TRENDS IN DELIVERY OF REMOTE COMPUTING SERVICES

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NOVEMBER 1980

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OF REMOTE COMPUTING SERVICES

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I INTRODUCTION

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A. PURPOSE

- This report, produced by INPUT as part of the Market Analysis Service, analyzes trends in modes of delivery of offerings by remote computing services (RCS) companies.

- This area of research, in which clients expressed a high level of interest, is particularly timely in light of recent developments in modes of delivery.

- The objectives of this study are to analyze current and future modes of delivery, to identify opportunities with significant revenue potential and to recommend how to take advantage of those opportunities.

B. RESEARCH AND METHODOLOGY

- The research for this study was based upon a questionnaire developed by INPUT and utilized during telephone and on-site interviews with 17 RCS vendors.

- The RCS vendors included in this research had average revenues of $77 million in 1979, as shown in Exhibit I-1.

EXHIBIT I-1

PROFILE OF RCS
COMPANIES SURVEYED

SIZE OF COMPANY ($ MILLION)	1979 TOTAL* REVENUES ($ MILLION)	NUMBER OF RESPONDENTS	AVERAGE REVENUE IN CATEGORY ($ MILLION)
<$25	$ 75	5	$ 15
$25-100	335	6	56
>$100	915	6	152
OVERALL	$1,325	17	$ 77

*REVENUES ARE FROM ALL SOURCES INCLUDING SOFTWARE, PROFESSIONAL SERVICES, ETC. REMOTE COMPUTING SERVICES REVENUES WERE APPROXIMATELY 66% OF THE ABOVE.

- All interviews were with senior marketing or planning personnel. Typical titles of interviewees included:

  - Vice President, Product Marketing Division.
  - Director, Market Research.
  - Director, Business Planning.
  - Manager of Product Planning.
  - Director of Planning.
  - Executive Vice President.
  - Vice President, Marketing.
  - Manager of Market Development.
  - Corporate Vice President of Planning.
  - Vice President and Division General Manager.
  - President.

- Interviews were conducted between May 5 and July 15, 1980.

- In addition, INPUT conducted an extensive review of vendor-produced literature.

- The analysis also drew upon data derived from INPUT's User Panel of EDP managers, the CAMP data bases and data produced from a variety of other INPUT research efforts.

- The base year for forecasting is 1979. The forecasts are limited to RCS vendors' offerings.

- In addition to remote computing services, the respondents participated in every other type of computer service, and these are examined in the context of respondents' current activities and trends in RCS.

- This report therefore examines trends among the large, nonspecialized RCS companies. The data cannot be used by themselves to make industry projections.

- Clients' inquiries and comments on the information presented are welcome.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

A. INTRODUCTION

- This study primarily presents the expectations of 17 major RCS vendors for the period 1979-1985.

  - Aggregate computer services revenues of these vendors in 1979 were $1.3 billion, with RCS revenues of $870 million.

  - Expected aggregate computer services revenue of these vendors in 1985 will be $4.2 billion, with RCS revenues of over $2.9 billion.

- Where appropriate, INPUT contrasts these vendor expectations with its forecast for user expenditures. Data from this survey are being factored into INPUT's 1980 Annual Report.

B. KEY RESULTS

- The lowered cost of hardware has helped RCS vendors to maintain prices or to limit increases, but has increased competition for services from turnkey systems and minicomputer vendors.

- Competition has caused some vendors to increase the availability of higher transmission speeds and to offer more protocols, which together have made intelligent terminals more attractive to users.

- The higher transmission rates have also made user site hardware services (USHS) more attractive because they make it possible to do time division multiplexing with the USHS acting as a node.

- INPUT analyzed the RCS revenues and growth predictions of the respondents by the type of use made of their services. This analysis will be expanded in future reports.

  - Revenues to RCS companies from transaction processing and information analysis applications will decline from 74% of 1979 RCS revenues to 61% in 1985, as shown in Exhibit II-1.

  - Revenues from data base management and vendor-provided data bases will grow at an average annual growth rate of 34% through 1985, and their share of total revenues will increase by 50% over that period.

  - Industry specialty services were predicted by respondents to grow at an average annual rate of 29% and to account for 54% of their revenues by 1985, as shown in Exhibit II-2.

- The fastest growing mode of delivery projected by respondents was reported to be data base inquiry and processing, with a five-year average annual growth rate of 30%, as shown in Exhibit II-3. Interactive and remote batch modes of delivery will together account for 57% of incremental growth by mode of delivery.

- INPUT forecasts much higher rates of growth through 1985 for turnkey systems and user site hardware services than did the respondents to this survey. In the short term, however, respondents did predict high growth rates from a small base.

EXHIBIT II-1

RCS VENDORS' REVENUE DISTRIBUTION BY APPLICATION TYPE, 1979-1985

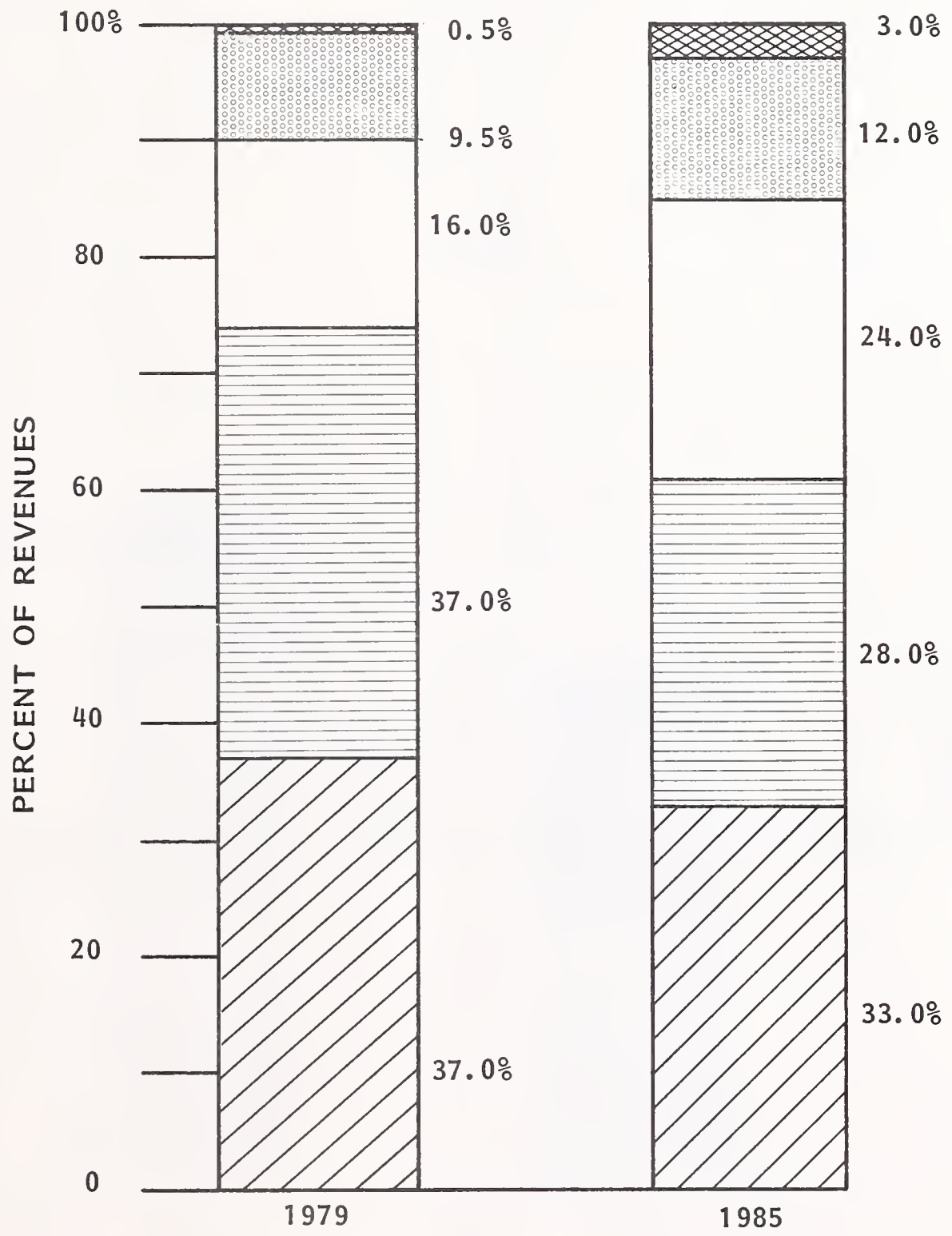

EXHIBIT II-2

RCS VENDORS' REVENUE DISTRIBUTION BY TYPE OF SERVICE, 1979-1985

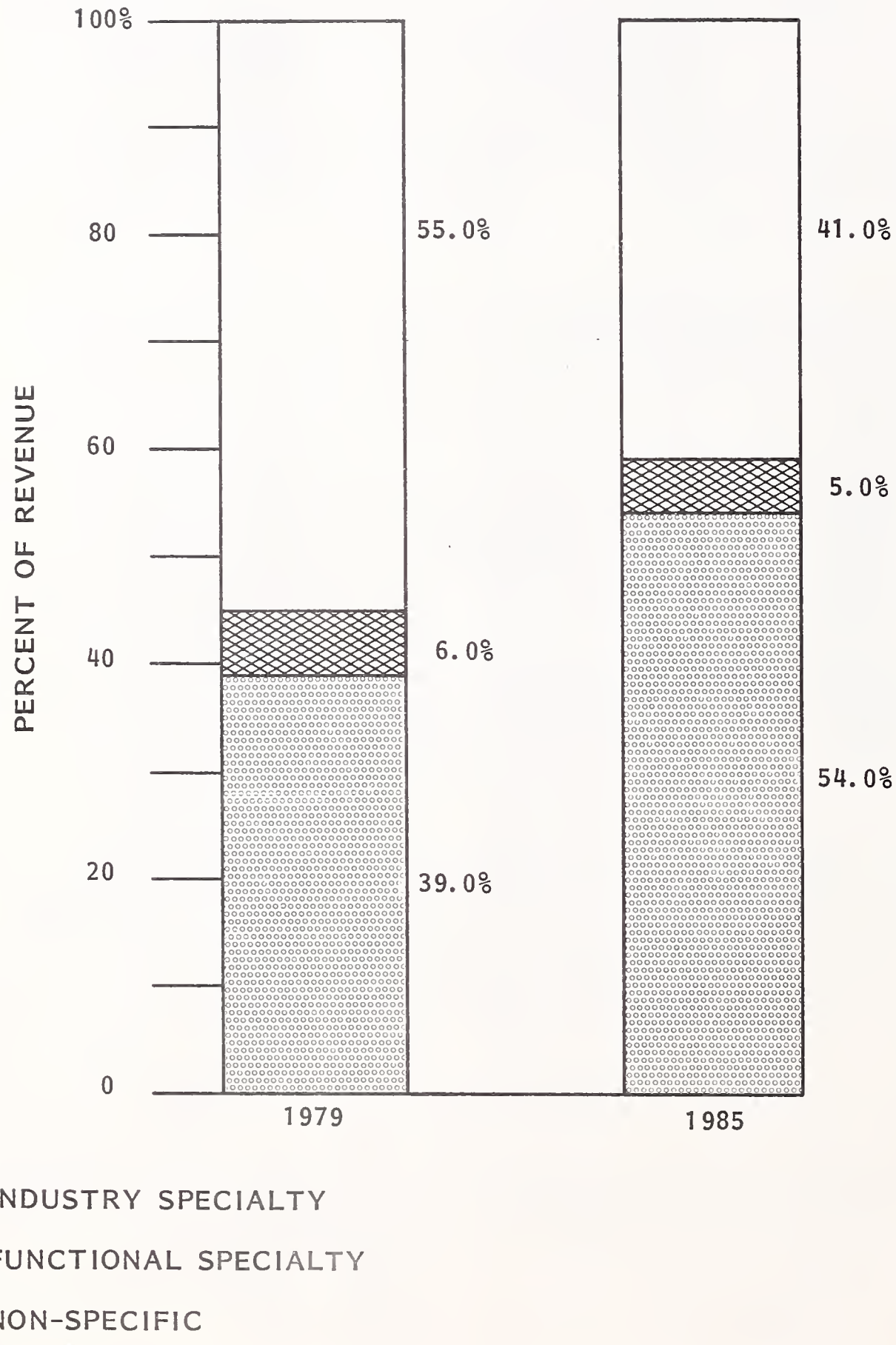

EXHIBIT II-3

INCREMENTAL REVENUE FORECASTED BY RESPONDENTS BY MODE OF DELIVERY, 1980-1985

COMPUTER SERVICES BY MODE OF DELIVERY AND OTHER REVENUE	AAGR 1980-1985 (PERCENT)	INCREMENTAL REVENUE GROWTH IN CURRENT DOLLARS ($ MILLION) 1980-1985
INTERACTIVE	21%	$895
REMOTE BATCH	21	$560
DATA BASE	30	$305
BATCH	15	$155
USHS	16	$60
FACILITIES MANAGEMENT	17	$60
OVERALL PROCESSING	21	$2,035
OTHER REVENUE	23	$225
PROFESSIONAL SERVICES	17	$165
TURNKEY SYSTEMS SOFTWARE PRODUCTS	18	$120
APPLICATIONS	20	$15
SYSTEMS	16	$10
OVERALL SOFTWARE	18	$25
OVERALL	21%	$2,570

0 100 200 300 400 500

- Respondents reported 1979-1980 growth of user site hardware services at 96%, and 1980-1985 annual growth at 16%. INPUT forcasts that the market for user site hardware services will grow at an average of over 50% per year to reach more than $1 billion by 1985.

- Respondent forecasts for turnkey systems growth were 77% for 1979-1980 and 18% for 1980-1985. INPUT forecasts turnkey systems market growth averaging 35% per year through 1985.

- Therefore it appears that RCS companies do not expect to share in these markets as much as other vendors, such as the industry-specialized processing vendors and software companies.

- Seventy-two percent of the respondents were found to be offering at least some processing services on IBM or IBM plug compatible processors.

  - The IBM and IBM PCM revenues were 54% of the respondents' 1979 revenues.

  - Those revenues were forecasted to grow by 25% in the 1979-1980 period, as compared to an overall growth rate of 20%.

- Eight of the respondents had introduced 13 new turnkey system products within the past two years, and five more said they planned to offer a turnkey system product for the first time in the next year.

- Six vendors reported they had offered user site hardware services for the first time in the past two years, and four more said they would introduce it within a year.

- Only two vendors reported that they neither offered nor planned to offer turnkey systems or USHS.

- Vendors reported several changes in the buying process when they introduced new modes of delivery.

  - The sale of either turnkey systems or user site hardware services usually meant that the EDP department as well as the end user would be involved in the decision-making process.

  - The sale of turnkey systems usually requires selling to a higher level than the sale of processing services.

  - The sales time required for selling user site hardware services was reported to be twice as long as the time required for selling processing services.

- Sixty percent of the respondents reported that minicomputers and microprocessors had impacted their corporate strategies.

  - Turnkey systems and mincomputers are the greatest threat to their base of business.

  - Vendors are responding by offering these products as a primarily defensive strategey.

C. RECOMMENDATIONS

- USHS and minicomputers are expected to have the greatest negative impact on RCS revenues from transaction processing and information analysis applications, especially when the RCS vendor is providing very little value added software. Therefore vendors should offer USHS for transaction processing applications and turnkey systems for information analysis applications.

- In addition to USHS, RCS vendors should sell terminals.

- When USHS and turnkey systems are sold, it should only be with very high value added software, and at least half of the system price should be for that software and associated professional services.

- A separate sales force should be employed for turnkey systems, but not for USHS.

- USHS and turnkey systems should be offered on the same hardware, which should have a broad range of sizes in order to address different market size segments.

- Very high transmission rates are expected to become widely available by the mid-1980s, so RCS vendors should be prepared to take advantage of them, particularly in the graphics area.

- RCS vendors should continue to orient themselves toward both industry and functional specialization. Vertical industry markets in particular offer the greatest promise for future growth.

- Data base management systems should be capable of serving as decision support systems in major functional areas such as marketing and finance. Proprietary data bases should be offered to support these applications.

- Vendors should direct more of their resources toward selling the use of their services for user data base management applications, particularly those that are dependent on networks or vendors' data bases.

III CURRENT DELIVERY MODES

III CURRENT DELIVERY MODES

A. INTRODUCTION

- Modes of delivery of computer services include processing services, software products and professional services. A full definition of each of these modes and their submodes appears in Appendix A of this report.

- INPUT studied the specific issue of modes of delivery of processing services in June 1975 in a report on the Remote Batch Marketplace.

- In 1975, INPUT described the remote computing services market in terms of three modes of delivery:

  - "Interactive/Timesharing - characterized by interaction of the user with the system; primarily for problem-solving timesharing, but also for data entry and transaction processing; the user is 'on-line' to the program/files."

  - "Remote Batch - the user hands over control of a job to the computer, which schedules job execution according to priorities and resource requirements."

  - "Data Base Inquiry - characterized by the retrieval of information from a vendor-maintained data base."

- Five years ago, the distinction between interactive and remote batch processing was fairly clear, although the classification of deferred timesharing presented some problems.

  - Remote batch generally meant the installation of a 2780-type device where large amounts of input/output had to be present to justify the expenditure.

    . More importantly, the job to be executed was a "batch" job that was processed remotely.

  - Interactive processing, on the other hand, usually meant small amounts of data.

- In the 1975 study, INPUT examined "pure interactive," "pure remote batch" and the combination of the two services.

- INPUT forecast that the combined mode was growing much faster than the "pure" modes, and that by 1980 it would represent 68% of the market (compared to 20% in 1975).

- That forecast has been more than fulfilled. Today, most RCS companies' revenues are derived from that mixed mode, and it is difficult for many of them to account for "pure" interactive or "pure" remote batch modes.

  - Vendors were generally unable to identify the pure modes in their responses to questions on modes of delivery.

  - They were able to distinguish the remote batch component from the interactive component in the mixed mode due to the fact that most companies have service schedules and prices that differentiate between the two.

- Therefore, although the interactive and remote batch modes are presented and forecast independently, they are two components of a combined mode that are less frequently found in their pure state.

- Data base inquiry as a mode of delivery is as distinct and important as it was in 1975, not to the typical RCS company but to a subset of these companies that specializes in providing these services as their principal, and often their only, mode of delivery. Such services represent one of the fastest-growing segments of computer services use today. These services have been examined in INPUT's recent report Market Opportunities for Data Base Services.

- A new mode of delivery of remote computing services has arisen since 1975, called User Site Hardware Services (USHS). These services:

  - Place programmable hardware on the user site (as compared to the EDP center).

  - Offer access to a telecommunications network.

  - Offer access, through the network, to the RCS vendor's larger computers.

  - Offer significant software as part of this service.

- Most of the major vendors, and some of the smaller ones, are offering USHS under a variety of names, including "distributed network services" and "on-site services."

- USHS represents a very small percentage of vendor revenues today, but it is growing extremely quickly.

- Turnkey systems, which are not processing services, are nevertheless becoming increasingly important to computer services companies as a source of revenue.

- Turnkey systems provide a combination of hardware and software integrated into a system designed to fulfill the processing requirements of a user's application (or applications).

- Like user site hardware services, turnkey systems are sold by vendors as an alternative to processing services and therefore merit special attention when one examines modes of delivery of RCS.

B. REVENUE FORECASTS

- INPUT estimates that the 1979 market for remote computing services was $3.2 billion.

  - The companies responding to this study provided over 26% of those revenues.

  - INPUT estimates that the respondents generated over 50% of all RCS revenues for companies with more than $10 million in revenue in 1979.

- The revenue growth forecasted by the respondents for 1979 to 1980 averaged 26%, as shown in Exhibit III-1.

  - The forecasted growth rate for 1978 to 1979 is slightly higher than the 25% reported by large, public processing companies in the 1980 ADAPSO annual report.

  - At the time the forecast was given (May to July 1980), most of the respondents indicated that they had not yet felt any impact from the recession.

  - The long-term forecast of 21% average annual growth rate was lower than the short-term forecast. This was partly because more than half

EXHIBIT III-1

RESPONDENTS' FORECAST OF REVENUES
BY MODE OF DELIVERY, 1979-1985

MODE OF DELIVERY	REPORTED 1979 ($ MILLION*)	1980 ($ MILLION*)	GROWTH 1979-1980 (PERCENT)	1985 ($ MILLION*)	AAGR 1980-1985 (PERCENT)
PROCESSING SERVICES					
REMOTE COMPUTING SERVICES					
INTERACTIVE	$ 470	$ 570	21%	$1,465	21%
REMOTE BATCH	290	360	23	920	21
DATA BASE INQUIRY	85	115	34	420	30
USER SITE HARD-WARE	25	50	96	110	16
SUBTOTAL REMOTE COMPUTING SERVICES	$ 870	$1,095	25%	$2,915	22%
FACILITIES MANAGEMENT	40	45	15	105	17
BATCH SERVICES	125	155	21	310	15
SUBTOTAL PROCESSING SERVICES	$1,035	$1,295	24%	$3,330	21%
SOFTWARE PRODUCTS					
SYSTEMS	8	9	13	20	16
APPLICATIONS	9	11	22	25	20
SUBTOTAL SOFTWARE PRODUCTS	$ 17	20%	18%	$ 45	18%
PROFESSIONAL SERVICES	115	140	19	$ 305	17
TOTAL COMPUTER SERVICES	$1,170	$1,455	24%	$3,680	20%
TURNKEY SYSTEMS	55	95	77	215	18
OTHER REVENUES	100	120	20	345	23
TOTAL**	$1,325	$1,670	26%	$4,240	21%

*ROUNDED

**TOTAL DOES NOT EQUAL TOTAL GIVEN IN EXHIBIT I-1 DUE TO ROUNDING

the respondents expected the recession to have a negative impact on their growth.

- While the short-term growth of USHS was forecast to be very high from a small base, the long-term growth rate is considerably less than for other modes of RCS, particularly data base inquiry. This reflects the generally defensive nature of USHS.

- Respondents' projections for turnkey systems were very similar to their forecast for USHS, for similar reasons:

  - Start-up situation.

  - Low base of revenues.

  - Defensive offerings.

- Facilities management had one of the slowest growth rate projections. For many of these companies, facilities management is a means to discount standard services for very large customers over long periods of time, and thus is essentially defensive.

- The batch services forecast of 15% average annual growth rate, while the lowest of all the modes of delivery, still shows a respectable rate of growth, even though these vendors are not the primary suppliers of batch services.

- Processing services will continue to account for a little less than 80% of these vendors' revenues through the middle of the decade, as shown in Exhibit III-2.

- The "other revenues" category's strong growth rate is primarily due to some respondents' high forecast of their involvement in communications services.

- Twenty-two percent of the revenues reported by respondents are derived from sources other than processing services.

EXHIBIT III-2

DISTRIBUTION OF RESPONDENTS' PROCESSING SERVICES REVENUES BY MODE OF SERVICE, 1979-1985 BASE

TYPE OF SERVICE/PRODUCT	PERCENT OF REVENUES	
	1979	1985
PROCESSING SERVICES	78%	79%
SOFTWARE PRODUCTS	1	1
PROFESSIONAL SERVICES	9	7
TURNKEY SYSTEM	4	5
OTHER	8	8
TOTAL	100%	100%

- Eight of the respondents reported that they were offering turnkey systems, but only four had sufficient income (more than 1%) to be able to report significant revenues from that source.

- Other sources of revenue include communications services, terminal sales, field engineering services, paper forms and miscellaneous items.

- Professional services were being offered by 13 of the respondents only as an adjunct to their processing services business. These revenues were forecasted to decline from 9% of 1979 revenues to 7% of 1985 revenues. INPUT forecasts that the opposite will happen: professional services' share of the market will increase.

C. REVENUE DISTRIBUTION BY MODES OF DELIVERY

- Although respondents estimated their processing services revenue distribution by mode of delivery, as shown in Exhibit III-3, they pointed out that most of their computing services were delivered in mixed mode.

  - Virtually none of the remote batch service was sold without some interactive use.

  - Much of the interactive use had some remote batch requirements.

  - About 1% of the remote computing services was sold as a part of, and dependent upon, an intelligent terminal and/or network computer access.

- About three quarters of the data base inquiry service (0.5% of total processing services) was sold in its pure form, without interactive or remote batch components.

EXHIBIT III-3

DISTRIBUTION OF RESPONDENTS' PROCESSING SERVICES REVENUES BY MODE OF DELIVERY, 1979-1985

MODE OF DELIVERY	PERCENT OF REVENUES	
	1979	1985
REMOTE COMPUTING SERVICES		
INTERACTIVE	45%	44%
REMOTE BATCH	28	28
DATA BASE INQUIRY	8	13
USER SITE HARDWARE SERVICES	3	3
SUBTOTAL FOR RCS	84%	88%
FACILITIES MANAGEMENT	4	3
BATCH SERVICES	12	9
TOTAL PROCESSING	100%	100%

- Facilities management revenues were all processing services offered under contracts of at least one year, and usually two or three years.

- With a few exceptions, most of the batch services were not actively marketed but were in the process of migrating to remote batch or to turnkey systems.

- User site hardware services represented a small part (3%) of the respondents' revenues in 1979.

IV TRENDS AFFECTING MODES OF DELIVERY

IV TRENDS AFFECTING MODES OF DELIVERY

A. HARDWARE TECHNOLOGY CHANGES

- Changes in the cost and technology of computer hardware have affected most of the companies surveyed.

  - Two of the respondents stated that they were able to maintain the price, or to limit increases in the price, of their processing services due to the lower cost of maintaining their mainframe processors.

  - Ten of the respondents reported that they had decided to offer user site hardware services and/or intelligent terminals, generally as a defensive strategy.

  - Three respondents commented that they had decided to package existing RCS services into a turnkey system offering.

- The vendors that decided to offer intelligent terminals were offering equipment that could be sold as USHS if significant software were added to the offering.

  - The equipment offered was selected because of the broad range of power available in the line.

- Emphasis was put on selling the equipment to lower the cost of data entry or to make the service "friendly" to the end user.

- Only seven of the ten vendors offering USHS or intelligent terminals had more than 1% of their total revenues coming from that source.

- Vendors who chose the turnkey system route did so primarily in response to competitive pressures from turnkey system companies.

  - One vendor indicated that faster turnaround from data entry to report generation was an important factor.

  - Another respondent said that theirs was a third-generation product; it was originally offered in a batch service mode, then in a timesharing mode, and now as a turnkey system.

- Several of the respondents indicated that they were going to start marketing four-color plotters because they had decreased in price.

- Overall, the respondents viewed the decreasing cost of hardware as a double-edged sword.

  - On the one hand, respondents were pleased that they could maintain prices or limit increases.

  - On the other hand, lower costs impacted them by enabling their competition (primarily turnkey systems firms) to compete for the same business.

B. TELECOMMUNICATIONS

- Only half of the companies believed that changes in communication technology or cost have impacted their strategy on modes of delivery.

  - One respondent indicated that the availability of higher transmission rates made it possible for them to offer smart terminals.

  - Another cited higher transmission rates as the basis for its ability to provide time division multiplexing with multiple workstations .

  - Higher communications cost was a major factor in one respondent's decision to offer USHS.

  - One respondent said it had been able to change from a "connect hour" to a "data transmission rate" structure.

  - Another respondent stated that competition has forced it to expand its capabilities and to offer a wider variety of protocols and transmission rates.

  - One respondent cited a network upgrade in standard delivery mode from 300 bits per second (bps) to 1,200 bps as its response to changes in technology as well as competition.

- The respondents did not feel that there had been significant changes in the technology or cost of communications over the past few years, but several stated that this would change within the near future because of technological advancements.

C. USE OF SERVICES

- The manner in which customers use remote computing services can have an impact on the modes of delivery of those services. RCS companies were asked to analyze their clients' use of their services and to estimate both the percentage of revenues that they derived from each use and the expected growth.

- For the purposes of this study, the use of services is examined in five categories. Each category was determined by the primary or predominant use of the application. Many products, services or applications have multiple uses, but usually a primary use can be identified, such as:

  - Transaction processing.

  - Information analysis.

  - Data base management.

  - Vendor data base, inquiry.

  - Vendor data base, processing application.

- "Transaction processing" is characteristically:

  - High-volume.

  - Highly repetitive.

  - Used for most business accounting.

- "Information analysis" generally involves:
  - Converting data into information through the use of mathematical, statistical or financial analysis tools.
  - Providing for easy display of the results in report or graphical form.
  - The ability to address a variety of nonrepetitive problems via rapidly adaptable tools.
  - A common business use for financial, marketing and statistical analysis.
  - Scientific and engineering techniques and applications.
- "Data base management" is characterized by being able to:
  - Organize and maintain a data base of users' information.
  - Store data in a manner that provides rapid and efficient retrieval.
  - Display data according to user-defined parameters.
- "Vendor data base, inquiry" has a proprietary data base provided by and controlled by the vendor.
  - It provides a means of selection and retrieval of data only.
  - It neither provides for, nor allows, the subsequent processing of the data.
- "Vendor data base, applications processing" is characterized by:
  - A proprietary data base provided and controlled by the vendor.

- Providing a means of selection and retrieval.

- Providing a means of further processing the data into information through the full use of information analysis tools.

- Possibly providing a means of mixing the vendor's data with a user's data base.

- Thirteen of the 17 respondents that provided statistical data for this study were able to readily break down the use of their services according to these categories.

  - Four of the respondents were unable to account for these types of use because their revenue accounting systems weren't designed to do so.

  - Most of the respondents who provided data were able to do so because each of their major products or services was designed to fulfill one of the major uses.

  - The revenues reported here by use were 85% of the reported processing service revenues of the 17 respondents.

- Vendor data base applications processing use was 9.5% of the 1979 revenues reported by respondents, as shown in Exhibit IV-1. The level of reported use was low for several reasons:

  - Many of the respondent companies offer these data bases packaged in a data base management system, so identification of these revenues becomes difficult.

  - Most of the data bases offered may be accessed by users who move data into their own programs, where the usage can no longer be accounted for.

EXHIBIT IV-1

DISTRIBUTION OF RCS REVENUES BY USE OF SERVICE, 1979-1985

USE OF SERVICE	1979 PERCENT OF REVENUE	1980 PERCENT OF REVENUE	1980/1979 GROWTH	1985 PERCENT OF REVENUE	1985/1980 GROWTH
TRANSACTION PROCESSING	37%	36%	23%	33%	22%
INFORMATION ANALYSIS	37	36	22	28	18
DATA BASE MANAGEMENT	16	17	34	24	34
VENDOR DATA BASE, INQUIRY	*	*	60	3	78
VENDOR DATA BASE, APPLI-CATIONS PROCESSING	9.5	10	27	12	29
VENDOR DATA BASE SUBTOTAL	10	11	30	15	34
TOTAL	100%	100%	25%	100%	25%

*LESS THAN 1%

- The long-term growth rate for this usage is close to that of data base management since they are very often dependent upon each other.

- Vendor data base inquiry was reported to be the fastest-growing use of services, but from a very small base for this group of vendors.

  - The projected long-term growth rate of 78% per year will still only give this type of use a 3% share of revenues by 1985.

  - Most of the industry revenues for this use came from companies that were not interviewed in this study; that is, the stock market quotation, news and bibliographic services companies.

- Some of the implications of these trends are:

  - Revenues from transaction processing applications will still grow through 1985, but some will migrate either to in-house systems or to turnkey systems.

  - Information analysis applications will move from the remote computing environment to microprocessor-based turnkey systems or personal computers.

  - Data base management applications will continue to grow because the applications software and the data bases incorporated in them are largely beyond the scope of turnkey systems. These systems are often also network-dependent because users need access from multiple locations. Very large applications usage will be maintained by vendors with USHS.

- The annual growth rate for RCS was forecast by respondents at 21% through 1985, which is 16% less than the 25% forecast for revenues associated with all use categories.

- This implies that growth from the sharply focused marketing programs is greater than that from less well-defined efforts.

- Growth rates for some specific types of use, such as data base managment (34%), are substantially higher than INPUT's forecast of 19% for the entire computer services industry through 1985.

D. TYPES OF SERVICES

- Respondents' revenues were analyzed by type of service to examine their current or potential impact on modes of delivery of processing services. Types of service examined were:

  - Industry-specific.

  - Functionally specific.

  - Nonspecific.

- Industry-specific services are characterized by:

  - Processing for a particular function or problem unique to an industry or industry group.

  - Usually satisfying all of the processing requirements of a specific function within the industry.

  - Possibly including application tools packaged to meet the unique requirements of an industry.

- Functionally specific services address a specific function across multiple industry sectors. Examples include:

- Payroll processing.

- Human resource processing.

- Cash management systems.

- Nonspecific services include any services that did not fit into the above two categories. Typical services would include:

  - Data base management systems.

  - Information retrieval software.

  - Statistical, graphical and scientific library routines or products.

- The respondents were asked to indicate the mode of delivery for each specific service.

  - Of the 34 services identified, only two were offered on turnkey systems, one as a facilities management service and the remaining 31 as remote computing services.

  - Since the three non-RCS services each represented less than 1% of the total revenue, they were combined with the RCS revenues for purposes of this analysis in order to preserve the anonymity of the respondents.

  - Very similar products or services were further combined within industry or functional specialty to aid in analysis and to preserve the anonymity of the respondents.

- The revenue distributions shown in Exhibit IV-2 reflect 100% of all processing and turnkey services reported.

EXHIBIT IV-2

DISTRIBUTION OF RCS REVENUES BY TYPE OF SERVICE, 1979-1985

TYPE OF PROCESSING SERVICE	1979 PERCENT OF REVENUE	1985 PERCENT OF REVENUE	1985/1979 AAGR
INDUSTRY SPECIALTY			
BANKING AND FINANCE	6%	5%	20%
MEDICAL	7	10	29
SERVICES	7	10	28
UTILITIES	4	5	26
MANUFACTURING	4	2	6
WHOLESALE	2	2	25
GOVERNMENT	1	*	17
RETAIL	8	20	40
SUBTOTAL/AVERAGE	39%	54%	29%
FUNCTIONAL SPECIALTY			
OFFICE AUTOMATION	*	*	23
CAD/CAM	3	2	16
ENGINEERING	3	2	13
PERSONNEL	*	1	86
SUBTOTAL	6%	5%	20%
NON-SPECIFIC	55	41	16
TOTAL/AVERAGE	100%	100%	22%

*LESS THAN 1%

- Thirteen of the 17 respondents were able to report some specialty revenues.

- Four of the respondents reported that all of their revenues were derived from nonspecific types of services.

- All of the 13 respondents reporting specialty types of service also reported varying amounts of nonspecific services revenues.

- Forty-five percent of the respondents' 1979 revenues came from specialty types of service. The respondents projected that these services would grow to 59% by 1985.

  - The industry specialty services were projected to grow 29%, nearly double the rate of growth for nonspecific services (16%).

  - Industry specialty products are likely to move to turnkey services as a mode of delivery, although less than 2% of revenues are currently delivered in the latter mode.

- Only half as many functional specialty services as industry specialty services were reported by respondents.

  - At least one major functional specialty not reported was payroll processing, which is primarily a batch application.

  - The percent of revenues from functional specialty services was projected to decline over the forecast period.

  - For most of the functional specialty services reported, which are relatively new to the processing industry, it may be too early to forecast their future.

- Personnel processing was projected to grow at the fastest rate (86%), though from a base of less than 1% of the total revenue.

- No statistics were gathered that directly correlated the uses of services with the types of service, but, based on the distribution of revenues and their respective growth rates, it is likely that many of the industry specialty types of services are used for data base management and vendor data base processing applications.

  - Many of the nonspecific types of services are based on transaction processing and/or information analysis usage.

E. COMPUTER HARDWARE USED AS CENTRAL PROCESSORS

- As shown in Exhibit IV-3, IBM was the largest supplier of mainframes used by the respondents, with 45% of 1979 processing services revenue based on that equipment and another 9% based on plug compatible manufacturers (PCMs) such as Amdahl, Itel (now National Systems) and CDC.

  - The rates of growth of revenues on IBM PCMs are 30% faster than on IBM equipment.

  - If these trends continue, IBM and IBM PCMs could capture as much as 64% of the revenue base for RCS by 1985.

  - Seventy-two percent of the vendors were offering some IBM- or IBM PCM-based service, showing that vendors are establishing the base for expansion of these services.

  - The revenue growth of services provided on Digital Equipment Corporation machines was reported to be well below average, at 14%. If this trend continues, DEC could lose 33% of its market share by 1985.

EXHIBIT IV-3

REVENUE DISTRIBUTION BY MAKE
OF PROCESSOR, 1979-1980

MANUFACTURER	NUMBER OF RESPONDENTS OFFERING SERVICE*	1979 PERCENT OF REVENUE	1980 PERCENT OF REVNEUE	1980-1979 GROWTH
IBM	12	45%	47%	27%
IBM PCM	5	9	9	31
SUBTOTAL	17%	54%	56%	25%
CONTROL DATA	5	8	9	34
DIGITAL EQUIPMENT	4	15	14	14
ALL OTHERS	8	23	21	8
SUBTOTAL	17	46%	44%	56%
TOTAL	34	100%	100%	20%

*TOTAL EXCEEDS NUMBER OF RCS VENDORS IN SURVEY BECAUSE MANY VENDORS OFFER SERVICES ON MORE THEN ONE MAKE OF PROCESSOR

- Services based on Control Data Corporation equipment were reported to be growing at the fastest rate, which could increase CDC's market share of revenue from 8% to 14% by 1985.

- The "all other" category was reported as the lowest-growth category.

- Caution should be exercised in interpreting these data.

  - The growth rates indicated are not necessarily a reflection of the measure of success that a particular manufacturer has in marketing its hardware.

  - The growth rates are a measure of of the respondents' abilities to sell services on the basis of their equipment.

- One trend is clear: Business on IBM's and IBM PCMs is large and growing rapidly because there is more software (especially industry and functional specialty software) available for that type of equipment.

- Five respondents reported that turnkey systems were offered on five different manufacturers' equipment: BTI, Data General, Digital Equipment Corporation, Hewlett-Packard and Tandem.

  - The revenue growth rate for turnkey systems was reported to be almost 90% per year, as shown in Exhibit IV-4.

  - Other studies by INPUT strongly support this projected high rate of growth for the next five years.

  - If this rate were to continue through 1985, turnkey system revenues for the responding companies would then be as much as 75% of processing services revenues.

EXHIBIT IV-4

NUMBER OF COMPANIES OFFERING OR PLANNING TO
OFFER NEW MODES OF DELIVERY

MODE OF DELIVERY	OFFERINGS PRIOR TO JUNE 1978	OFFERINGS INTRODUCED BETWEEN JUNE 1978 AND 1980	OFFERINGS PLANNED BY JUNE 1981	TOTAL RECENT AND PLANNED OFFERINGS	MODE NOT OFFERED
TURNKEY SYSTEMS	3	5	3	11	6
USER SITE HARDWARE SERVICES	0	7	3	10	7
FOUR-COLOR GRAPHICS	0	7	0	7	10
IMAGE PROCESSING	0	3	0	3	14
AUDIO RESPONSE	0	2	0	2	15

F. RECENT AND PLANNED NEW MODES OF DELIVERY

- In the past two years, 15 of the 17 companies responding have offered a new mode of delivery.

  - The most frequently mentioned new modes of delivery were user site hardware services and four-color graphics capabilities, as shown in Exhibit IV-4.

  - Five of the companies had introduced turnkey systems based on computers from a variety of vendors, including only one from IBM.

- Three new image processing offerings were introduced, which included:

  - One respondent providing output on either microfilm or 35mm slides, the latter being used as a vehicle for graphical ouput.

  - Another provided a signature verification system using CRTs.

- Two vendors have introduced an audio-response, touch-tone telephone service in conjunction with cash management systems.

- Among those with plans for a new mode of delivery in the next year, three of the companies hope to offer turnkey systems and another three USHS.

- All of the companies planning to offer USHS and one of those planning a turnkey offering said they would like to base their products on the IBM 4300 or an equivalent PCM. In this way, they would be able to offer software they already supported, and training, documentation and technical support costs and problems would be substantially lower.

- The companies may not base their products on the IBM 4300 or an equivalent PCM because:

- The IBM 4300 is often unavailable.

- Some IBM PCM hardware vendors will not provide field engineering services to companies receiving OEM discounts.

- They are afraid that some IBM PCM manufacturers may not be in business very long.

- The eleven companies offering or planning to offer turnkey systems involved 19 different systems, five of which were in the planning stage.

G. CHANGES IN THE BUYING PROCESS

- The vendors that had introduced four-color graphics, image processing and audio response said that they had encountered no change in the buying process.

- Three vendors with experience selling large USHS to Fortune 500 prospects noted the following changes in the buying process:

  - The EDP department had to be involved in the buying decision.

  - The sales calls had to be made at a higher level than in a typical processing service sale.

- Four of the eleven respondents selling turnkey systems said that they had to be sold to a higher level of management, and two of them said that the EDP department had to be involved in the buying process.

- INPUT's research highlights several considerations:

  - Many RCS companies have unrealistic expectations about the length of time involved in the selling process of USHS. Most vendors expect the sales cycle to take three months, but find that it takes closer to six months.

  - Most of the RCS vendors' sales people were dealing with the EDP department for the first time, leading to a form of "culture shock."

  - Due also to the EDP department's involvement, sales people require more data processing hardware expertise to be effective than is needed for a processing services sale.

H. COMPETITIVE FORCES

- Respondents generally considered their business safe from threats, as shown in Exhibit IV-5.

  - Turnkey systems and minicomputers were rated as the greatest threat to their business.

- Many of the respondents expressed the feeling that turnkey systems and minicomputers were a double-edged sword, that obviously they were a competitive force to be dealt with, but also that they presented an excellent opportunity for services companies to offer alternative modes of delivery.

- The concern about applications software seemed, in part, to focus on a concern about software vendors selling very sophisticated data base management systems and information analysis systems for use on minicomputers. This would include the types of software that are considered premier products by many of the remote computing services companies interviewed.

EXHIBIT IV-5

RATINGS OF
THREATS TO
CURRENT BASE OF BUSINESS

COMPETITIVE THREAT	RATING*
TURNKEY SYSTEMS	3.2
MINICOMPUTERS	3.1
APPLICATIONS SOFTWARE	2.6
MICROCOMPUTERS	2.4
REMOTE COMPUTING SERVICES	1.6
PROFESSIONAL SERVICES	1.6
COMMUNICATIONS	1.6
FACILITIES MANAGEMENT	1.4
BATCH PROCESSING SERVICES	1.2
SYSTEMS SOFTWARE	1.2

TOTAL NUMBER OF RESPONDENTS = 17

*RATING BASED ON A SCALE OF 1 TO 5, WITH 5 INDICATING THE GREATEST THREAT

- Most companies have had to reevaluate their strategies as a result of new product offerings by competitors.

- Several of the respondents said that the low cost of microcomputers caused them to consider offering them as a base for low-cost USHS to support graphics or data entry applications.

- A number of respondents mentioned a particular concern that the IBM 4300 or 8100 and the DEC 11 were having an impact on their current bases.

- Another said that it usually reacted to a competitive offering only when it impacted a specific product line. For example, it had to offer an audio response capability when a competitor did, in order to protect a particular applications product.

- The fact that some RCS competitors had organized along industry specialty marketing lines caused one respondent to consider changing from its less-specialized approach.

V PLANNING FOR THE 1980s

V PLANNING FOR THE 1980s

A. REMOTE COMPUTING SERVICES

- Many people inside and outside the computer services industry have been concerned about the imminent doom of the remote computing services industry as a result of the invasion of the minicomputer and the microprocessor. So far it appears that such fears have been grossly exaggerated, although the full impact of very small computers for personal and departmental use has yet to be felt. (See INPUT's study, Selling Personal Computers to Large Companies.)

- Some of the more venturesome companies in the industry responded to the threat a few years ago with a primarily defensive strategy by introducing user site hardware services (USHS).

- Most companies waited on the sidelines to see what would happen. A few are still there, but the majority of the RCS firms now offer such services.

- Respondents to this survey indicated that user site hardware services accounted for 2.5% of their processing services revenues in 1979, and were forecast to grow to only 3% of their revenues by 1985.

- However, INPUT estimates that user site hardware services will acount for at least 6% of processing services revenues by 1985, with well over a billion dollars in revenue.

  - The strategy of many of the new companies offering these services is more offensive than defensive.

  - INPUT expects the high growth rate for these services to persist longer than respondents anticipate in their forecast of a long-term growth rate of only 16% per year.

- INPUT forecasts that turnkey systems will represent over $23.3 billion in revenues by 1985. The share to be obtained by processing services companies will be greater than that forecast by the companies surveyed.

- These very large markets for USHS and turnkey systems are not expected to grow at the expense of the traditional remote computing services, but will be the result of exploiting new markets not currently served by those vendors. However, some revenue will be transferred.

- The remote computing services companies' main defense and offense, in respect to minicomputers and microprocessors, lies in what they sell and to whom they sell it.

  - Vendors of raw computer power, who sell processing transactions on a repetitive basis or perform information analysis on an individual basis, are most vulnerable to the mini/micro competition.

  - Research shows that these uses of services will decline as a share of total revenues in the RCS industry by nearly 20% in the next five years.

  - Much of the transaction processing business will migrate to the small computer, particularly in its turnkey system form.

- As this processing, storage and software capability increases in the 1980s, very small computing systems (less than $15,000 purchase price) will be able to address more and more information analysis needs.

- Bond yields serve as an example of the trend in information analysis.

  - In the early 1960s, financial analysts computed bond yields by extrapolation from yield tables generated by batch processing systems.

  - By the late 1960s, investment bankers were using remote computing services to perform this analysis. A typical large bond dealer would spend $5,000 a month calculating the yields on bonds.

  - By the early 1970s, several manufacturers introduced minicomputers priced under $5,000, some of which could be set on the top of a desk, which could perform the same calculations but in far greater volume.

  - In the late 1970s, this same analysis could be performed on a pocket calculator that cost iess than $100.

- In the meantime, the remote computing services companies went on to bigger and more complex problems involving information analysis.

  - This usage is still high, accounting for approximately 37% of the 1979 processing services reported by our respondents.

  - However, a decline will be inevitable in the 1980s as desktop computers are introduced with half a million bytes of memory at a total purchase price approaching what many RCS users are accustomed to spending each month. These desktop computers will also have the requisite software.

- Processing companies should exploit this trend offensively, rather than defensively, by offering:

- User site hardware services to address the transaction processing applications.

- Turnkey systems for information analysis needs.

- The use of processing services for information analysis and transaction processing is still expected to produce more than half of the incremental revenues processing companies will earn over the next five years.

  - However, the growth rate for these uses will be substantially lower than that for data base management and vendor data base uses of processing services.

- While continuing to serve the aforementioned uses, processing companies should direct more of their resources and efforts to the higher-growth types of uses.

  - Data base management and vendor data base processing services are projected by the respondents to grow at an average annual rate of 34% through 1985.

  - Beyond 1985, the potential growth rates for these services are even higher, as technological advances lower the cost of delivering these services to the consumer marketplace.

- The data base management services that will fuel this growth will:

  - Be capable of managing very large volumes of data.

  - Provide for the distribution of data across multiple computers at the vendor's and the user's site.

  - Access numerous and extensive vendor-provided data bases, especially demographic, marketing, financial and economic data bases.

- Have multidimensional, analytical, statistical and modeling capabilities.

- Provide flexible and easy reporting in ad hoc as well as fixed mode.

- Offer a menu of alternatives for the visual display of information.

- Provide a means of inputting and outputting large amounts of data at the user's site or at a nearby vendor's branch office.

- In addition:

  - The system should be "portable" in that all or part of it should be made available to the user in a broad range of hardware configurations on user site hardware.

  - Security and access accounting control to data and modules should be comprehensive and flexible.

- Throughout the 1980s, processing vendors should be building within the framework of the general and flexible data base management systems, industry and functionally specific standard product offerings which will support a variety of decision-making applications for corporate users. The direction to be taken here should be determined by the vendors':

  - Current customer base.

  - Areas of industry expertise.

  - Functional capabilities of their data base management systems.

  - Proprietary data bases.

- Industry and functional specialization will be vital ingredients to success in the 1980s in the marketing of processing services.

- The respondents to this study reported that 45% of their 1979 revenues came from industry and functional specialty products.

- The industry specialty products were projected to have an average annual growth rate of 29% through 1985.

- Fifty-nine percent of the respondents' revenues are forecast to come from the specialty areas and only 41% from nonspecific products, which have a projected growth rate of only 16% through 1985.

• If they have not already done so, processing companies should reorganize themselves to address industry and functional markets.

- Firms should have revenue accounting systems that report not only the products sold but the industry or functional areas within an industry to which they are sold.

- Firms starting to specialize should concentrate on those industries in which they have the broadest base of revenues, software and expertise.

- Firms that plan growth through acquisitions should look for industry-specialty or functional specialty companies that have established growth records in vertical markets.

- Firms that plan to develop specialty products internally should be cautious when estimating the lead time and investment. Their cost can be much more than an acquistion, and their success is less certain.

- Companies that take the specialty route through licenses on software should look for exclusive agreements - with purchase options to protect their investment in marketing - in the event that they develop a large customer base.

- The cost of market development is very high and companies should do this only for specialized products over which they can exercise control.

- Industry-specialty and functional specialty products are often tied to proprietary data bases or can be enhanced by an interface into data bases.

- INPUT has forecast that the market for on-line data bases for RCS vendors will grow by 24% AAGR to $3.18 billion in 1985. (See Market Opportunities for Data Base Services, July 1980).

- RCS vendors should acquire the rights to market data bases that fit into their specialty marketing plans.

- Data bases will also be a vital element in decision-support systems used by Fortune 1,000 companies in the 1980s.

- Access to data bases is usually through communications networks. Their maintenance requires very large-scale processing systems.

  - Data base applications are less likely to migrate to modes of delivery other than RCS.

  - Timeliness and reliability are critical factors.

- Specialty products should be offered as standard programs, but with flexible parameters. When possible, they should be developed within the vendors' proprietary data base management system.

- Respondents reported that they were experiencing their fastest growth with industry specialty products for the services (mostly accounting), medical and retail industry sectors.

- INPUT predicts that the greatest opportunities for functional specialty products lie in CAD/CAM products and services.

- New products and services should be driven by marketing, not by the technical or sales departments.

- Image processing applications will become more widely available through RCS vendors as a result of higher transmission rates in the 1980s, so vendors should begin to establish themselves in this technology today.

B. EXTENSIONS OF NETWORK SERVICES

- Terminals, in their various manifestations, will provide numerous new opportunities to extend network services in RCS in the 1980s.

  - Most vendors interviewed for this study were not marketing terminals as OEMs.

  - Many of the vendors were going to start selling terminals because of their planned involvement in USHS or graphics.

- Vendors who had been selling terminals seemed to have a number of advantages over those who did not. RCS vendors who sold terminals:

  - Benefited from their experience with field engineering support, logistics of delivery, maintaining inventory, negotiating contracts with manufacturers and building profit margins when it came to offering user site hardware services.

  - Were able to order proprietary features on their terminals that helped to enhance or to lock in processing services.

  - Were involved, and played a major role, in the strategic planning of terminal manufacturers.

- Were able to design and build prototypical machines for certain specialty products.

- At least one RCS vendor took the final step and started to manufacture its own terminals, resulting in improved profit margins.

  - As a possible offset to the benefits, there is some debate about whether the profit margins are as great in that activity as they are in simply selling processing services.

  - INPUT recommends that remote computing services companies seriously consider selling terminals.

- INPUT expects that some general-purpose terminals with limited display capability, either with CRT or printer, and a full keyboard with some intelligence will be availabe soon for less than $500.

- A number of very low-cost, special-purpose terminals are already on the market with limited capabilities.

  - Many more are expected in the next few years.

  - These devices will help RCS put the typical office worker - and eventually, homemaker - on-line to computer services.

- The rapidly dropping cost of terminals will have a substantial impact on the use of business graphics and design applications in the 1980s.

- The broader base of graphics terminals will expand markets, particularly in 35mm slide format suitable for management presentations.

- Touch-tone telephones, with microprocessors and modems built in and a limited display, may come into wide use by the mid-eighties, particularly in the areas of credit approval, electronic funds transfer and data base inquiry.

- These devices will be programmable so that they can autodial an RCS vendor and automatically log into its system.

- Real-time stock and commodity quotations, as well as recent wire service news, will become available to the executive over the telephone.

- The rental price of these telephone terminals will probably be less than $25 per month.

- The distinction between smart terminals, intelligent terminals, microprocessors and minicomputers will diminish in the eighties.

  - The lower cost of larger processors will make differentiation less necessary.

  - The availability of software across a very broad range of processing capabilities, from the low end (under $5,000) to the high end (megabyte), will enable almost all terminals to qualify as a base for user site hardware services.

C. USER SITE HARDWARE SERVICES

- In the report Market Opportunities for User Site Hardware Services from Remote Computing Services Companies, INPUT projects that user site hardware services will produce over a billion dollars a year in revenues for processing services companies by 1985.

  - INPUT recommends that processing services companies offer these services.

  - Vendors should offer equipment that is available in as broad a range of sizes and capabilities as possible.

  - Compatibility with a vendor's mainframe processing service is an important consideration, but not the only one.

- Vendors should target the transaction processing market for their USHS.

- User site hardware services should only be offered with very high value added software.

- In order to obtain an adequate profit margin, vendors should charge at least 50% of the total price of their services for software, support and professional services.

- Vendors should anticipate a longer sales cycle for user site hardware services.

- Vendors should not use a separate sales force for their user site hardware services, but should back up their regular sales force with regional sales support people who have experience and expertise in hardware sales.

D. TURNKEY SYSTEMS

- INPUT estimates that the total market for turnkey systems was a little over $4 billion in 1979, growing to a little over $23 billion by 1985.

- Processing services companies will benefit by selling turnkey systems in an overall market that will grow at 35% per year.

- A significant portion of growth for processing services companies will probably come from the acquisition of existing turnkey system companies, as the vendors diversify into vertical markets and expand in existing ones.

- INPUT estimates that there are over 4,500 vendors of turnkey systems in the U.S. today.

- In a recent survey of 114 processing services companies, 22% reported that they had installed turnkey systems in 1979 and an additional 36% projected that they would be installing systems in 1981.

- Almost half of the respondents to that survey with revenues over $10 million, indicated that they would be installing turnkey systems by 1981, as shown in Exhibit V-1.

- Whenever possible, vendors should offer turnkey systems on the same hardware used for USHS, in order to reduce support costs.

- Vendors should select hardware that provides a wide range of sizes, so that systems may be targeted toward different size prospects.

- Vendors should select turnkey systems that address large, vertical, industry-specialty markets.

- The software should be offered in a standard format, but should have flexible parameters.

- A continuous source of revenues should be sought through the sale of add-on software and hardware.

- Separate marketing and sales forces should be established for turnkey systems, with the objective of creating a separate line of business as early as possible.

- Turnkey systems should be sold as a service, not as a product.

EXHIBIT V-1

PROCESSING SERVICES COMPANIES INSTALLING
TURNKEY SYSTEMS, 1979-1981

COMPANY SIZE ($ MILLION)	PERCENT OF RESPONDENTS		
	1979	1980	1981
< $2	14%	29%	29%
$2-10	24	39	42
> $10	33	36	45
AVERAGE	22%	33%	36%

SOURCE: 1980 ADAPSO SURVEY

APPENDIX A: DEFINITIONS

APPENDIX A: DEFINITIONS

COMPUTER SERVICES

- Services provided by vendors that perform data processing functions using vendor computers (processing services) or assist users to perform such functions on their own computers (software products and/or professional services).

- Following are definitions of the modes of service used in this report:

  - Remote Computing Services. The provision of data processing to a user by means of terminals at the user's site(s), connected by a data communications network to the vendor's central computer. There are three submodes of RCS:

    . Interactive (timesharing) is characterized by the interaction of the user with the system, primarily for problem-solving time-sharing but also for data entry and transaction processing. The user is on-line to the program/files.

    . Remote Batch hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements.

- Date Base inquiry is characterized by the retrieval of information from a vendor-maintained data base. This may be owned by the vendor or a third party.

- User Site Hardware Services (USHS). These are offerings, typically provided by RCS vendors, which place programmable hardware at the user's site (rather than at the EDP center). USHS offers:

  - Access to a communications network.

  - Access through the network to the RCS vendor's larger computers.

  - Significant software as part of the service.

- Batch Services. This includes data processing performed at vendors' sites, of user programs and/or data that are physically transported (as opposed to electronically by telecommunications media) to and/or from those sites. Data entry and data output services, such as keypunching and COM processing, are also included. Batch services include those expenditures by users that take their data to a vendor site, where a terminal connected to a remote computer is used for the actual processing.

- Processing Services Facilities Management (FM). FM involves the provision of processing services to the user on a long-term basis (greater than one year). The user purchases services using the vendor's computer and staff.

USE OF PROCESSING SERVICES

- Processing services encompass facilities management, remote computing services, batch services and user site hardware services. They are categorized by use as follows:

  - Transaction Processing indicates those services where the primary or predominant purpose of the application is to process transactions, usually in a highly repetitive fashion. Most business accounting fits into this category. Payroll, accounts receivable, order entry, portfolio accounting and inventory control are all good examples of transaction processing.

  - Information Analysis services are processing services where the primary or predominant purpose of the application is to convert data into information through the use of mathematical, statistical or financial analysis tools that readily and easily display the results in report or graphical form. The tools may be rapidly adapted to address a variety of nonrepetitive problems. These tools are often in the areas of financial analysis, marketing, planning and statistical analysis. Many of the techniques incorporated have their origins in scientific and engineering applications, which also generally fall within this category.

  - User Data Base Management services are processing services where the primary or predominant purpose of the application is to organize and maintain a data base of user information in a manner that facilitates its rapid and efficient retrieval and display according to user-defined parameters, either in an ad hoc or fixed form.

  - Vendor Data Base services are processing services where the primary or predominant purpose of the application is to retrieve and/or process data supplied by the vendor who controls access to it (although it may

be owned by a third party). There are two modes of delivery of this service:

. Inquiry data base services provide a means of selection and retrieval of data only. They neither provide for, nor usually allow for, the subsequent processing of the data. Stock market statistics, news services and bibliographic data bases are commonly offered in this mode.

. Application Processing services, in addition to providing a means of selection and retrieval, provide a means of further processing the data into information through the full use of information analysis tools and data base management systems, which permit the merging of vendor data with user data. Demographic, marketing and financial and economic data bases are commonly offered in this mode.

TYPES OF PROCESSING SERVICES

- Processing services are further categorized by three types:

  - Industry-Specific services provide processing for particular functions or problems unique to an industry or industry group. The applications software provided usually satisfies all of the processing requirements of a specific function within the industry, but may include application tools that are packaged to meet unique requirements of an industry. Examples of industry-specific services include tax processing for the accounting industry, seismic data processing, hospital information systems, demand deposit accounting for banks and material requirements planning for small manufacturers. Industry sectors used in this report are defined in Exhibit A-1.

EXHIBIT A-1

INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
MANUFACTURING	23	APPAREL
	25	FURNITURE
	27	PRINTING
	31	LEATHER
	34	METAL
	35	MACHINERY
	36	ELECTRONICS
	37	TRANSPORTATION
	38	SCIENTIFIC AND CONTROL INSTRUMENTS
	39	MISCELLANEOUS MFG.
	10	METAL MINING
	11	ANTHRACITE MINING
	12	COAL MINING
	13	OIL AND GAS EXTRACTION
	20	FOOD PRODUCTS
	21	TOBACCO
	22	TEXTILE PRODUCTS
	24	LUMBER AND WOOD PRODUCTS
	26	PAPER PRODUCTS
	28	CHEMICALS
	29	PETROLEUM
	30	RUBBER AND PLASTICS
	32	STONE, GLASS, CLAY
	33	PRIMARY METALS

EXHIBIT A-1 (CONT.)

INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
TRANSPORTATION	40	RAILROADS
	41	LOCAL TRANSIT
	42	MOTOR FREIGHT
	43	U.S. POSTAL SERVICE
	44	WATER TRANSPORTATION
	45	AIR
	46	PIPELINES
	47	TRANSPORTATION SERVICES
UTILITIES	48	COMMUNICATIONS
	49	ELECTRIC, GAS & SANITARY
BANKING AND FINANCE	60	BANKS
	61	CREDIT AGENCIES
	62	SECURITY AND COMMODITY BROKERS
	67	HOLDING AND INVESTMENT OFFICES
INSURANCE	63	INSURANCE (LIFE, HEALTH, ETC.)
	64	INSURANCE AGENTS
MEDICAL	80	HEALTH SERVICES

EXHIBIT A-1 (CONT.)

INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
EDUCATION	82	EDUCATIONAL SERVICES
RETAIL	52	BUILDING MATERIALS, HARDWARE
	53	GENERAL MERCHANDISE
	54	FOOD
	55	AUTOMOTIVE AND GAS STATIONS
	56	APPAREL
	57	FURNITURE
	58	EATING AND DRINKING
	59	MISCELLANEOUS RETAIL
WHOLESALE	50	DURABLE GOODS
	51	NON-DURABLE GOODS
GOVERNMENT	91-97	AS APPROPRIATE
SERVICES	73	BUSINESS SERVICES

- Functionally Specific services provide products that address a specific function across multiple industry sectors. Examples are payroll, personnel, cash management systems and most general business, scientific and engineering applications.

- Nonspecific services include all services not included in the above two categories. Typical services would be based on languages, data base management systems, information retrieval software, and statistical, graphical and scientific library routines or packages. Software in this category could be used to develop applications software that would then be placed in one of the industry-specific or functionally specific categories.

PROFESSIONAL SERVICES

- This category is made up of services related to EDP, including system design, custom/contract programming, consulting, education, training and facilities management. Services are provided on the basis of:

  - Time and Materials - The billing rate is measured in units of time, rather than actual costs.

  - Fixed Price - A firm price is agreed upon for a defined piece of work.

  - Cost Plus Fee - The billing rate depends on actual costs plus a fixed fee.

  - Professional Services Facilities Management - The provision of professional or contract services to the user when the vendor's staff runs the user's computer facility.

SOFTWARE PRODUCTS

- This category includes users' purchases of applications and systems packages for use on in-house computer systems. Included are lease and purchase expenditures as well as fees for work performed by the vendor to implement and maintain the package at the users' site(s). Fees for work performed by organizations other than the package vendor are counted in professional services. There are several subcategories of software products:

  - Applications Products are software that perform processing to serve user functions. They consist of:

    . Cross-industry products, which are used in multiple user industry sectors. Examples are payroll, inventory control and financial planning.

    . Industry-specialized products, which are used in a specific industry sector such as banking and finance, transportation or discrete manufacturing. Examples are demand deposit accounting and airline scheduling.

  - System Products are software that enable the computer/communications system to perform basic functions. They consist of:

    . System operations products, which function during applications program execution to manage the computer system resource. Examples include operating systems, DBMS, communication monitors, emulators and spoolers.

    . System utilization products, which are used by operations personnel to utilize the computer system more effectively. Examples include performance measurement, job accounting, computer operations scheduling and utilities.

- System implementation products, which are used to prepare applications for execution by assisting in designing, programming, testing and related functions. Examples include languages, sorts, productivity aids, data dictionaries, report writers, project control systems, program library management systems and retrieval systems.

TURNKEY SYSTEMS

- A turnkey system is a combination of hardware and software integrated into a total system designed to fulfill the processing requirements of an application (or applications) for a user.

NOTE

- When any ambiguity arises concerning the proper place to count certain user expenditures, INPUT seeks the user's viewpoint and categorizes the expenditures accordingly.

APPENDIX B: DATA BASE

EXHIBIT B-1

RESPONDENTS' FORECAST OF REVENUES
BY MODE OF DELIVERY, 1979-1985

MODE OF DELIVERY	REPORTED 1979 ($ MILLION*)	1980 ($ MILLION*)	GROWTH 1979-1980 (PERCENT)	1985 ($ MILLION*)	AAGR 1980-1985 (PERCENT)
PROCESSING SERVICES					
REMOTE COMPUTING SERVICES					
INTERACTIVE	$ 470	$ 570	21%	$1,465	21%
REMOTE BATCH	290	360	23	920	21
DATA BASE INQUIRY	85	115	34	420	30
USER SITE HARD - WARE	25	50	96	110	16
SUBTOTAL REMOTE COMPUTING SERVICES	$ 870	$1,095	25%	$2,915	22%
FACILITIES MANAGEMENT	40	45	15	105	17
BATCH SERVICES	125	155	21	310	15
SUBTOTAL PRO-CESSING SERVICES	$1,035	$1,295	24%	$3,330	21%
SOFTWARE PRODUCTS					
SYSTEMS	8	9	13	20	16
APPLICATIONS	9	11	22	25	20
SUBTOTAL SOFTWARE PRODUCTS	$ 17	20%	18%	$ 45	18%
PROFESSIONAL SERVICES	115	140	19	$ 305	17
TOTAL COMPUTER SERVICES	$1,170	$1,455	24%	$3,680	20%
TURNKEY SYSTEMS	55	95	77	215	18
OTHER REVENUES	100	120	20	345	23
TOTAL**	$1,325	$1,670	26%	$4,240	21%

*ROUNDED

**TOTAL DOES NOT EQUAL TOTAL GIVEN IN EXHIBIT I-1 DUE TO ROUNDING

EXHIBIT B-2

DISTRIBUTION OF RCS REVENUES BY USE OF SERVICE, 1979-1985

USE OF SERVICE	1979 PERCENT OF REVENUE	1980 PERCENT OF REVENUE	1980/1979 GROWTH	1985 PERCENT OF REVENUE	1985/1980 GROWTH
TRANSACTION PROCESSING	37%	36%	23%	33%	22%
INFORMATION ANALYSIS	37	36	22	28	18
DATA BASE MANAGEMENT	16	17	34	24	34
VENDOR DATA BASE, INQUIRY	*	*	60	3	78
VENDOR DATA BASE, APPLI-CATIONS PROCESSING	9.5	10	27	12	29
VENDOR DATA BASE-SUBTOTAL	10	11	30	.15	34
TOTAL	100%	100%	25%	100%	25%

*LESS THAN 1%

EXHIBIT B-3

DISTRIBUTION OF RCS REVENUES BY TYPE OF SERVICE, 1979-1985

TYPE OF PROCESSING SERVICE	1979 PERCENT OF REVENUE	1985 PERCENT OF REVENUE	1985/1979 AAGR
INDUSTRY SPECIALTY			
BANKING AND FINANCE	6%	5%	20%
MEDICAL	7	10	29
SERVICES	7	10	28
UTILITIES	4	5	26
MANUFACTURING	4	2	6
WHOLESALE	2	2	25
GOVERNMENT	1	*	17
RETAIL	8	20	40
SUBTOTAL/AVERAGE	39%	54%	29%
FUNCTIONAL SPECIALTY			
OFFICE AUTOMATION	*	*	23
CAD/CAM	3	2	16
ENGINEERING	3	2	13
PERSONNEL	*	1	86
SUBTOTAL	6%	5%	20%
NON-SPECIFIC	55	41	16
TOTAL/AVERAGE	100%	100%	22%

*LESS THAN 1%

EXHIBIT B-4

REVENUE DISTRIBUTION BY MAKE
OF PROCESSOR, 1979-1980

MANUFACTURER	NUMBER OF RESPONDENTS OFFERING SERVICE*	1979 PERCENT OF REVENUE	1980 PERCENT OF REVNEUE	1980-1979 GROWTH
IBM	12	45%	47%	27%
IBM PCM	5	9	9	31
SUBTOTAL	17%	54%	56%	25%
CONTROL DATA	5	8	9	34
DIGITAL EQUIPMENT	4	15	14	14
ALL OTHERS	8	23	21	8
SUBTOTAL	17	46%	44%	56%
TOTAL	34	100%	100%	20%

*TOTAL EXCEEDS NUMBER OF RCS VENDORS IN SURVEY BECAUSE MANY VENDORS OFFER SERVICES ON MORE THEN ONE MAKE OF PROCESSOR

APPENDIX C: RELATED INPUT REPORTS

APPENDIX C: RELATED INPUT REPORTS

Title	Publication Date
Selling Personal Computer To Large Companies	1980
Market Opportunities For Data Base Services	1980
Market Opportunities For User Site Hardware Services From Remote Computing Services Companies	1980
Turnkey Systems Opportunities, 1979-1984	1980
Fourteenth Annual Survey Of The Computer Services Industry - ADAPSO	1980
Market Analysis Service - 1979 Annual Report	1979
Opportunities In User Site Hardware Services	1979
Remote Computing Services Companies' Plans For User Site Computers	1978
Remote Batch Marketplace - Requirements For Entry	1975

APPENDIX D: QUESTIONNAIRE

TRENDS IN MODES OF DELIVERY

VENDOR QUESTIONNAIRE

1. What percent of your 1979 revenue is derived from the following breakdown of processing services, hardware and software products, facilities management, professional services, and communication services?

	Percent of Current Revenues	1979-80 % Growth	1980-85 % Growth
Processing Services			
- Batch	_____ %	____ %	____ %
- Dumb Terminals			
. Interactive	_____ %	____ %	____ %
. Remote Batch	_____ %	____ %	____ %
. Both	_____ %	____ %	____ %
- Intelligent Terminal/ Network Computer			
. Interactive	_____ %	____ %	____ %
. Remote Batch	_____ %	____ %	____ %
. Both	%	%	%
Products			
- Dumb Terminal	_____ %	____ %	____ %
- ≥ 4800 Baud Terminal	_____ %	____ %	____ %
- Intelligent Terminal	_____ %	____ %	____ %
- Minicomputer	_____ %	____ %	____ %
- Turnkey Systems	_____ %	____ %	____ %
- System Software	_____ %	____ %	____ %
- Application Software	_____ %	____ %	____ %
Other Services			
- Facilities Management	_____ %	____ %	____ %
- Professional Services	_____ %	____ %	____ %
- Communications Services	_____ %	____ %	____ %
Other Revenue			
- _____	_____ %	____ %	____ %
- _____	_____ %	____ %	____ %
TOTAL	100 %	____ %	____ %

2. Are any of the above products or services sold to specific industry or functional market segments? If yes:

Industry/Function	Mode	% of Revenue	1980-85 Growth Rate
		%	%
		%	%
		%	%
		%	%
		%	%

3. What hardware do you sell or provide services on?

Hardware	Service	% of Revenue	% Growth or Decline
		%	%
		%	%
		%	%
		%	%

4. Have you released products involving a new mode of delivery in the past two years? If yes, describe.

5. Do you plan to offer any new modes of delivery of service in the next year? If yes, describe.

_____

_____

_____

_____

_____

6. In analyzing how your clients use your service, please estimate usage percentages based on the following categories of use:

	% of Current Revenue	1979-80 % Growth	1980-85 % Growth
- Transaction Processing	_____ %	_____ %	_____ %
- Information Analysis	_____ %	_____ %	_____ %
- User Data Base Management	_____ %	_____ %	_____ %
- Vendor Proprietary Data Base			
. Inquiry Only	_____ %	_____ %	_____ %
. Processing Applications	_____ %	_____ %	_____ %

7. Have changes in hardware technology or lower hardware cost impacted your strategy on modes of delivery? If so, how?

_____

_____

_____

_____

_____

8. Have changes in communications technology or cost impacted your strategy on modes of delivery? If so, how?

9. Have you noticed any changes in the client's decision-making process when you have changed your delivery mode? Describe.

10. Have there been any new products or services announced by other companies which have caused you to re-evaluate your current strategy, such as the IBM 8100, personal computers, or computer service company distributed data processing offerings? If so, why?

11. On a scale of 1 to 5 (1 = least threat, 5 = greatest threat), please rate the following services or product offerings as threats to your current base of business over the next two to three years:

	Rating
Processing Services	
- Batch	_____
- Dumb Terminals	
. Interactive	_____
. Remote Batch	_____
- Intelligent Terminal/ Network Computer	
. Interactive	_____
. Remote Batch	_____
Products	
- Microcomputers	_____
- Minicomputers	_____
- Turnkey Systems	_____
- Systems Software	_____
- Application Software	_____
Other Services	
- Facility Management	_____
- Professional Services	_____
- Communications	_____
Other (describe)	
- _____	_____
- _____	_____

12. What were your total revenues in 1979? $ _____

projection for 1980 $ _____

target by 1985 $ _____