Stream Analysis allows customers to access financial information that is traditionally stored in host computers.

DBS's client/server model emphasizes server functionality: presentation services and some applications processing is done at the client; the rest of the application processing and data management is done at the server. Sybase is the data base of choice in client/server.

As it moves strongly in the direction of client/server, DBS is moving away from individual products. It will no longer have an Expert Series and a Millennium Series; these will be one integrated product line. Given the problematic nature of DBS's different products, which in customers' views did not seem to fit well together, this strategy is essential for DBS's continued success. Nonetheless, DBS will be challenged by migrating its existing customers to its new product line.

To assist in the migration process, DBS has launched a re-engineering consulting practice and has also established new partnerships with Price Waterhouse, Ernst & Young, Deloitte Touche and Cap Gemini for re-engineering, long-range systems planning and systems integration. These are all new partnerships that are specifically focused on assisting DBS's customers with change.

DBS's strength in the marketplace is its name and size. INPUT estimates fiscal 1991 revenues to have been $485 million, only a 2% increase over fiscal 1990. U.S. sales account for 70% of revenues.

c. Oracle Corporation

During 1988 and 1989, Oracle expanded its offerings to include financial, manufacturing, and office automation applications software products and systems integration services. In February 1990, it introduced Oracle Personnel—originally developed and marketed in Europe—to the U.S. marketplace. INPUT estimates that its revenues from applications software products is approaching $100 million.

Factors that differentiate Oracle from other software products vendors are its multivendor and multiplatform capabilities and the degree of integration between Oracle FINANCIALS and its other applications software products. Oracle's products run on 27 different platforms. Oracle's use of its own CASE tools, and of course its use of its own ORACLE RDBMS, is also a differentiator. Customers can do their own development around Oracle's products using Oracle CASE.

The fact that its products run on so many different platforms is a strength. However, it could also be considered a weakness, as the company has had numerous quality problems in the past, perhaps because of the inherent challenges of supporting so many different platforms. Oracle's focus on its FINANCIALS product over the last year was to put a rigorous quality assurance program in place.

Oracle's revenues are now over $1 billion, which makes it one of the largest software products companies in the world. Although its revenues overall were up in 1991, its U.S. sales were down 13% compared to 1990.

Sixty-two percent of Oracle's 1991 fiscal revenues were from non-U.S. sources; this percentage is up from 50% in 1990. Oracle has been expanding and continues to significantly expand its international product capabilities; Oracle FINANCIALS is now available in six languages (with five more in development) and has multicurrency capabilities.

d. Ross Systems

Over the last year, Ross has undergone a great deal of change:

- It changed its strategy away from strictly DEC platforms to multiple UNIX-based platforms in addition to Ultrix and VMS for DOS.
- It acquired Pioneer Computer Group Ltd., a maker of a process manufacturing software product line and a 4GL product.
- It introduced a government accounting applications software product for state and local agencies.
- It introduced a client/server desktop product for budgeting and expense tracking. The client is a Mac or a PC with Windows or Motif, and the server is a VAX or Ultrix minicomputer.
- It added a desktop executive information system (EIS) through Cognos Power.
- It expanded its presence into the international arena.

In addition to the Pioneer acquisition, Ross has acquired three other companies in the last three years and is likely to continue to expand through additional acquisitions and internationally. Total revenues for fiscal 1991 are estimated to have been in the $80 million range.

e. Systems Union, Inc.

Systems Union is the U.S. company of the Europe-based Systems Union Group. It exemplifies the kinds of companies with which U.S. firms will be competing in the international accounting software products arena.

SunSystems is a family of integrated multicurrency accounting and business software packages that are made up of two basic modules. The SunAccount module is a combined ledger accounting system that translates and consolidates critical financial information in all world currencies; it adapts to all international accounting standards; and is available in several language versions, including French, Spanish, English, Chinese, Japanese, and German. The SunBusiness module, which integrates with SunAccount, manages all elements of single or multicurrency invoicing, sales order processing, and inventory control. It enables users to tailor contents of their sales invoices to meet their individual needs.

Client/server versions that support the Oracle or SQL Server RDBMS were announced last year. The versions operate similarly on PCs; a range of PC LANs; DEC VAX and DEC Systems ULTRIX, IBM RISC System/6000 and AS/400 workstation and midrange computers; and UNIX-based systems from NCR, Pyramid, Altos, and other vendors.

Systems Union is a Microsoft SQL Solutions Partner; SunSystems is the first accounting front end to use Microsoft's SQL Server RDBMS.

Definition of Terms

A
Introduction

INPUT's *Definition of Terms* provides the framework for all of INPUT's market analyses and forecasts of the information services industry. It is used for all U.S. programs. The structure defined in Exhibit A-1 is also used in Europe and for the worldwide forecast.

One of the strengths of INPUT's market analysis services is the consistency of the underlying market sizing and forecast data. Each year INPUT reviews its industry structure and makes changes if they are required. When changes are made they are carefully documented and the new definitions and forecasts reconciled to the prior definitions and forecasts. INPUT clients have the benefit of being able to track market forecast data from year to year against a proven and consistent foundation of definitions.

For 1992 INPUT has added one delivery mode and defined three new submodes to its Information Services Industry Structure:

- *Equipment Services* has been added as the ninth delivery mode. INPUT has forecasted the equipment maintenance, support and related services market through its Customer Services Programs for a number or years. Starting in 1992, the equipment services portion of the customer services market will be included in the total information services industry as defined by INPUT. Other portions of this market (such as software support) are already included.

- Two new submodes have been defined in the *Systems Operations* delivery mode - *desktop services* and *network management*. They are defined on pages 5 and 6.

- A fourth submode has been defined within the Professional Services delivery mode—*applications management*. This change reflects a shift in the way some software development and maintenance services are purchased. A complete definition is provided on page 6.

A series of definitions for computer equipment have also been added.

Changes from the 1991 INPUT *Definition of Terms* are indicated with a ☆.

B

Overall Definitions and Analytical Framework

1. Information Services

Information Services are computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Use of vendor-provided computer processing services to develop or run applications or provide services such as disaster recovery or data entry (called *Processing Services*)
- A combination of computer equipment, packaged software and associated support services which will meet an application systems need (called *Turnkey Systems*)
- Packaged software products, including systems software or applications software products (called *Software Products*)
- People services that support users in developing and operating their own information systems (called *Professional Services*)
- The combination of products (software and equipment) and services where the vendor assumes total responsibility for the development of a custom integrated solution to an information systems need (called *Systems Integration*)
- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called *Systems Operations*)
- Services that support the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange (called *Network Applications*)
- Services that support the access and use of public and proprietary information such as on-line data bases and news services (called *Electronic Information Services*)
- Services that support the operation of computer and digital communication equipment (called *Equipment Services*)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is part of an overall service offering such as a turnkey system, a systems operations contract, or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., electronic data interchange services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the information services industry consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels; and competitive issues.

2. Market Forecasts/User Expenditures

All information services market forecasts are estimates of *User Expenditures* for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorized according to what users perceive they are buying.

By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

- Double counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for repackaging and resale to end users)
- Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers

Captive Information Services User Expenditures are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

Non-captive Information Services User Expenditures are expenditures that go to vendors that have a different parent corporation than the user. It is these expenditures which constitute the information services market analyzed by INPUT and that are included in INPUT forecasts.

3. Delivery Modes

Delivery Modes are defined as specific products and services that satisfy a given user need. While *Market Sectors* specify *who* the buyer is, *Delivery Modes* specify *what* the user is buying.

Of the nine delivery modes defined by INPUT, six are considered primary products or services:

- *Processing Services*
- *Network Services*
- *Professional Services*
- *Applications Software Products*
- *Systems Software Products*
- *Equipment Services*

The remaining three delivery modes represent combinations of these products and services, combined with equipment, management and/or other services:

- *Turnkey Systems*
- *Systems Operations*
- *Systems Integration*

Section C describes the delivery modes and their structure in more detail.

4. Market Sectors

Market Sectors or markets are groupings or categories of the buyers of information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc. These are called "industry-specific" markets.

- *Functional Application* markets, such as Human Resources, Accounting, etc. These are called "cross-industry" markets.

- *Other* markets, which are neither industry- nor application-specific, such as the market for systems software products and much of the on-line data base market.

Specific market sectors used by INPUT are defined in Section E, below.

5. Trading Communities

Information technology is playing a major role in re-engineering, not just companies but the value chain or *Trading Communities* in which these companies operate. This re-engineering is resulting in electronic commerce emerging where interorganizational electronic systems facilitate the business processes of the trading community.

- A trading community is the group or organizations—commercial and non-commercial—involved in producing a good or services.

- Electronic commerce and trading communities are addressed in INPUT's EDI and Electronic Commerce Program.

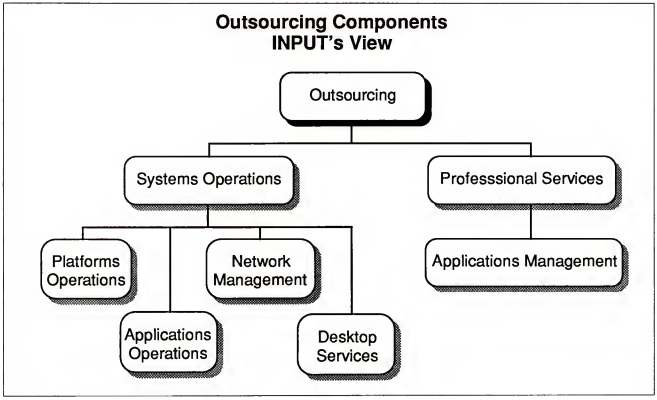
6. Outsourcing

Over the past few years a major change has occurred in the way clients are buying some information services. The shift has been labeled *outsourcing*.

INPUT views outsourcing as a change in the form of the client/vendor relationship. Under an outsourcing relationship, all or a major portion of the information systems function is contracted to a vendor in a long-term relationship. The vendor is responsible for the performance of the function.

INPUT considers the following submodes to be outsourcing-type relationships and in aggregate to represent the outsourcing market. See Exhibit A-1. Complete definitions are provided in Section C of this document. INPUT provides these forecasts as part of the corresponding delivery modes.

EXHIBIT A-1



- *Platform Systems Operations* - The vendor is responsible for managing and operating the client's computer systems.

- *Applications System Operations* - The vendor is responsible for developing and/or maintaining a client's applications as well as operating the computer systems.

☆*Network Management* - The vendor assumes full responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client.

☆*Applications Management/Maintenance* - The professional services vendor has full responsibility for developing and/or maintaining some or all of the applications systems that a client uses to support business operations. The services are provided on a long-term contractual basis.

☆*Desktop Services* - The vendor assumes responsibility for the deployment, maintenance, and connectivity between the personal computers and/or intelligent workstations in the client organization. The services may also include performing the help-desk function. The services are provided on a long-term contractual basis.

C
Delivery Modes and Submodes

Exhibit A-2 provides the overall structure of the information services industry as defined and used by INPUT. This section of *Definition of Terms* provides definitions for each of the delivery modes and their submodes or components.

1. Software Products

INPUT divides the software products market into two delivery modes: systems software and applications software.

The two delivery modes have many similarities. Both involve purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if part of the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the professional services delivery mode. Fees for work related to education, consulting, and/or custom modification of software products are also counted as professional services, provided such fees are charged separately from the price of the software product itself.

EXHIBIT A-2

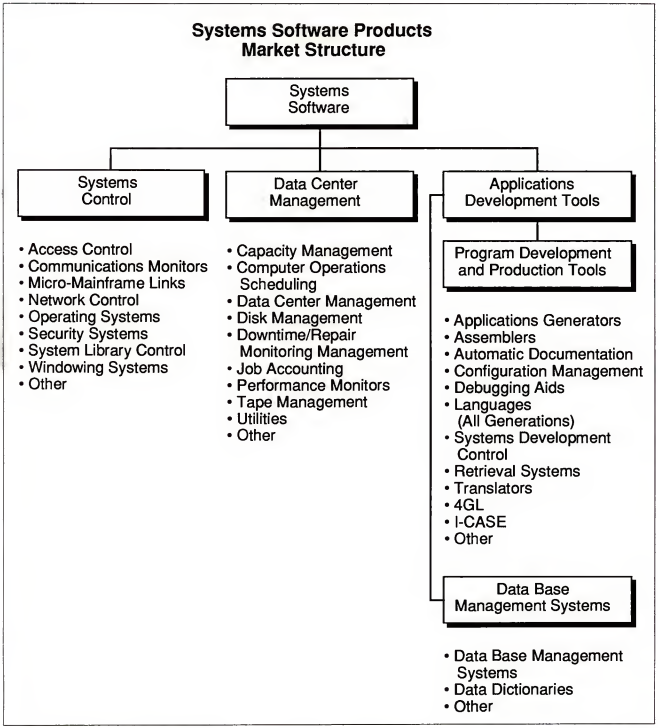
Information Services Industry Structure—1992

Source: INPUT

a. Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. INPUT divides systems software products into three submodes. See Exhibit A-3.

EXHIBIT A-3



- *Systems Control Products* - Software programs that manage computer system resources and control the execution of programs. These products include operating systems, emulators, network control, library control, windowing, access control, and spoolers.

- *Operations Management Tools* - Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities, and capacity management.

- *Applications Development Tools* - Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, data base management systems, report writers, project control systems, CASE systems and other development productivity aids.

INPUT also forecasts the systems software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

b. Applications Software Products

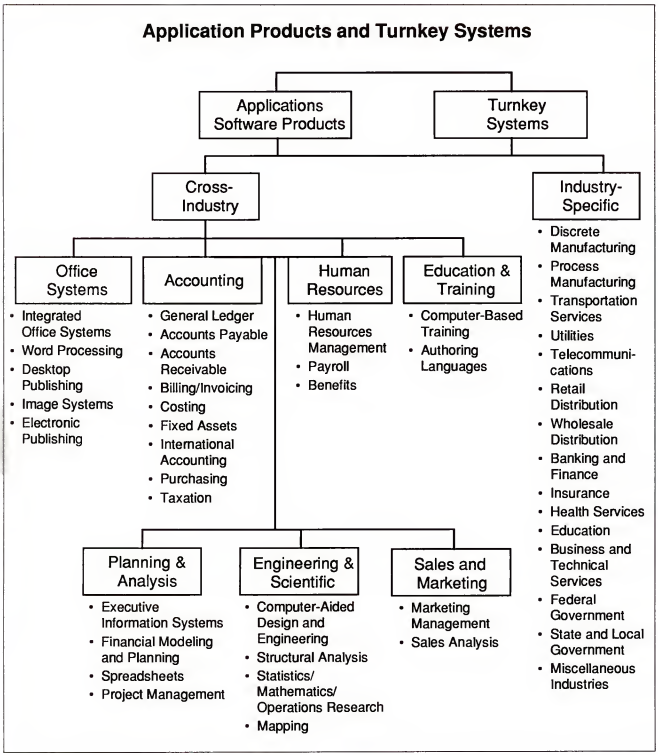
Applications software products enable a user or group of users to support an operational or administrative process within an organization. Examples include accounts payable, order entry, project management and office systems. INPUT categorizes applications software products into two groups of market sectors. (See Exhibit A-4.)

- *Industry Applications Software Products* - Software products that perform functions related to fulfilling business or organizational needs unique to a specific industry (vertical) market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping, automobile dealer parts inventory, etc.

- *Cross-Industry Applications Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Examples include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

INPUT also forecasts the applications software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

EXHIBIT A-4



2. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged applications software into a single product developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and professional services provided. INPUT categorizes turnkey systems into two groups of market sectors as it does for applications software products. (See Exhibit A-4.)

Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems, or embedded computer systems for military applications.

Computer manufacturers (e.g., IBM or DEC) that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

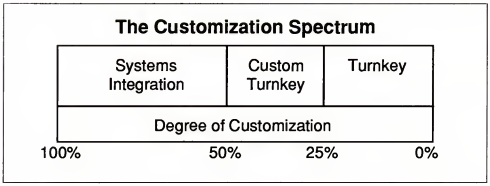
- *Value-Added Reseller (VAR):* A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually applications software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services, software support, and applications upgrades.

Turnkey systems have three components:

- Equipment - computer hardware supplied as part of the turnkey system
- Software products - prepackaged systems and applications software products
- Professional services - services to install or customize the system or train the user, provided as part of the turnkey system sale

Exhibit A-5 contrasts turnkey systems with systems integration. Turnkey systems are based on available software products that a vendor may modify to a modest degree.

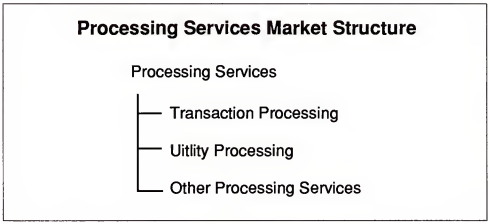
EXHIBIT A-5



3. Processing Services

This delivery mode includes three submodes: transaction processing, utility processing, and "other" processing services. See Exhibit A-6.

EXHIBIT A-6



- *Transaction Processing* - Client uses vendor-provided information systems—including hardware, software and/or data networks—at the vendor site or customer site to process specific applications and update client data bases. The application software is typically provided by the vendor.

- *Utility Processing* - Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), enabling clients to develop and/or operate their own programs or process data on the vendor's system.

- *Other Processing Services* - Vendor provides service—usually at the vendor site—such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

4. Systems Operations

Systems operations as a delivery mode was introduced in the 1990 Market Analysis and Systems Operations programs. Previously called Facilities Management, this delivery mode was created by taking the Systems Operations submode out of both Processing Services and Professional Services. For 1992 the submodes have been defined as follows.

Systems operations involves the operation and management of all or a significant part of the client's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes where the difference is whether the support of applications, as well as data center operations, is included.

- *Platform systems operations* - The vendor manages and operates the computer systems, to perform the client's business functions, without taking responsibility for the client's application systems.

- *Applications systems operations* - The vendor manages and operates the computer systems to perform the client's business functions, and is also responsible for maintaining, or developing and maintaining, the client's application systems.

☆*Network Management* - The vendor assumes responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client. A network management outsourcing contract may include only the management services or the full costs of the communications services and equipment plus the management services.

☆*Desktop Services* - The vendor assumes responsibility for the deployment, maintenance, and connectivity among the personal computers and/or workstations in the client organization. The services may also include performing the help-desk function. Equipment as well as services can be part of a desktop services outsourcing contract.

Note: This type of client service can also be provided through traditional professional services where the contractual criteria of outsourcing are not present.

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the client's information systems environment (equipment, networks, applications systems), either at the client's site or the vendor's site.

Note: In the federal government market, systems operation services are also defined by equipment ownership with the terms "COCO" (Contractor-Owned, Contractor-Operated), and "GOCO" (Government-Owned, Contractor-Operated).

5. Systems Integration (SI)

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price. (Refer to Exhibit A-7.)

The components of a systems integration project are the following:

- *Equipment* - information processing and communications equipment required to build the systems solution. This component may include custom as well as off-the-shelf equipment to meet the unique needs of the project. The systems integration equipment category excludes turnkey systems by definition.

- *Software products* - prepackaged applications and systems software products.

- *Professional services* - the value-added component that adapts the equipment and develops, assembles, or modifies the software and hardware to meet the system's requirements. It includes all of the professional services activities required to develop, implement, and if included in the contract, operate an information system, including consulting, program/project management, design and integration, software development, education and training, documentation, and systems operations and maintenance.

- *Other services* - most systems integration contracts include other services and product expenditures that are not classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies, and other items required for a smooth development effort.

EXHIBIT A-7

Products/Services in Systems Integration Projects

Equipment

- Information systems
- Communications

Software Products

- Systems software
- Applications software

Professional Services

- Consulting
  - Feasibility and trade-off studies
  - Selection of equipment, network and software
- Program/project management
- Design/integration
  - Systems design
  - Installation of equipment, network, and software
  - Demonstration and testing
- Software development
  - Modification of software packages
  - Modification of existing software
  - Custom development of software
- Education/training and documentation
- Systems operations/maintenance

Other Miscellaneous Products/Services

- Site preparation
- Data processing supplies
- Processing/network services
- Data/voice communication services

6. Professional Services

This category includes four submodes: consulting, education and training, software development, and applications management. Exhibit A-8 provides additional detail.

- *Consulting:* Services include management consulting (related to information systems), information systems re-engineering, information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of the information system, including equipment, software, networks and systems operations.

- *Education and Training:* Services that provide training and education or the development of training materials related to information systems and services for the information systems professional and the user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation. Education and training provided by school systems are not included. General education and training products are included as a cross-industry market sector.

- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation, and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

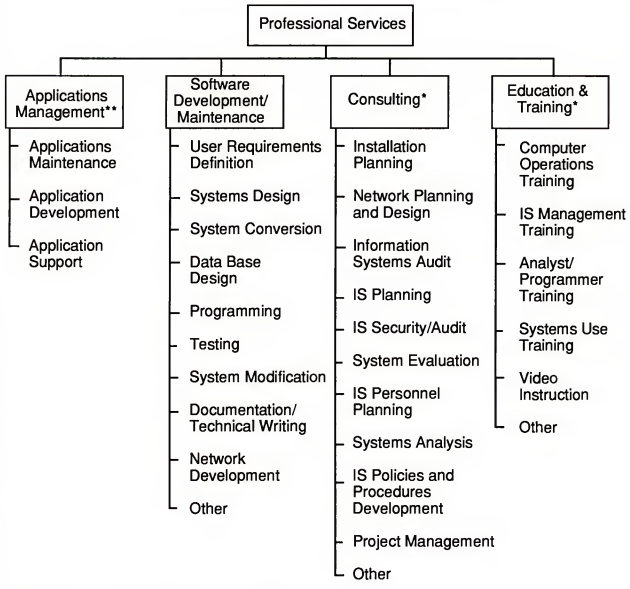
☆*Applications Management*: The vendor has full responsibility for maintaining and upgrading some or all of the application systems that a client uses to support business operations and may develop and implement new application systems for the client.

An applications management contract differs from traditional software development in the form of the client/vendor relationship. Under traditional software development services the relationship is project based. Under applications management it is time and function based.

These services may be provided in combination or separately from platform systems operations.

EXHIBIT A-8

Professional Services Market Structure



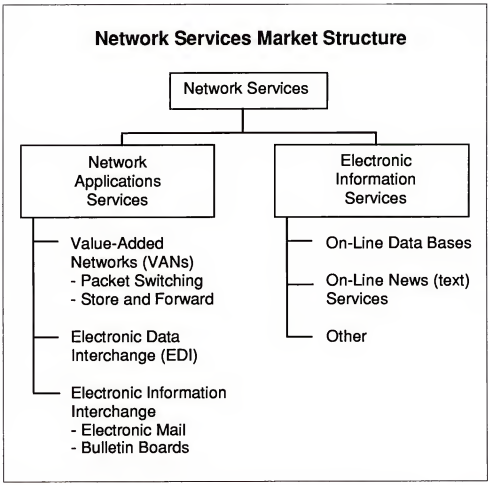
*Related to computer systems, topics, or issues

**Vendor assumes full responsibility on contracted longer term basis

7. Network Services

Network services are a variety of telecommunications-based functions and operations. Network service includes two submodes, as shown in Exhibit A-9.

EXHIBIT A-9



a. Electronic Information Services

Electronic information services are data bases that provide specific information via terminal- or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers.

Users inquire into and extract information from the data bases. They may load extracted data into their own computer systems; the vendor does not provide data processing or manipulation capability as part of the electronic information service and users cannot update the vendor's data bases. However, the vendor may offer other services (network applications or processing services) that do offer processing or manipulation capability.

The two kinds of electronic information services are:

- *On-line Data Bases* - Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.

- Unstructured, primarily textual information on people, companies, events, etc. These are often news services.

While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

b. Network Applications

Value-Added Network Services (VAN Services) - VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

While VAN services were originally provided only by specialized VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, Sprint, etc.). Meanwhile, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

Electronic Data Interchange (EDI) - Application-to-application electronic exchange of business data between trade partners or facilitators using a telecommunications network.

Electronic Information Interchange- The transmission of messages across an electronic network managed by a services vendor, including electronic mail, voice mail, voice messaging, and access to Telex, TWX, and other messaging services. This also includes bulletin board services.

8. Equipment Services

☆The equipment services delivery mode includes two submodes. Both deal with the support and maintenance of computer equipment.

☆*Equipment Maintenance* - Services provided to repair, diagnose problems and provide preventive maintenance both on-site and off-site for computer equipment. The costs of parts, media and other supplies are excluded. These services are typically provided on a contract basis.

☆*Environmental Services* - Composed of equipment and data center related special services such as cabling, air conditioning and power supply, equipment relocation and similar services.

D
Computer Equipment

☆These definitions have been included to provide the basis for market segmentation in the software products markets.

☆*Computer Equipment* - Includes all computer and telecommunications equipment that can be separately acquired with or without installation by the vendor and not acquired as part of an integrated system. Unless otherwise noted in an INPUT forecast, computer equipment is only included where it is part of the purchase of services or software products (e.g., turnkey systems and systems integration).

☆*Peripherals* - Includes all input, output, communications, and storage devices (other than main memory) that can be channel connected to a processor, and generally cannot be included in other categories such as terminals.

☆*Input Devices* - Includes keyboards, numeric pads, card readers, light pens and track balls, tape readers, position and motion sensors, and analog-to-digital converters.

☆*Output Devices* - Includes printers, CRTs, projection television screens, micrographics processors, digital graphics, and plotters

☆*Communication Devices* - Includes modem, encryption equipment, special interfaces, and error control

☆*Storage Devices* - Includes magnetic tape (reel, cartridge, and cassette), floppy and hard disks, solid state (integrated circuits), and bubble and optical memories

☆*Computer Systems* - Includes all processors from personal computers to supercomputers. Computer systems may require type- or model-unique operating software to be functional, but this category excludes applications software and peripheral devices and processors or CPUs not provided as part of an integrated (turnkey) system.

☆*Personal computers* - Smaller computers using 8-, 16-, or 32-bit computer technology. Generally designed to sit on a desktop and are portable for individual use. Price generally less than $5,000.

☆*Workstations* - High-performance, desktop, single-user computers often employing Reduced Instruction Set Computing (RISC). Workstations provide integrated, high-speed, local network-based services such as data base access, file storage and back-up, remote communications, and peripheral support. These products usually cost from $5,000 to $15,000.

☆*Minicomputer or midsize computers* - Minicomputers are generally priced from $15,000 to $350,000. Many of the emerging client/server computers are in this category.

☆*Mainframe or large computers* - Traditional mainframe and supercomputers costing more than $350,000.

E
Sector Definitions

1. Industry Sector Definitions

INPUT structures the information services market into industry sectors such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) code system. The specific industries (and their SIC codes) included under these industry sectors are detailed in Exhibit A-10.

INPUT includes all delivery modes except systems software products and equipment services in industry market sectors. See Exhibit A-9 and section E-3 (Delivery Mode Reporting by Sector).

Note: SIC code 88 is Personal Households. INPUT does not currently analyze or forecast information services in this market sector.

EXHIBIT A-10

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying nonmetalic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete products
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (including airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)

EXHIBIT A-10 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Telecommunications	48xx	Communications
Utilities	49xx	Electric, gas and sanitary services
Retail Distribution	52xx	Building materials
	53xx	General merchandise stores
	54xx	Food stores
	55xx	Automotive dealers, gas stations
	56xx	Apparel and accessory stores
	57xx	Home furniture, furnishings and accessory stores
	58xx	Eating and drinking places
	59xx	Miscellaneous retail
Wholesale Distribution	50xx	Wholesale trade - durable goods
	51xx	Wholesale trade - nondurable goods
Banking and Finance	60xx	Depositary institutions
	61xx	Nondepositary institutions
	62xx	Security and commodity brokers, dealers, exchanges and services
	67xx	Holding and other investment offices
Insurance	63xx	Insurance carriers
	64xx	Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services

EXHIBIT A-10 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Business Services	65xx	Real estate
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	73xx	Business services (except hotel reservation services in 7389)
	7389x	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amusement and recreation services
	81xx	Legal services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	Construction - special trade contractors

2. Cross-Industry Sector Definitions

INPUT has identified seven cross-industry market sectors. These sectors or markets involve multi-industry applications such as human resource systems, accounting systems, etc.

- In order to be included in an industry sector, the service or product delivered must be specific to that sector only. If a service or product is used in more than one industry sector, it is counted as cross-industry.

- INPUT only includes the turnkey systems, applications software products, and transaction processing services in the cross-industry sectors.

The seven cross-industry markets are:

Accounting - consists of applications software products and information services that serve such functions as:

- General ledger
- Financial management
- Accounts payable
- Accounts receivable
- Billing/invoicing
- Fixed assets
- International accounting
- Purchasing
- Taxation
- Financial consolidation

- Excluded are accounting products and services directed to a specific industry, such as tax processing services for CPAs and accountants within the business services industry sector.

Human Resources - consists of application solutions purchased by multiple industry sectors to serve the functions of human resources management and payroll. Examples of specific applications within these two major functions are:

- Employee relations
- Benefits administration
- Government compliance
- Manpower planning
- Compensation administration
- Applicant tracking
- Position control
- Payroll processing

Education and Training - consists of education and training for information systems professionals and users of information systems delivered as a software product, turnkey system or through processing services. The market for computer-based training tools for the training of any employee on any subject is also included.

Office Systems consists of the following:

- Integrated office systems (IOS)
- Word processing
- Desktop publishing
- Electronic publishing
- Image systems

- IOSs—such as IBM's OfficeVision, HP's NewWave Office and DEC's All-In-1—typically include the following core functions, all of which are accessed from the same desktop: electronic mail, decision support systems, time management and filing systems.

- Office systems graphics include presentation graphics (which represent the bulk of office systems graphics), paint and line art, page description languages, and electronic form programs.

- The fundamental difference between electronic publishing and desktop publishing (within the office systems sector) is that electronic publishing encompasses a method of document management and control from a single point—regardless of how many authors/locations work on a document—whereas desktop publishing is a personal productivity tool and is generally a lower end product residing on a personal computer.

- Electronic or computer publishing systems that are sold strictly and specifically to commercial publishers, printers, and typesetters are excluded from cross-industry consideration and are included in the discrete manufacturing industry.

Engineering and Scientific encompasses the following applications:

- Computer-aided design and engineering (CAD and CAE)
- Structural analysis
- Statistics/mathematics/operations research
- Mapping/GIS

- Computer-aided manufacturing (CAM) or CAD that is integrated with CAM is excluded from the cross-industry sector as it is specific to the manufacturing industries. CAD or CAE that is dedicated to integrated circuit design is also excluded because it is specific to the semiconductor industry.

Planning and Analysis consists of software products and information services in four application areas:

- Executive Information Systems (EIS)
- Financial modeling or planning systems
- Spreadsheets
- Project management

Sales and Marketing encompasses marketing management and sales analysis application solutions.

- Sales and marketing includes:

  - Sales analysis
  - Marketing management
  - Demographic market planning models

3. Delivery Mode Reporting by Sector

This section describes how the delivery mode forecasts relate to the market sector forecasts. Exhibit A-11 summarizes the relationships.

- *Processing services* - The transaction processing services submode is forecasted for each industry and cross-industry market sector. The utility and other processing services submodes are forecasted in total market in the general market sector.

- *Turnkey systems* - Turnkey systems is forecasted for the 15 industry and 7 cross-industry sectors. Each component of turnkey systems is forecasted in each sector.

- *Applications software products* - The applications software products delivery mode is forecasted for the 15 industry and 7 cross-industry sectors. In addition, each forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.

- *Systems operations* - Each of the systems operations submodes is forecasted for each of the 15 industry sectors.

- *Systems integration* - Systems integration and each of the components of systems integration are forecasted for each of the 15 industry sectors.

- *Professional services* - Professional services and each of the submodes is forecasted for each of the 15 industry sectors.

EXHIBIT A-11

Delivery Mode versus Market Sector Forecast Content

Delivery Mode	Submode	Market Sectors		
		Industry Sectors	Cross-Industry Sectors	General
Processing Services	Transaction	X	X	
	Utility			X
	Other			X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform	X		
	Applications	X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications	X		
	Electronic Information Services	X		X
Systems Software Products				X
Equipment Services				X

- *Network services* - The network applications submode of network services forecasted for each of the 15 industry sectors.

  Industry and cross-industry electronic information services are forecast in relevant market sectors. The remainder of electronic information services is forecasted in total for the general market sector.

- *Systems software products* - Systems software products and its submodes are forecasted in total for the general market sector. Each submode forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.

- *Equipment services* - Equipment services and its submodes are forecasted in total in the general market sectors.

F

Vendor Revenue and User Expenditure Conversion

The size of the information services market may be viewed from two perspectives: vendor (producer) revenues and user expenditures. INPUT defines and forecasts the information services market in terms of user expenditures. User expenditures reflect the markup in producer sales when a product such as software is delivered through indirect distribution channels (such as original equipment manufacturers (OEMs), retailers and distributors). The focus on user expenditure also eliminates the double counting of revenues that would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., ComputerLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some areas of significant difference. Many microcomputer software products, for example, are marketed through distribution channels. To capture the valued added through these distribution channels, adjustment factors are used to convert estimated information services vendor revenues to user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase software and subcontract the services of other professional services vendors. Turnkey vendors incorporate purchased software into the systems they sell to users.

To account for such intra-industry transactions, INPUT uses conversion ratios to derive the estimate of end-user expenditures.

Exhibit A-12 summarizes the net effect of the various ratios used by INPUT to convert vendor revenues to user expenditure (market size) figures for each delivery mode.

EXHIBIT A-12

Vendor Revenue to User Expenditure Conversion

Delivery Mode	Vendor Revenue Multiplier
Applications Software Products	1.18
Systems Software Products	1.10
Systems Operations	0.95
Systems Integration	0.95
Professional Services	0.99
Network Services	0.99
Processing Services	0.99
Turnkey Systems	0.95
Equipment Services	0.99

Forecast Data Base

INPUT has lowered its forecast this year for workstation- and PC-based accounting applications software products because we believe that user reluctance to migrate to new solutions, new pricing schemes and the need for industry-specific functionality will have stronger negative impacts during the first few years of the forecast period.

EXHIBIT B-1

Accounting Cross-Industry Sector User Expenditure Forecast by Delivery Mode, 1991-1997

Delivery Modes	1991 ($ M)	Growth 90-91 (%)	1992 ($ M)	1993 ($ M)	1994 ($ M)	1995 ($ M)	1996 ($ M)	1997 ($ M)	CAGR 92-97 (%)
Sector Total	2,835	7	3,045	3,270	3,560	3,860	4,250	4,900	10
Processing Services	150	3	155	160	165	170	175	180	3
- Transaction Processing	150	3	155	160	165	170	175	180	3
Turnkey Systems	435	3	450	460	475	490	505	520	3
Applications Software Products	2,250	8	2,440	2,650	2,920	3,200	3,570	4,200	11
- Mainframe	757	4	790	820	850	890	920	1,000	4
- Minicomputer	560	6	600	630	670	710	750	800	6
- Workstation/PC	933	13	1,050	1,200	1,400	1,600	1,900	2,400	18

EXHIBIT B-2

Accounting Cross-Industry Sector
1992 MAP Data Base Reconciliation by Delivery Mode

Delivery Modes	1991 Market				1996 Market				91-96 CAGR per data 91 rpt (%)	91-96 CAGR per data 92 rpt (%)
	1991 Report (Fcst) ($ M)	1992 Report (Actual) ($ M)	Variance from 1991 Report ($ M)	Variance from 1991 Report (%)	1991 Report (Fcst) ($ M)	1992 Report (Fcst) ($ M)	Variance from 1991 Report ($ M)	Variance from 1991 Report (%)		
Sector Total	2,835	2,835	0	0	4,671	4,250	421	-9	11	8
Processing Services	150	150	0	0	175	175	0	0	3	3
- Transaction Processing	150	150	0	0	175	175	0	0	3	3
Turnkey Systems	435	435	0	0	504	505	1	0	3	3
Applications Software Products	2,250	2,250	0	0	3,992	3,570	-422	-11	12	10
- Mainframe	757	757	0	0	920	920	0	0	4	4
- Minicomputer	560	560	0	0	750	750	0	0	6	6
- Workstation/PC	933	933	0	0	2,322	1,900	-422	-18	20	15

About INPUT

INPUT is a worldwide consulting and market research firm uniquely focused on the information technology services and software markets. Executives in many technically advanced companies in North America, Europe, and Japan rely on INPUT for data, objective analysis, and insightful opinions to support their business plans, market assessments, and technology directions. By leveraging INPUT's considerable knowledge and expertise, clients make informed decisions more quickly, and benefit by saving on the cost of internal research.

Since 1974, INPUT has compiled the most extensive research base available on the worldwide information services market and its key segments, providing detailed market forecasts, vertical industry sector analysis and forecasts and analysis of vendor strategies and products. INPUT delivers specific expertise in the fast changing areas of outsourcing, systems integration, EDI/electronic commerce, software development/CASE, and on the impact of downsizing.

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