THE U.K. COMPUTER SERVICES INDUSTRY

1980

ABOUT INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

Many of INPUT's professional staff members have nearly 20 years experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed in 1974, INPUT has become a leading international consulting firm. Clients include of the world's largest and most technically iced companies.

The company carries research. Working clc tant issues, INPUT's interpret the research mendations and inno needs. Clients recei access to data on wh continuous consulting

Headquarters
2471 East Bayshore
Suite 600
Palo Alto, California
(415) 493-1600
Telex 171407

Los Angeles
4676 Admiralty Way
#401 C
Marina Del Rey, Calif
(213) 823-1230

UNITED KINGDOM
INPUT, Ltd.
Airwork House (4th
35 Piccadilly
London, W.1.
England
01-439-4442
Telex 269776

(03) 371-3082

troit
0 N. Main Street
ite 204
mouth, Michigan 48170
3) 459-8730

shington, D.C.
30 North Lynn Street
ite 400
lington, Virginia 22209
3) 522-2118

FILIATES

tralia
com Australia
hland Centre, 7-9 Merriwa St.,
Box 110,
don N.S.W. 2072
(02) 498-8199
Telex AA 24434

Italy
PGP Sistema SRL
20127 Milano
Via Soperga 36
Italy
Milan 284-2850

INPUT
Planning Services for Management

X-PRO
812

THE U.K. COMPUTER SERVICES INDUSTRY
1980

DECEMBER 1980

THE U.K. COMPUTER SERVICES INDUSTRY
1980

- i -

TABLE OF CONTENTS

INPUT
M-E02

INPUT

INPUT

THE U.K. COMPUTER SERVICES INDUSTRY
1980

LIST OF EXHIBITS

INPUT

INPUT

Page

INPUT

INPUT

I INTRODUCTION

I   INTRODUCTION

A.   THE MAS/EUROPE 1980 PROGRAMME

- This report forms part of the Market Analysis Service for Europe (MAS/Europe) subscription programme for 1980.

- It is written to be read both as a self-contained report on the U.K. computer services market and as a member of the complete set of reports issued under the programme.

1.   PROGRAMME STRUCTURE

- The structure of the complete programme for the year is illustrated diagrammatically in Exhibit I-I. The exhibit also emphasises INPUT's intention to draw comparisons at a continental level between the European market and the market in the U.S.A. in the European Summary Report.

- The MAS/E Programme for 1980 has retained those traditional client-oriented elements which have done so much to ensure benefits to subscribers:

    - Enquiry consulting service.

    - In-house presentation.

INPUT

EXHIBIT I-1

MAS/EUROPE 1980: REPORTING STRUCTURE AND PHILOSOPHY

INPUT
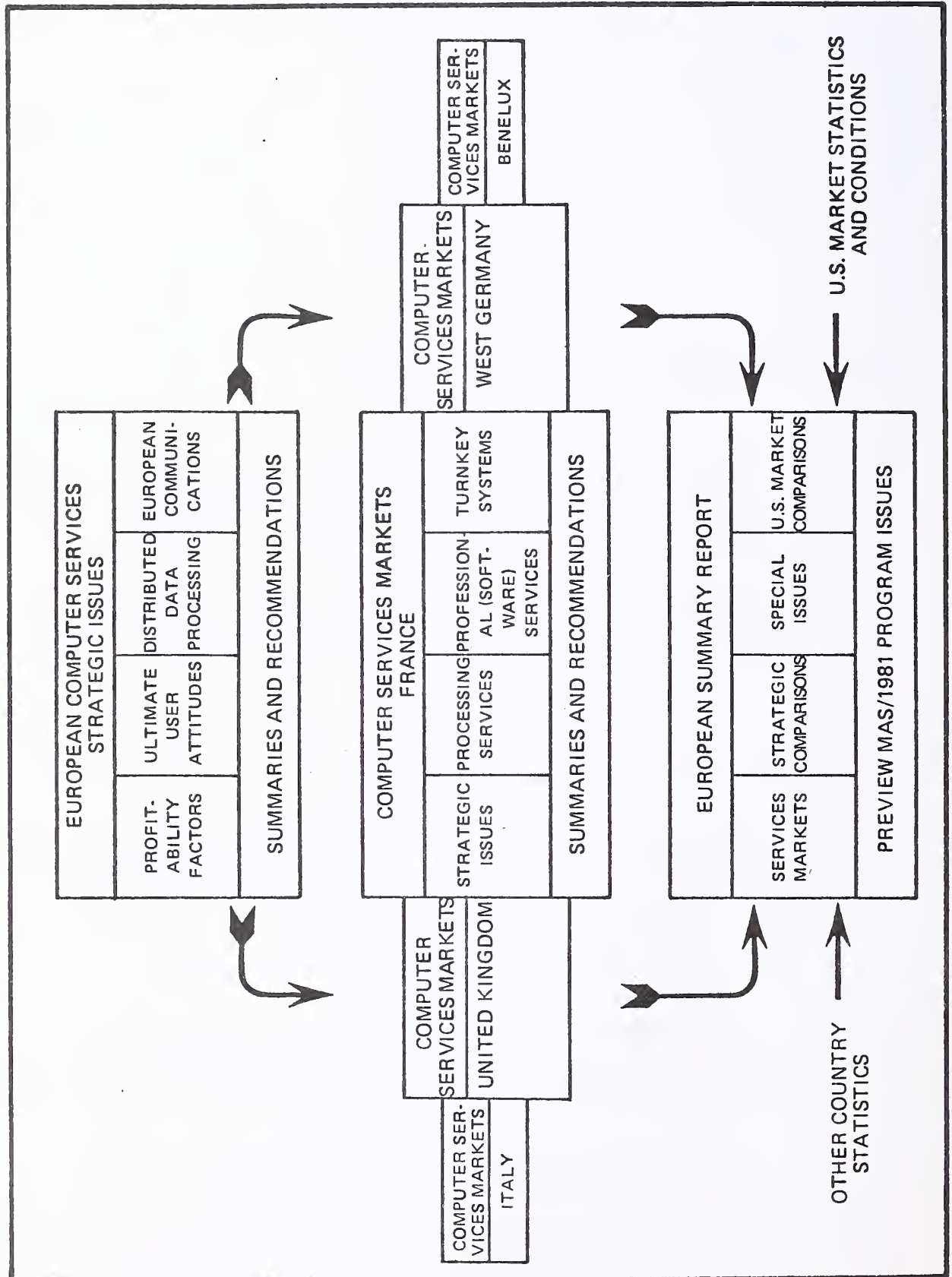
- Joint Client Conference (added this year).

2. RESEARCH APPROACH

- The service is underpinned in Europe by two programmes of research:

    - User research aimed at a variety of organisations chosen by reason of their size and structure rather than for their industry affiliation.

    - Vendor research, aimed at a smaller target sample, but one chosen again principally by size and national coverage criteria.

- Three levels of user interviews were conducted:

    - Multinational corporations, both those with headquarters in Europe and those based in the U.S.A.

    - Major national companies and major subsidiaries of the multinationals.

    - Smaller national independent and subsidiary companies.

- Vendors were interviewed at two levels:

    - Worldwide and European multinationals, including:

        . Computer manufacturers.

        . Processing services suppliers with European networking capability.

        . Software product suppliers.

        . Professional services companies system and software houses, consultancies and turnkey systems suppliers.

INPUT

- National companies offering:

    . Processing-bureau services.

    . Systems and software.

- The interview is the main methodology for obtaining up-to-date information in this field. INPUT supplements this by drawing on past data in the company's database and by using additional data derived from concurrent custom research projects. For the U.K. research in 1980, four questionnaires were used: two for users and two for vendors. The two vendor questionnaires address the two types of data being handled:

    - Market size and company product data.

    - Issue data, consisting of supplier company attitudes: either taken from its own policies, or attitudes to the market as a whole.

- The two user questionnaires are directed at:

    - General management.

    - Management.

- The objective behind choosing research participation from companies according to their size and national coverage characteristics is:

    - To assess the impact of the trend towards dispersed or distributed data processing as it affects organisations of varying size and geographic spread.

- A broad classification by industry type is being made, namely a division by three major classifications:

    - Discrete manufacturing.

- 4 -

INPUT

EXHIBIT I-2

MAS/EUROPE 1980: USER ATTITUDE RESEARCH, TARGETTED SAMPLES

INPUT
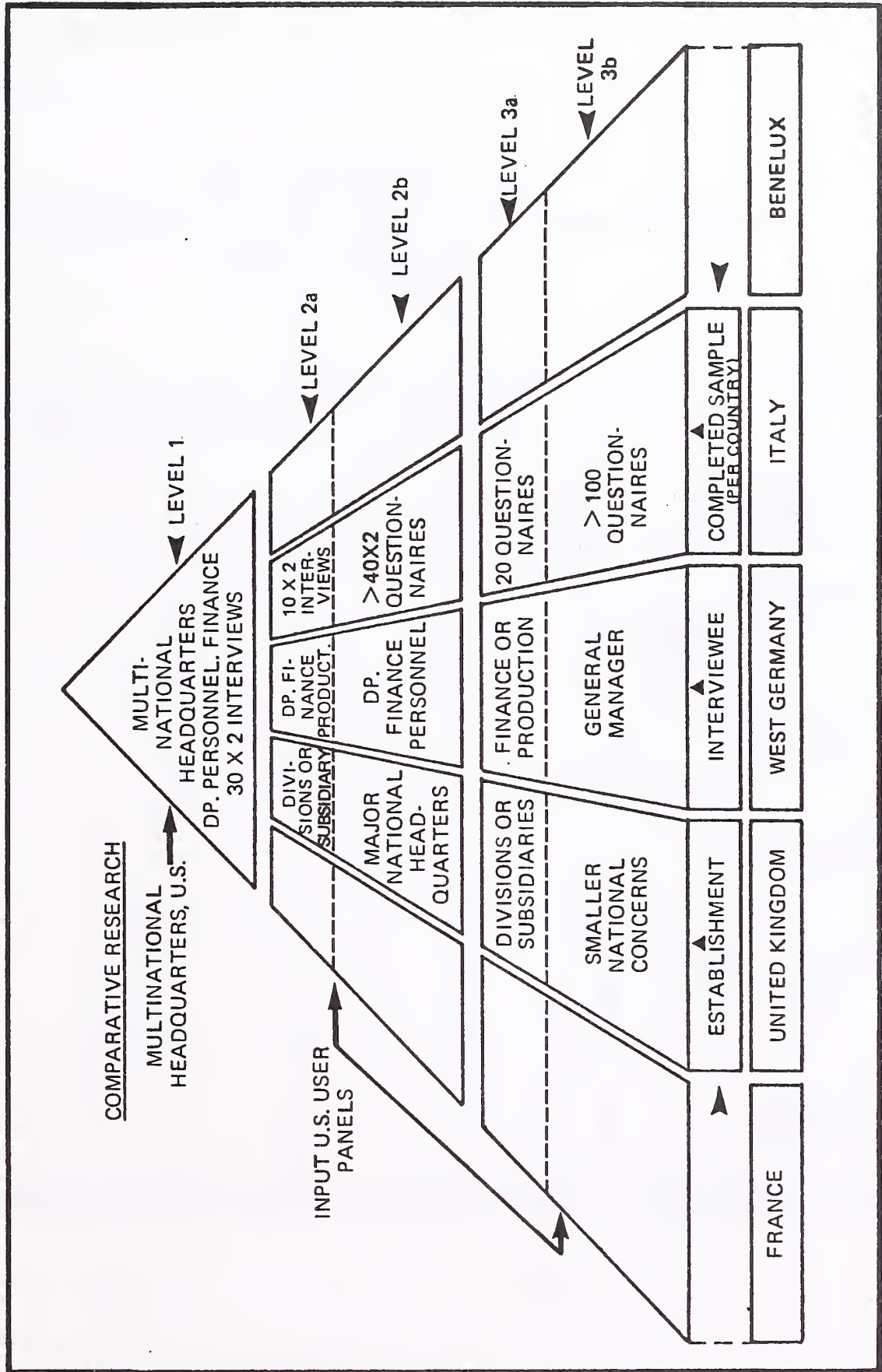
EXHIBIT I-3

MAS/EUROPE 1980:
VENDOR RESEARCH ON PROFITABILITY AND OTHER ISSUES,
TARGETTED SAMPLES

TYPE OF VENDOR	NUMBER OF INTERVIEWS BY COUNTRY/MARKET					
	MULTI-NATIONAL	BENELUX	FRANCE	ITALY	UNITED KINGDOM	WEST GERMANY
COMPUTER MANUFACTURER	15	–	–	–	–	–
PROCESSING SERVICES	10	5	5	5	5	5
SOFTWARE PRODUCTS	5	5	5	5	5	5
PROFESSIONAL (SOFTWARE) SERVICES	5	5	5	5	5	5
TURNKEY SYSTEMS	5	5	5	5	5	5

BASE REFERENCE: INPUT'S CAMP DIRECTORIES WITH DATA ON OVER 4,000 COMPANIES

INPUT

EXHIBIT I-4

MAS/EUROPE 1980: USER ATTITUDE RESEARCH, ACTUAL INTERVIEWS – UNITED KINGDOM

COMPARATIVE RESEARCH

MULTINATIONAL HEADQUARTERS, U.S.

INPUT U.S. USER PANELS

INPUT S.E.S.

LEVEL 1

LEVEL 2a

LEVEL 2b

LEVEL 3a.

LEVEL 3b

MULTI-NATIONAL HEADQUARTERS

53   27   45

DIVI-SIONS OR SUBSIDIARY

MAJOR NATIONAL HEAD-QUARTERS

NO. OF DP COYS USER MGNT.

QNRE.

36 24 20   35 26 15

DIVISIONS OR SUBSIDIARIES

SMALLER NATIONAL CONCERNS

NO. OF COYS.   DP USER   MGNT.

QNRE.

11 9 5   60 35 42

ESTABLISHMENT   INTERVIEWEE   COMPLETED SAMPLE

FRANCE   ITALY   WEST GERMANY   UNITED KINDGOM   BENELUX

	DP	MGNT	BOTH
MGNT	121	127	
COYS.	53	195	

INPUT

EXHIBIT I-5

MAS/EUROPE 1980:

VENDOR RESEARCH ON PROFITABILITY AND OTHER ISSUES,

ACTUAL INTERVIEWS - UNITED KINGDOM

TYPE OF VENDOR	ACTUAL NUMBERS OF INTERVIEWS BY COUNTRY/MARKET					
	MULTI-NATIONAL	BENELUX	FRANCE	ITALY	UNITED KINGDOM	WEST GERMANY
COMPUTER MANUFACTURER	12	–	–	–	–	–
PROCESSING SERVICES	13	5	8	13	11	5
SOFTWARE PRODUCTS	5	5	–	5	4	5
PROFESSIONAL (SOFTWARE) SERVICES	8	5	6	7	2	5
TURNKEY SYSTEMS	3	5	4	4	4	5

BASE REFERENCE: INPUT'S CAMP DIRECTORIES AND DATA ON OVER 4,000 COMPANIES

INPUT

- Process manufacturing.

- Service industries and other.

• This sector spread is not intended to disclose significant variations by industry, but to ensure a comprehensive and unbiased choice of user samples.

• Exhibits I-2 and I-3 illustrate diagrammatically the user and supplier interview sample hierarchies, and show the sample constituents and targetted numbers.

• Exhibits I-4 and I-5 give the actual numbers of users and vendors interviewed and analysed for the production of this report on the U.K.

• The numbers in the body of Exhibit I-4 are presented in threes. The significance of the positioning is as follows:

- The left-hand number is the number of companies interviewed at the level indicated to the right of the diagram.

- The central number is the number of completed EDP user question-naires at that level.

- The right-hand number is the number of completed management questionnaires at that level.

• At the foot of the page is a box of four numbers indicating the numbers of:

- Completed EDP user questionnaires.

- Completed management questionnaires.

- Companies that have completed both.

- Companies that have completed at least one questionnaire.

INPUT

3. TERMINOLOGY

- For 1980, INPUT has enhanced the set of market sector definitions in the MAS/Europe programme, at the same time retaining comparability with results from MAS/US and other INPUT programmes in the U.S.A.

- This has been effected by:

  - Bringing new services definitions (e.g. User Site Hardware Services - USHS) into the traditional sectors to reflect their latest trends.

  - Introducing one new major sector - turnkey systems.

- The full set of major and sub-major market sectors is shown in Exhibit I-6. In addition, processing services are analysed under the application (functional) headings:

  - General business.

  - Scientific and technical.

  - Industry specialty.

  - Utility.

- A glossary containing INPUT's definitions for these terms is found in Appendix A.

B. SCOPE OF THE REPORT

- The aims of this report are twofold:

INPUT

EXHIBIT I-6

MAS/EUROPE 1980: COMPUTER SERVICES MARKET SIZES

COUNTRY MARKET ANALYSIS AND FORECASTS			
PROCESSING SERVICES	PROFESSIONAL (SOFTWARE) SERVICES	SOFTWARE PRODUCTS	TURNKEY SYSTEMS

• BATCH
• REMOTE COMPUTING
  – INTERACTIVE
  – REMOTE BATCH
• F.M.
• USHS
• 1980–1984
	• CONSULTING
	• PROGRAMMING AND SYSTEMS DESIGN
	• EDUCATION
	• 1980–1984
		• SYSTEMS
		• APPLICATIONS
		  – INDUSTRY SPECIFIC
		  – CROSS INDUSTRY
		• 1980–1984
			• CROSS INDUSTRY
			• INDUSTRY SPECIFIC
			• 1980–1984

KEY COMPETITION	KEY COMPETITION	KEY COMPETITION	KEY COMPETITION

▼

EUROPEAN MARKET SUMMARY		
EUROPE		U.S.A.
MARKET SIZES GROWTH FORECASTS PRICING COMPARISON COUNTRY COMPARISONS KEY COMPETITION	◄ ►	MARKET SIZES GROWTH FORECASTS COMPARATIVE ISSUES

- II -

INPUT

- To describe and review the state of the computing services market in the U.K. during 1980, and to present forward forecasts through 1984.

- To highlight and discuss the strategic issues for vendors operating in the U.K. These issues will be a subset of those dealt with in the INPUT report: 'Strategies for the Computer Services Industry in Western Europe, 1980-1989' produced at the start of the MAS/Europe 1980 programme.

● The structure of the report is such as partly to separate and partly to intermingle these two aims in its treatment of the subject matter:

- Chapter III gives an overview analysis of the whole market.

- Chapter IV analyses the aspects of this year's research findings that are common to all types of computing services vendor, or are common across all users.

- Chapter V presents INPUT's views on the strategic issues researched.

- Chapters VI through IX deal with the details of the market for each of the four major types of service:

  . Processing services.

  . Software products.

  . Professional services.

  . Turnkey systems.

INPUT

- The detail in Chapters VI through IX includes:

  . Development of the market sector during the last calendar year (1979) for which published results exist in the main.

  . Impact of strategic issues on vendors operating principally in the sector.

  . Competitive analysis.

  . Sector forward forecasts for the five-year period 1980-1984.

- Chapter II is an executive summary consisting of:

  . Treatment of the key issues.

  . Conclusions and recommendations.

● Appendices B and C contain the vendor questionnaires used and an analysis of the respondent samples, while Appendix D gives similar data on the user research.

INPUT

II EXECUTIVE SUMMARY

II   EXECUTIVE SUMMARY

A.   U.K. COMPUTER SERVICES MARKET SIZE AND GROWTH

- The U.K. computer services market is the most open and competitive outside the U.S. The openness of the market has led to the growth of a range of vendors offering the most diverse set of services in Europe.

- These services are very largely centred round the London and South-East Region, and particularly the financial centre of the City of London. However, substantial areas of competence exist in the Midlands and the North-West.

- The total services market was £459 million in 1979, and is expected to exceed £600 million in 1980.

- With an average annual growth rate of 26% in the five-year forward period, the U.K. market is forecast to reach £1.5 billion in 1984 in current pounds sterling. This figure, therefore, includes INPUT's anticipated price rises in the intervening period.

- In 1980, the market has experienced a slowing-down in growth rates in certain sectors, notably processing services. Moreover, professional services companies are reporting a shortening of order books as recession impacts hardware shipments. Only the software products sector is experiencing continued high growth rates without any sign of recessionary impact.

INPUT

- Exhibit II-1 shows the anticipated growth of the major sectors between 1980 and 1984. The highlight of the picture is the growth of software products relative to the other two major sectors.

- This forecast is based on the underlying strength of the services sectors of the U.K. economy at a time when the shift of resources from manufacturing to services industries is being accelerated by the government's economic measures. It assumes that the U.K. economy will pull out of recession in 1982 and thereafter experience an accelerating growth pattern.

- During this period, the export potential of U.K. computer services will be enhanced by the demand generated within the European Community by both French policies towards 'informatique' and those of the Commission itself. Export revenues are expected to grow from £48 million in 1979 to £150 million in 1984.

B.   IBM, ICL AND COMPUTER SERVICES

- In the earlier Strategy Report, INPUT gave its opinion on the likelihood of IBM turning to a computer services type of philosophy, offering a computing utility worldwide to all types and sizes of enterprise.

- Effectively, this is what IBM does at present, but:

    - It is achieved on a local level in a non-homogeneous manner.

    - The activities are perceived as of secondary importance to IBM itself.

- INPUT's conclusions on this topic are:

    - IBM will not attempt such a move (to a services orientation) until market saturation of end users is encountered on a global scale. To do

INPU

EXHIBIT II-1

GROWTH OF THE U.K. COMPUTER SERVICES
MARKET SECTORS BETWEEN 1980 AND 1984

INPUT
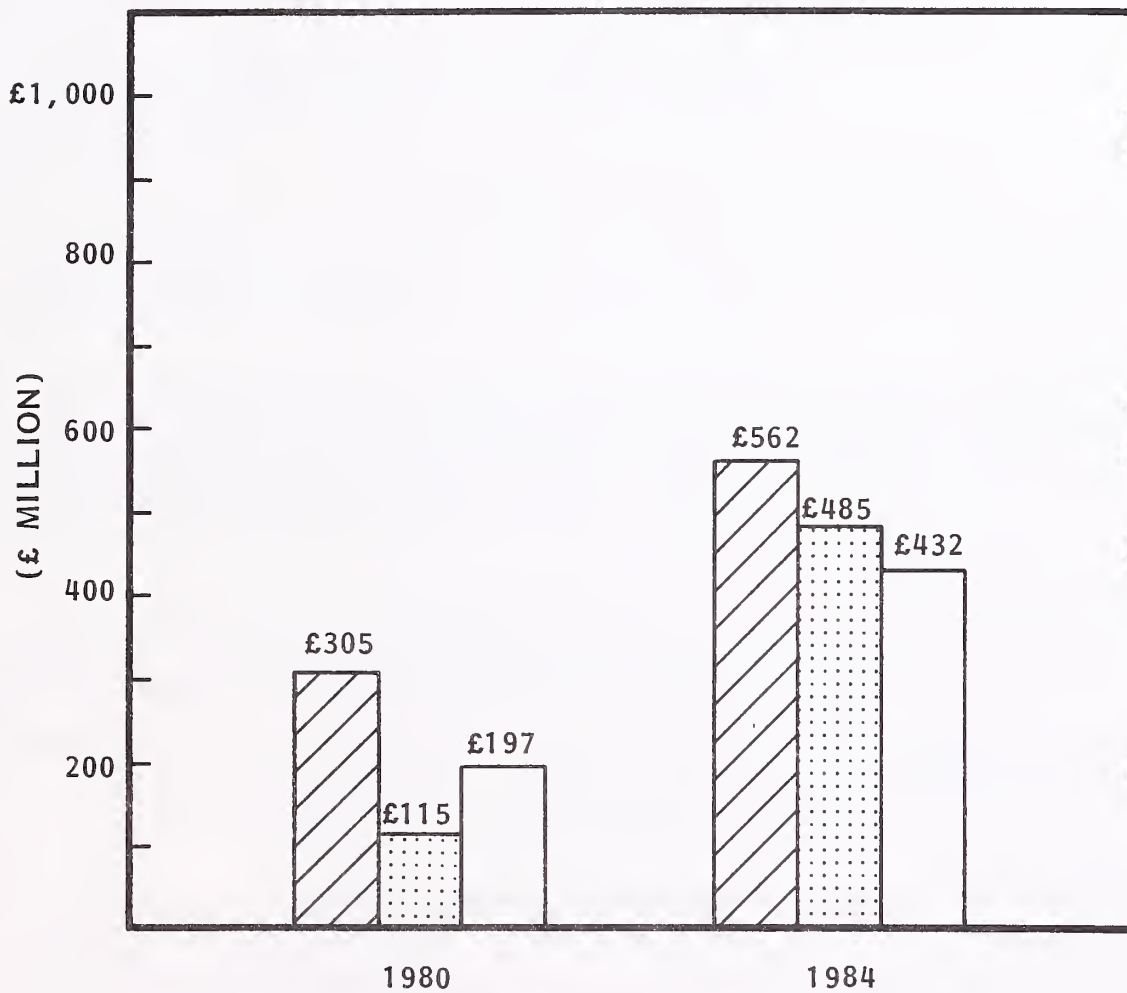
so earlier would run the risk of losing control of large numbers of end users, or of the distribution channels to them.

- This sort of market saturation will only be reached when the developing countries (the Third World and China) have become a viable and well-established marketplace.

- On a global level, IBM is therefore faced with:

    - The requirement to keep up in the race for dominance in the office automation field in the industrialised countries.

    - The need to move into developing countries once these markets have shown themselves ready for exploitation.

- In the U.K. market, IBM as a processing services vendor is represented by:

    - RCS (Remote Computing Services) located at the large "Supercentre" at Warwick. Here there are several large 370/168 configurations serving up to 80 high-speed lines for provision of international network facilites.

    - IBM computers located elsewhere (Croydon, Manchester, Birmingham and London), which are mainly used by IBM and its customers for testing.

- ICL is faced with a different set of problems to IBM's:

    - ICL is an order of magnitude smaller than IBM.

    - ICL has never been able to achieve the same level of vertical integration as IBM, and so has had to maintain its user base by attempting a greater degree of 'user-friendliness' than IBM and other mainframers.

INPL

- The choice of whether to go for a greater degree of service orientation has become a critical factor in ICL's survival at this stage in its development.

• With its present method of marketing its image, ICL is keeping its options open as to where its final position in the marketplace might be.

• Exhibit II-2 shows the market sector revenues gained in each of the major sectors in 1979 by IBM and ICL.

C. USER ATTITUDES AND KEY MARKET TRENDS

• EDP responsibility at board level is in the hands of the Financial Director in almost 50% of the cases.

• Top management of the DP function is well disposed towards computer services companies and views them in many bid situations as equal contenders with the hardware suppliers.

• The installation of on-line applications is the most common preoccupation of the DP manager in 1980, and will remain so through 1982.

    - His main problems right now are excessive application development time, and the impact of recession on budgets.

• User expenditures are split 50:50 between those spent through DP managers and those spent by end users.

• Financial applications remain the chief area of expenditure and development for both sources.

INPUT

EXHIBIT II-2

COMPARISON OF COMPUTER SERVICES
REVENUES OF ICL AND IBM IN 1979

PROCESSING SERVICES

SOFTWARE PRODUCTS

PROFESSIONAL SERVICES

INPU
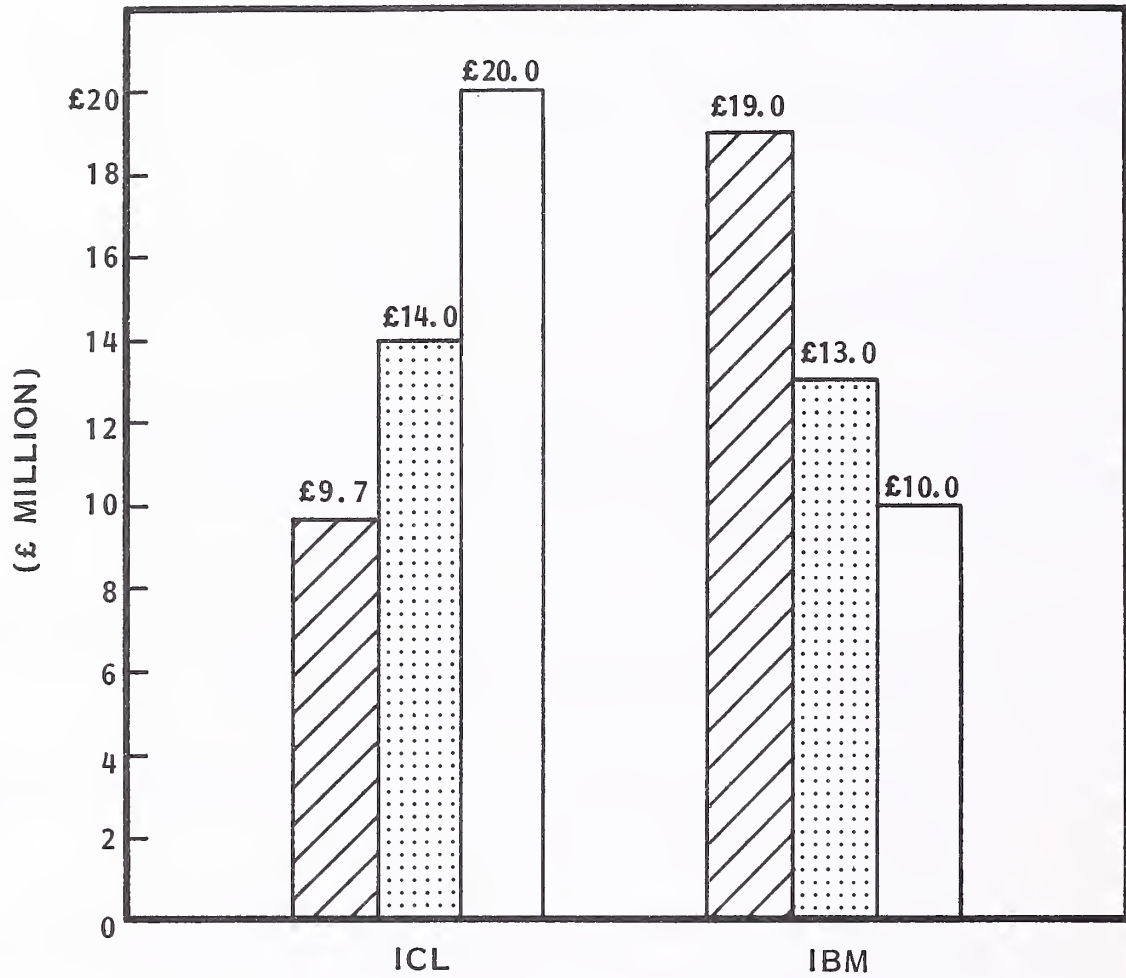
- Software product expenditures are anticipated by users to grow at over 30% per annum for the next year.

- Future trends in communications-based services favour:

  - Short-term, fast growth in Electronic Mail and CRT graphics.

  - Steadier, longer-term growth in On-line Database retrieval usage, both in-house and from external proprietary sources.

D.   PROCESSING SERVICES

1.   CONCLUSIONS

- Processing services are experiencing the impact of recession, which has cut back their rate of growth from 26% in 1979 to 22% in 1980.

- Vendors must expect to continue with this climate until 1983, when better real growth will return. In the meantime, real growth will be 2% and 3% in 1981 and 1982 respectively.

- The two major trends affecting RCS are:

  - Provision of on-line database services.

  - Migration of services to a User Site Hardware Service (USHS) delivery method.

- Batch services are still buoyant but are not predicted to survive the present recession in the same form. Pressure to transfer batch to some other offering - in-house or from an external source - is increasing.

INPUT

2.   RECOMMENDATIONS

● Processing services vendors should take the opportunity of the recession to:

  -    Re-examine their basic market position and strategy.

  -    Revamp the product catalogue to match more closely the post-recession environment.

● Develop an acquisition programme, particularly:

  -    Take the opportunity of the strong pound to acquire suitable candidates in the North American market.

E.   **SOFTWARE PRODUCTS**

I.   CONCLUSIONS

● The software products sector is growing at over 50% in 1980. The impact of recession and high inflation will be to slow real growth to 30% and 26% in 1981 and 1982 respectively.

● This growth comes from three directions simultaneously:

  -    Hardware vendors' unbundling.

  -    Independent software products companies' natural growth.

  -    Software houses' productising their project offerings in order to achieve repeat business potential.

INPL

- DP managers see software as the primary vehicle to deal with increasing work backlogs.

2. RECOMMENDATIONS

- Be selective as to the quality of staff used for installation and support.

- Be careful not to take on situations unsuitable for treatment by a packaged product solution. Credibility with the growing client base must not be lost.

- Plan correct pricing strategies to take into account:

  - Increasing people costs.

  - Supporting services.

  - Maintenance of the installed base.

F.   PROFESSIONAL SERVICES

1.   CONCLUSIONS

- Professional services are forecast to be severely impacted in 1981 and 1982, with real growth rates down to 10% and 5% respectively.

- The education and training segment of professional services is predicted to weather the recessionary pressures better than the other segments because:

  - It is becoming more product-orientated.

  - Dispersal of intelligence in small computers is fuelling demand.

INPUT

- Office automation applications will be started up by leading-edge companies during the recession. Software and system houses can expect to receive contracts or be in bid situations in the 1982-1984 period.

2. RECOMMENDATIONS

- Leading suppliers must seek revenue growth in export markets during the recessionary two years ahead.

- Smaller companies should productise their past project experience and software, and seek product opportunities in highly specific application and industry sectors.

- The contract programming community should attempt to exploit the more stable economies of West European countries, where demand for skilled personnel is very high.

G. TURNKEY SYSTEMS

1. CONCLUSIONS

- The turnkey systems sector, though excluded from the computation of the total computer services market, is being treated as a subsector in the 1980 MAS/E Programme in order to ensure continuity within INPUT's standard programme framework.

- The U.K. turnkey sector is actually split into two segments:

    - Major one-off systems, primarily for large organisations.

    - Smaller systems usually sold as a standard product with minor modification. These are mostly for small business machines.

INPL

- The characteristics of the two segments require different sets of technical and commercial skills, and different types of companies are found working in them.

2.   RECOMMENDATIONS

- Ensure that your skills are appropriate to the type of turnkey market being served.

- Emphasise reputation in the first market segment.

- Develop strong commercial and financial management skills, particularly in the second type of market.

- If your market is of the repeat commercial systems type, prepare to be in contention with the major hardware vendors.

INPUT

III MARKET ANALYSIS, 1979 - 1984

III   MARKET ANALYSIS, 1979-1984

A.   COMPUTER SERVICES MARKET CHANGES

- The U.K. Computer Services market was researched, compared to the findings of prior INPUT research, and then forecast for the five-year period 1980-1984.

    - Market development for the 1979-1980 timeframe was evaluated from the results of the INPUT database updates for 1980, which included 80% of the top twenty service companies (by U.K. market share), as well as 12 leading computer manufacturers with substantial services revenues.

    - Market forecasts were built from the user and vendor expenditure returns, and cross-checked against each other and against the DOI (U.K. Department of Industry) Business Monitor SDQ9.

- The 1979 forecasts were developed using a "bottom-up" philosophy. Wherever possible, two breakdowns of individual sectors were derived independently and used to cross-check each other:

    - For instance, processing services were forecast both by functional area and by mode of delivery, and the two were adjusted to be mutually consistent.

INPUT

- Besides the above breakdowns, remote computing services were forecast also by submodes, including interactive, remote batch, database enquiry and user site hardware services (USHS).

- Software products were forecast:

  - By system and application packages.

  - By both independent suppliers and hardware vendors.

- Professional services were forecast by categories for:

  - Consultancy.

  - Software development.

  - Education and training.

  - Contract programming and other.

- Turnkey systems have been split off from the total computer services market and forecast separately. The forecasts were made by:

  - Hardware revenues.

  - Software and other charges.

- In addition, turnkey systems supplied by independent suppliers have been compared with those installed by hardware vendors in order to illustrate the way in which this sector is of equal revenue-earning potential to vendors from different trading backgrounds.

- The incremental revenue growth forecasts, by service sector, are presented in Exhibit III-1:

INPL

EXHIBIT III-1
INCREMENTAL REVENUE GROWTH BY
MODE AND TYPE OF SERVICE, 1979-1984

COMPUTER SERVICE BY MODE AND TYPE	AAGR 1979-1984 (PERCENT)	INCREMENTAL REVENUE GROWTH IN CURRENT POUNDS (£ MILLION)
INDUSTRY SPECIALTY - RCS	29%	£72
UTILITY - RCS	22	£61
GENERAL BUSINESS - RCS	26	£53
GENERAL BUSINESS - BATCH	17	£50
INDUSTRY SPECIALTY - BATCH	17	£28
SCIENTIFIC AND ENGINEERING - RCS	16	£24
UTILITY - BATCH	5	£11
INDUSTRY SPECIALTY - FM	13	£7
SCIENTIFIC AND ENGINEERING - BATCH	6	£7
GENERAL BUSINESS - FM	0	£0
SCIENTIFIC AND ENGINEERING - FM	0	£0
UTILITY - FM	-17	- £0.3
TOTAL PROCESSING	18	£313
SYSTEMS SOFTWARE	45	£230
APPLICATIONS SOFTWARE	51	£185
TOTAL SOFTWARE	47	£415
PROFESSIONAL SERVICES	25	£292
TURNKEY SYSTEMS	29	£126

0   100   200   300   400   £500

INPUT

- 1979, a good year, showed a 34% growth over 1978 revenues, when these had been adjusted to bring them more accurately into line with INPUT's U.S. procedures and definitions, and to effect the incorporation of hardware manufacturers' software product revenues.

- 1980 is also expected to be a good year, though in some sectors, notably processing services, revenues are being impacted by the U.K. recession.

- The 1979-1984 growth rates are the average annual compounded rates.

- The rates between individual years may differ, since the figures were built up from the more detailed forecasts which follow, and which take into account growths (and declines) in certain types and modes of service.

- All figures are in current pounds sterling. They include price increase factors which have been calculated according to the way in which individual sectors will be affected by inflation. These factors are shown in tabular form in Exhibit III-2. These price increases have been estimated from INPUT's knowledge of the quantity and timing of typical increases by leading vendors in the industry.

B. MARKET DEVELOPMENT 1979-1980

1. GROWTH IN THE PERIOD

- The total U.K. market for computer services will grow in 1980 at the same rates as it grew in 1979, as shown in Exhibit III-3. In spite of this growth, forecast at 34%, the processing services sectore has started to feel the impact of recession. As a result, processing services' growth in 1980 will be four percentage points below that of 1979, 22% as against the previous year's 26%.

INPL

EXHIBIT III-2

- 31 -

ANTICIPATED U.K.
PRICE RISES, 1979-1984

YEAR	RPI* INCREASE	PRICE INCREASES			
		PROCESSING SERVICES	SOFTWARE PRODUCTS	PROFESSIONAL SERVICES	TURNKEY SYSTEMS
1978/1979	15%	10%	13%	18%	11%
1979/1980	18	11	13	20	14
1980/1981	13	14	12	16	3
1981/1982	11	13	13	14	3
1982/1983	10	10	11	10	19
1983/1984	10	10	10	10	14

*RPI = RETAIL PRICE INDEX

SOURCE: INPUT FORECAST

INPUT

EXHIBIT III-3

COMPUTER SERVICES MARKET DEVELOPMENT,
1979-1980

MODE OF DELIVERY	REPORTED 1978 (£ MILLION)	REVISED* 1978 (£ MILLION)	1979 (£ MILLION)	GROWTH 1978-1979 (PERCENT)	1980 (£ MILLION)	GROWTH 1979-1980 (PERCENT)
REMOTE COMPUTING	£ 94	85	£110	29%	£138	25%
FACILITIES MANAGEMENT	8	8	9	13	10	11
BATCH	103	105	130	24	157	21
SUBTOTAL - PROCESSING	£205	£198	£249	26%	£305	22%
SOFTWARE PRODUCTS	27	40	70	75	115	64
PROFESSIONAL SERVICES	115**	105	140	33	197	41
TOTAL	£347	£343	£459	34%	£617	34%
TURNKEY SYSTEMS	22	36	49	36	67	37

*REVISED TO MATCH MAS/E 1980 CATEGORIES
**INCLUDED TURNKEY AS PART OF PROFESSIONAL SERVICES IN 1979

INPUT

- Professional services are expected to experience the same, or a similar, recessionary climate in 1981, but in 1980 this sector is still essentially buoyant. Its growth rate, at 41%, will be a significant increase over the previous rate of 33%. However, this increase reflects the way in which time-based people services are most susceptible to an increase in the rate of inflation, and are more easily able to follow it.

- Software products, continuing their growth from a relatively small base, have grown in 1980 to the very respectable size of £115 million. This has been fuelled by:

  - The increasing rate of software unbundling, as large numbers of IBM 4300 installations come on stream.

  - The introduction of IBM's chargeable software maintenance scheme for on-site service.

  - A personal computer user base standing at almost 50,000 units by the end of 1979.

- Software products are predicted to take a 19% market share in 1980, having grown by 64% over 1979.

2. RECONCILIATION TO 1979 ANNUAL REPORT

- Distortions of the figures as previously measured have now been removed in the revisions which have been made to the 1978 market figures:

  - Professional services revenues, previously associated with RCS, have now all been assigned to the professional services category.

  - Facilities management has been separated from batch services, to be shown independently at 8 million.

- 33 -

INPUT

-       Turnkey systems revenues have been extracted from professional services, and are shown outside the services market entirely.

-       The overall services market forecast has dwindled by £4 million, though the equivalent total, including turnkey systems, has increased by £32 million. The changes are as follows:

.   £13 million for software products (understated).

.   £14 million for turnkey systems (understated).

.   £12 million for exclusions from professional services.

.   £7 million for processing services (overstated).

C.   FORECASTS FOR COMPUTER SERVICES, 1980-1984

1.   LONG-TERM GROWTH

●   Computer services markets in the U.K. are forecast to grow threefold from a 1979 base of £459 million to a total of £1,479 million in 1984. This gives an average annual compounded growth rate of 26%.

●   An outstanding feature of the five-year period will be the growth in software products, which at the outset is the smallest sector (15% share) but which will rival processing services as the largest sector by 1984.

●   However, in spite of having the lowest growth rate (18%) of the three sectors, processing services will remain the largest sector. Further, it has the potential to expand faster for the rest of the decade, due to the burgeoning database services market.

INPUT

- The strength of the software products market is a compound of many driving forces:

  - Hardware vendors unbundling their offerings.

  - DP management wishing to conserve their in-house effort for implementation and tailoring tasks.

  - Turnkey system houses buying-in more and more software components, to improve control of delivery dates.

  - The opening of the personal computer market to both home and business users.

  - The steady progress of Viewdata, again for both private and public use.

- These forces are forecast to produce a handsome but declining growth rate, slipping from 64% in 1980 to 42% in 1984. This is accompanied by a dip, and a rally in 1983 as IBM's next generation of products increases software revenue contributions.

- Exhibit III-4 summarises the effect of all these changes in the relative importance of the sectors.

- Exhibit III-5 tabulates the annual growth rates used in forecasting the market growth shown in detail in Exhibit III-6. The rates shown are actual forecast growth rates summing:

  - Anticipated price rises for each type of service.

  - Real growth rates forecast in each cell of the matrix formed by type and mode of service and application area (in the case of processing services).

INPUT

EXHIBIT III-4

U.K. COMPUTER SERVICES MARKET
(CURRENT POUNDS STERLING)

SOFTWARE
PRODUCTS
£70 MILLION

£49M

TURNKEY SYSTEMS

PROCESSING
SERVICES
£249 MILLION

PRO-
FESSIONAL
SERVICES
£140 MILLION

1979 £459 MILLION

£0.2 BILLION
29% AAGR

TURNKEY SYSTEMS

PROCESSING
SERVICES
£0.6 BILLION
18% AAGR

SOFTWARE
PRODUCTS
£0.5 BILLION
47% AAGR

PROFESSIONAL
SERVICES
£0.4 BILLION
25% AAGR

1984 £1.5 BILLION, 26% AAGR
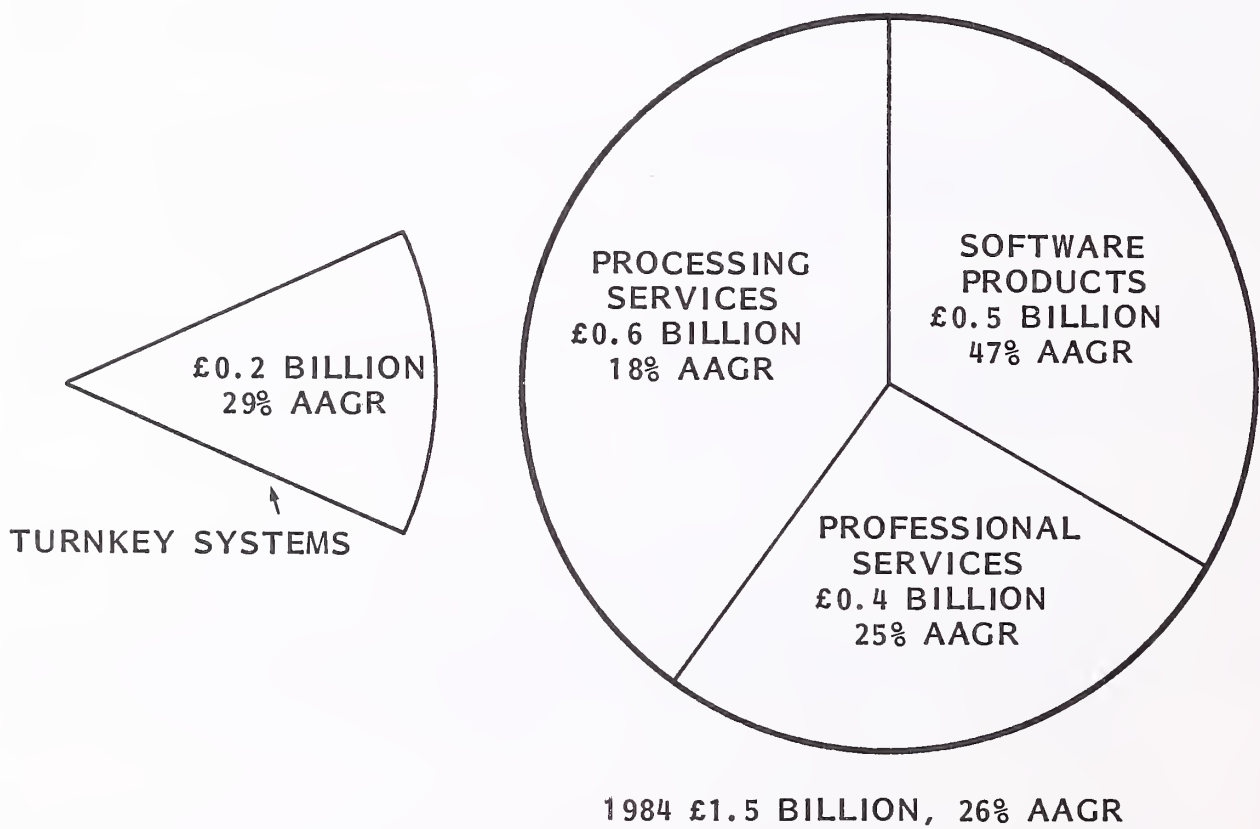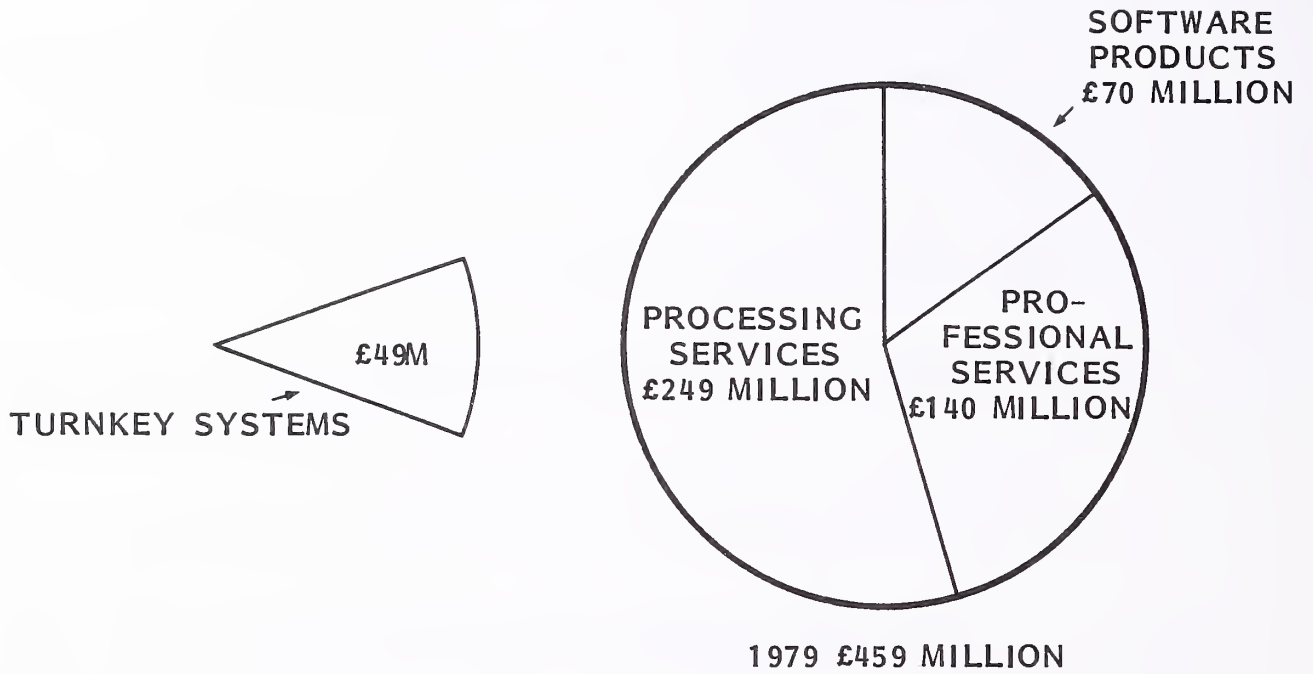
SOURCE: INPUT FORECAST

INPUT

EXHIBIT III-5

GROWTH RATES ASSOCIATED WITH
COMPUTER SERVICES MARKET FORECASTS, BY MODE AND
TYPE OF SERVICE, FOR THE PERIOD 1979-1984

COMPUTER SERVICE		GROWTH RATES						
MODE	TYPE	1978-1979	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	AAGR 1979-1984
REMOTE COMPUTING SERVICES	GEN. BUS.	39%	20%	23%	22%	31%	32%	26%
	SCI. & ENG.	22	25	15	16	6	21	16
	IND. SPEC.	33	21	26	26	30	43	29
	UTILITY	21	34	17	18	23	20	22
SUBTOTAL		29%	25%	20%	20%	24%	30%	24%
FACILITIES MANAGE-MENT	GEN. BUS.	-	-	-	-	-	-	-
	SCI. & ENG.	-	-	-	-	-	-	-
	IND. SPEC.	15	14	10	13	15	17	13
	UTILITY	-15	-15	-20	-11	-10	-15	-17
SUBTOTAL		13%	11%	10%	9%	15%	16%	11%
BATCH	GEN. BUS.	27	31	18	16	11	10	17
	SCI. & ENG.	5	9	2	8	5	5	6
	IND. SPEC.	44	35	10	18	13	12	17
	UTILITY	26	9	8	6	3	3	5
SUBTOTAL		24%	21%	9%	12%	9%	7%	12%
TOTAL PROCES-SING	GEN. BUS.	31	26	19	18	19	19	20
	SCI. & ENG.	13	14	10	13	8	12	11
	IND. SPEC.	36	25	16	21	22	28	23
	UTILITY	20	21	12	13	15	14	14
TOTAL		26%	22%	14%	16%	17%	19%	18%
SOFTWARE PRODUCTS	SYSTEMS	79	63	36	36	53	39	45
	APPLICATIONS	69	67	51	43	48	47	51
TOTAL		75%	64%	43%	39%	51%	42%	47%
PROFESSIONAL SERVICES		33	41	26	19	22	20	25
GRAND TOTAL		34%	34%	23%	22%	27%	26%	26%
TURNKEY SYSTEMS		36	37	21	20	36	33	29

INPUT

EXHIBIT III-6

COMPUTER SERVICES MARKET FORECAST, BY MODE AND TYPE OF SERVICE - TOTAL, 1979-1984

COMPUTER SERVICE		USER EXPENDITURES								
MODE	TYPE	1978 (£M)	1979 (£M)	GROWTH 1978-1979 (£M)	1980 (£M)	1981 (£M)	1982 (£M)	1983 (£M)	1984 (£M)	AAGR 1979-1984 (%)
REMOTE COMPUTING SERVICES	GEN. BUS.	£ 18	£ 25	39%	£ 30	£ 37	£ 45	£ 59	£ 78	26%
	SCI. & ENG.	18	22	22	27	31	36	38	46	16
	IND. SPEC.	21	28	33	34	43	54	70	100	29
	UTILITY	29	35	21	47	55	65	80	96	22
SUBTOTAL		£ 85	£110	29%	£138	£166	£200	£ 247	£ 320	24%
FACILITIES MANAGE-MENT	GEN. BUS.	–	–	–	–	–	–	–	–	–
	SCI. & ENG.	–	–	–	–	–	–	–	–	–
	IND. SPEC.	7	8	15	9	10	11	13	15	13
	UTILITY	1	1	–15	1	1	1	1	1	–17
SUBTOTAL		£ 8	£ 9	13%	£ 10	£ 11	£ 12	£ 14	£ 16	11%
BATCH	GEN. BUS.	33	42	27	55	65	75	84	92	17
	SCI. & ENG.	21	22	5	24	24	26	28	29	6
	IND. SPEC.	16	23	44	31	34	40	45	51	17
	UTILITY	34	43	26	47	48	51	53	54	5
SUBTOTAL		£105	£130	24%	£157	£171	£192	£ 210	£ 226	12%
TOTAL PROCES-SING	GEN. BUS.	52	68	31	86	102	120	143	170	20
	SCI. & ENG.	39	44	13	51	55	62	66	75	11
	IND. SPEC.	44	60	36	75	87	105	128	166	23
	UTILITY	64	77	20	93	104	117	134	151	14
TOTAL		£198	£249	26%	£305	£348	£404	£ 471	£ 562	18%
SOFTWARE PRODUCTS	SYSTEMS	24	43	79	70	95	129	197	273	45
	APPLICA-TIONS	16	27	69	45	68	97	144	212	51
SUBTOTAL		£ 40	£ 70	75%	£115	£163	£226	£ 341	£ 485	47%
PROFESSIONAL SERVICES		105	140	33	197	248	295	360	432	25
GRAND TOTAL		£343	£459	34%	£617	£759	£925	£1,172	£1,479	26%
TURNKEY SYSTEMS		36	49	36	67	81	97	132	175	29

INPUT

- In formulating these predictions, INPUT has had to take account of the twin effects of recession and inflation. These two factors:

    - Interact with each other.

    - Sometimes have opposing effects.

2.   RECESSION EFFECTS

- Processing services have been affected by the recession in 1980. Vendors report short-term targets being missed, whereas prior to the summer, few managements thought that recession did them any harm. Assuming an easing of recession in 1981 and a simultaneous slow-down of the inflation rate to nearly single figures, vendors will still, for another 18 months, lack the confident outlook of previous years.

- Professional services have not suffered recessionary pressures to anything like the same extent. Vendors are, however, viewing 1981 more nervously as backlogs become lower towards the close of this year. Longer-term contracts have so far helped to buffer this sector.

- The driving force behind the software products market in 1980 have been so strong that any impact from the recession has been masked. However, as hardware vendor shipment rates begin to slow under the force of the U.K. recession, growth rates will be cut in 1981, but without falling below the significant level of 64%.

- The cumulative economic pressures from inflation and recession result in the real growth rates illustrated in Exhibit III-7. The main characteristic is the depressing effect shown in 1981-82, followed by accelerating growth again through to 1985.

INPUT

EXHIBIT III-7

IMPACT OF INFLATION ON COMPUTER SERVICES GROWTH, 1979-1984

MODE	USER EXPENDITURES (£ MILLION)						AAGR 1979-1984 (PERCENT)
	1979	1980	1981	1982	1983	1984	
PROCESSING SERVICES							
TOTAL MARKET FORECAST	£249	£305	£348	£404	£ 471	£ 562	18%
GROWTH FROM INFLATION	£ 20	£ 27	£ 43	£ 45	£ 40	£ 47	-
REAL GROWTH	£ 31	£ 29	£0.5	£ 11	£ 27	£ 44	-
REAL GROWTH RATE	16%	12%	2%	3%	7%	9%	8.2%
SOFTWARE PRODUCTS							
TOTAL MARKET FORECAST	£ 70	£115	£163	£226	£ 341	£ 485	47%
GROWTH FROM INFLATION	£ 5	£ 9	£ 14	£ 21	£ 25	£ 34	-
REAL GROWTH	£ 25	£ 36	£ 34	£ 42	£ 90	£ 110	-
REAL GROWTH RATE	62%	51%	30%	26%	40%	32%	40%
PROFESSIONAL SERVICES							
TOTAL MARKET FORECAST	£140	£197	£248	£295	£ 360	£ 432	25%
GROWTH FROM INFLATION	£ 19	£ 28	£ 31	£ 35	£ 30	£ 36	-
REAL GROWTH	£ 16	£ 29	£ 20	£ 12	£ 35	£ 36	-
REAL GROWTH RATE	15%	21%	10%	5%	12%	10%	12%
TOTAL COMPUTER SERVICES							
TOTAL MARKET FORECAST	£459	£617	£759	£925	£1,172	£1,479	26%
GROWTH FROM INFLATION	£ 44	£ 64	£ 78	£101	£ 95	£ 117	-
REAL GROWTH	£ 72	£ 94	£ 64	£ 65	£ 152	£ 190	-
REAL GROWTH RATE	21%	20%	11%	9%	16%	16%	13%
TURNKEY SYSTEMS							
TOTAL MARKET FORECAST	£ 49	£ 67	£ 81	£ 97	£ 132	£ 175	29%
GROWTH FROM INFLATION	£ 4	£ 7	£ 2	£ 2	£ 18	£ 18	-
REAL GROWTH	£ 9	£ 11	£ 12	£ 14	£ 17	£ 25	-
REAL GROWTH RATE	25%	22%	18%	17%	18%	19%	20%

INPUT

D.   COMPETITIVE ENVIRONMENT

• Detailed research and analysis of both the published and internal acounts of leading service companies' 1979 revenues has enabled INPUT to establish accurate rankings of these vendors by:

  - Overall revenues in calendar 1979.

  - Revenues in major market sectors, again for 1979.

• A number of adjustments have been made to the leaders' stated revenues in order to normalise them for comparison and ranking purposes:

  - Captive revenues have been subtracted. (See Appendix A for a definition of captive revenues.)

  - Export revenues have been separated from U.K. domestic revenues.

  - Where reported results were for non-calendar financial years, an adjustment was made.

  - Hardware and hardware maintenance revenues were extracted, unless these were associated with turnkey systems.

• Exhibit III-8 shows the Top Ten U.K. vendors as ranked by a share of the domestic market for all computer services, not including turnkey systems.

• IBM does not occupy first place, as it did in the 1978 ranking, because:

  - IBM has been treated as a number of separate companies in order to enhance comparability vis-a-vis ICL, whose revenues are split between three operating subsidiaries: BARIC, DATASKIL and the UK Division itself.

INPUT

EXHIBIT III-8

THE TOP TEN COMPUTER SERVICES VENDORS,

BY UNITED KINGDOM 1979 MARKET SHARE

RANK	VENDOR	REVENUE* IN MILLIONS OF POUNDS STERLING (£M)				
		PROCESSING SERVICES	SOFTWARE PRODUCTS	PROFESSIONAL SERVICES	ALL SERVICES TOTAL	TURNKEY SYSTEMS
1	BOC (CSD)	£12.4	£0.3	£14.7	£27.4	£3.9
2	IBM (DCS/RCS)	18.8	–	2.4	21.1	–
3	ICL DATASKIL	1.3	2.4	16.3	20.0	–
4	GEISCO	13.5	–	1.2	14.7	–
5	CENTREFILE	13.9	0.1	0.1	14.0	0.1
6	HOSKYNS	3.8	2.2	5.5	11.5	2.5
7	COMSHARE	10.7	–	–	10.7	–
8	CAP-CPP	–	0.9	9.6	10.5	–
9	ICL BARIC	8.4	–	1.7	10.1	–
10	SCICON	4.3	0.4	3.6	8.4	0.4

*ADJUSTED TO CALENDAR YEAR 1979
N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

- Software products revenues of DPD and GSD have been excluded from IBM's bureau operation (DCS/RCS).

- Hardware vendors as software products providers have been excluded from the general rankings, though they do appear in the detailed rankings included in Chapter VII.

- BOC Computer Services Division has moved to the head of list, largely as a result of its acquisition of Software Sciences Ltd. This broadening of its portfolio has coincided in a timely fashion with the improving growth rates of areas into which it has moved.

- Centrefile and Hoskyns have moved to positions five and six respectively.

- Comshare is appearing now in seventh place, as a result of its major expansion in 1979. Continuing with this rate of growth will soon bring it into contention with GEISCO, the reigning leader in the timesharing business.

- Centrefile, in fifth place, has experienced solid growth in its batch services. Its payroll and accounting services are holding up extremely well against the overall market trend away from batch.

- This year a second Top Ten table has been produced by a second method. This table, which allows inclusion of worldwide revenues of U.K.-headquartered companies, is aimed at enabling comparison between the major national companies and the multinationals operating on U.K. soil.

- The result appears in Exhibit III-9. The three newcomers are:

    - Systime.

    - Logica.

    - CMG.

INPUT

EXHIBIT III-9

THE TOP TEN COMPUTER SERVICES VENDORS IN THE
UNITED KINGDOM, BASED ON TOTAL EXTERNAL REVENUES

RANK	VENDOR	REVENUE* IN MILLIONS OF POUNDS STERLING (£M)			
		EXPORT	UNITED KINGDOM DOMESTIC	TOTAL EXTERNAL	REPORTED CAPTIVE
1	BOC (CSD)	£1.5	£31.2	£32.7	£3.9
2	ICL DATASKIL	2.7	20.0	22.7	3.8
3	IBM (DCS/RCS)	–	21.1	21.1	–
4	SYSTIME	3.6	14.3	17.9**	–
5	SCICON	7.0	8.7	15.7	–
6	GEISCO	–	14.7	14.7	–
7	LOGICA	6.7	8.0	14.7	–
8	HOSKYNS	0.3	14.1	14.4	–
9	CENTREFILE	–	14.1	14.1	0.7
10	CMG	7.0	6.8	13.8	–

* ADJUSTED TO CALENDAR YEAR 1979
** INCLUDES PURE HARDWARE AND OTHER MISCELLANEOUS REVENUES

INPU

- Also shown in Exhibit III-9 are the captive revenues reported by vendors whose corporate owners use their services. Caution should be applied in comparing a captive revenue figure against the corresponding external services total, since the former may be calculated on an internal transfer rate, which is essentially discounted. Moreover, certain vendors (for example, ICL Baric or UCSL, with total 1979 revenues of £12.8 million) claim that some of their captive revenues are competed for within the group.

- Changes in the pattern of business at the top of the market can be assessed from the analysis revealed by Exhibit III-10. This shows the split of the Top Ten's revenues in 1979 and 1978 between the main sectors. Overall, the Top Ten's market share rose 1% to 32% by experiencing a 38% growth rate, compared with 34% for the market as a whole.

- Exhibit III-11 shows the top supplier rankings by the three major service types:

  - Processing services.

  - Software products.

  - Professional services.

- It is characteristic of this market that very few vendors have more than a 10% share of any major sector. For this reason INPUT often meets the comment: 'We don't have any competition'.

INPUT

EXHIBIT III-10

THE U.K. COMPUTER SERVICES MARKET, 1978/1979

BATCH
SERVICES
£25M
17%

FM
£5M
3%

SOFT-
WARE PRO-
DUCTS £9M 6%

RCS
£53M
37%

PROFESSIONAL
SERVICES
£54M
37%
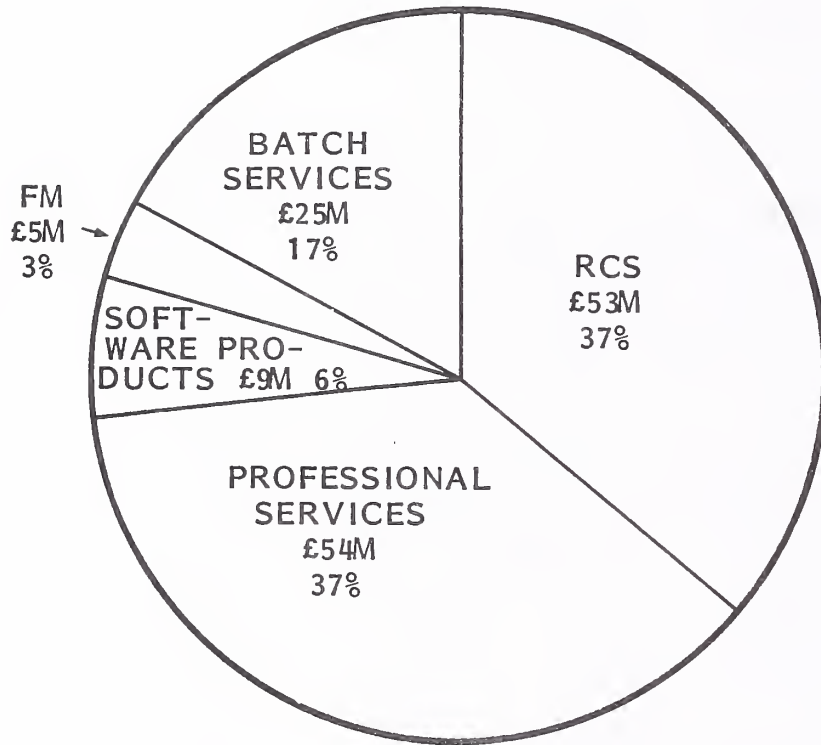
THE TOP TEN 1979
(£146M = 32% OF MARKET)

BATCH
£22M
20%

FM £4M 4%
SOFTWARE
PRODUCTS
£2M 2%

RCS
£44M
42%

PROFESSIONAL
SERVICES
£34M
32%
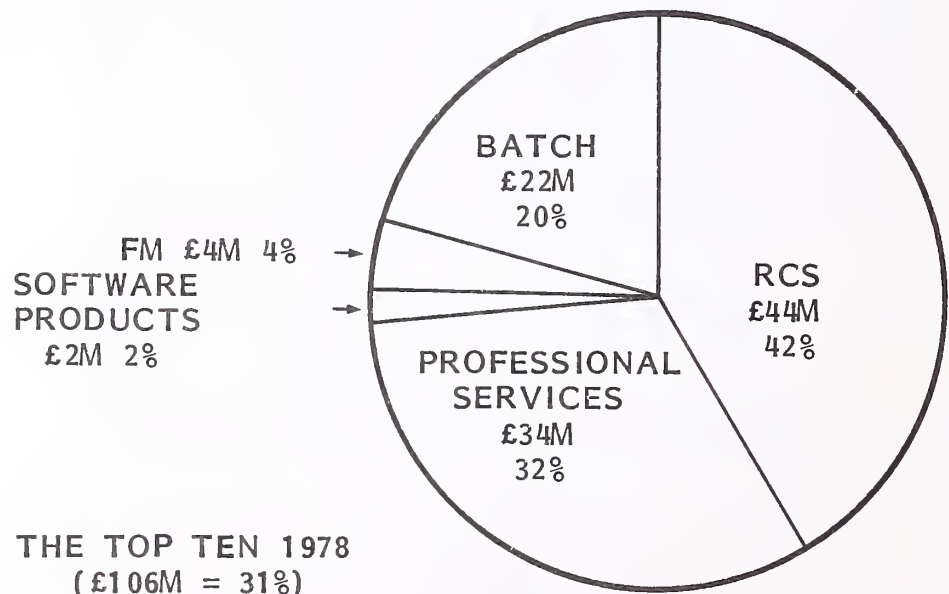
THE TOP TEN 1978
(£106M = 31%)

INPUT

EXHIBIT III-11

TOP SUPPLIER RANKING AND SECTOR

MARKET SHARES, BY SERVICE TYPE,

UNITED KINGDOM – 1979

TYPE RANK	PROCESSING SERVICES £249M		SOFTWARE PRODUCTS £70M (INDEPENDENTS)		PROFESSIONAL SERVICES £140M	
	SUPPLIER	SHARE	SUPPLIER	SHARE	SUPPLIER	SHARE
1	IBM (DCS/RCS)	7.6%	SYSTIME	3.8%	ICL DATASKIL	11.7%
2	CENTREFILE	5.6	ICL DATASKIL	3.7	BOC (CSD)	10.5
3	GEISCO	5.4	HOSKYNS	3.1	CAP – CPP	6.9
4	BOC (CSD)	5.0	CINCOM	2.2	LOGICA	5.2
5	COMSHARE	4.3	PETERBOROUGH	2.1	DATA LOGIC	4.9
6	ICL BARIC	3.4	PPL	2.0	VLI	4.5
7	SIA	2.8	ABS	1.4	HOSKYNS	3.9
8	UCSL	2.5	INFORMATICS	1.4	SCICON	2.6
9	ADP – NIS	2.2	CAP-CPP	1.2	SYSTIME	2.6
10	ATKINS ON-LINE	2.2	BIS	1.2	F. INTERNATIONAL	2.4
11	UCC	2.0	SOFTWARE AG	1.1	PACTEL	2.4
12	SCICON CSL	1.8	NCC	0.9	CMG	2.0
13	CMG	1.6	PACTEL	0.8	SPL	1.9
14	NDPS	1.6	UCC (SPI)	0.7	MARCOL	1.9
15	COMPOWER	1.5	IAL GEMINI	0.6	BIS APPLIED	1.8
16	HOSKYNS	1.5	MSA	0.6	ACS	1.7
17	GSI (U.K.)	1.5	SCICON CONS. I	0.6	IBM	1.7
18	RHM MANAGE-MENT SERVICES	1.4	BOC (CSD)	0.5	CDC	1.4
19	ADP-MD	1.4	PANSOPHIC	0.5	ICL BARIC	1.2
20	CDC	1.4	ALTERGO	0.4	IAL-GEMINI	0.6

SOURCE: CAMP/EUROPE

INPUT

IV COMPUTER SERVICES MARKET ISSUES IN THE U.K.

IV   COMPUTER SERVICES MARKET ISSUES IN THE U.K.

- This chapter presents the analysis of the results of specific research carried out for the 1980 MAS programme in the U.K. It is restricted to the issues which are common to all types of vendors.

- In addition, it draws on data from:

    - Two hundred computer users in four industry sectors, which contribute significantly to computer services industry revenues. These users were contacted for their specific relevance to IBM-based bureau services in the 1980s.

    - Twenty software services vendors, interviewed on the topics of software contracts, maintenance of products and marketing policy.

- Issues relevant to each type of vendor are reported on in Chapters VI through IX.

A.   ANALYSIS OF VENDOR ISSUE DATA

1.   INTERVIEW SAMPLE

- Twenty vendors responded to the Vendor Issue Questionnaire. Among the sample are twelve of the top twenty U.K. suppliers.

INPUT

- The majority of respondents specialised in processing services, but 25% of the sample completed the professional services module, indicating an increasing interest in diversified portfolios of business.

- Intense interest in communications in the European context was evidenced by 90% of respondents' completing the module on data and business communications.

2.   SECTOR-SPECIFIC MARKETING

- The present position of those vendors interviewed with regard to whether their product development was biased towards cross-industry or industry-specific products was that:

    - Nearly half favoured industry-specific products.

    - About a third favoured cross-industry products.

    - The balance had no particular bias.

- Looking towards the future, the emphasis on industry-specific products becomes even more pronounced. Exhibit IV-1 presents the replies of all respondents on the likely split of development effort in two and five years' time. The chart shows a slow, steady but not dramatic move towards industry-specific marketing over a five-year period on the part of a sample representing 30% of the U.K. market and having overseas interests of equal market importance.

- In Exhibit IV-2, of the six groups isolated, five showed a diminution in cross-industry functional product development and a corresponding increase in industry-specific products.

- The only group moving in the opposite direction were processing services vendors, with present-day, cross-industry bias. This group included well-known

- 50 -

INPU

EXHIBIT IV-1

DISTRIBUTIONS OF RESPONDENTS' PRODUCT DEVELOPMENT BIASES IN TWO AND FIVE YEARS' TIME

CROSS-INDUSTRY

LARGE BIAS
(i.e., >70%)
13%
13%

MODERATE
(i.e., ≤70% BUT >50%)
31%
19%

EQUAL BIAS
(i.e., 50:50)
12%
25%

MODERATE
(i.e., >50% BUT≤70%)
25%
6%

LARGE BIAS
(i.e., >70%)
19%
37%

INDUSTRY-SPECIFIC

0   20   40   60   80   100%

PERCENT OF RESPONDENTS

▨ IN TWO YEARS
☐ IN FIVE YEARS

INPUT
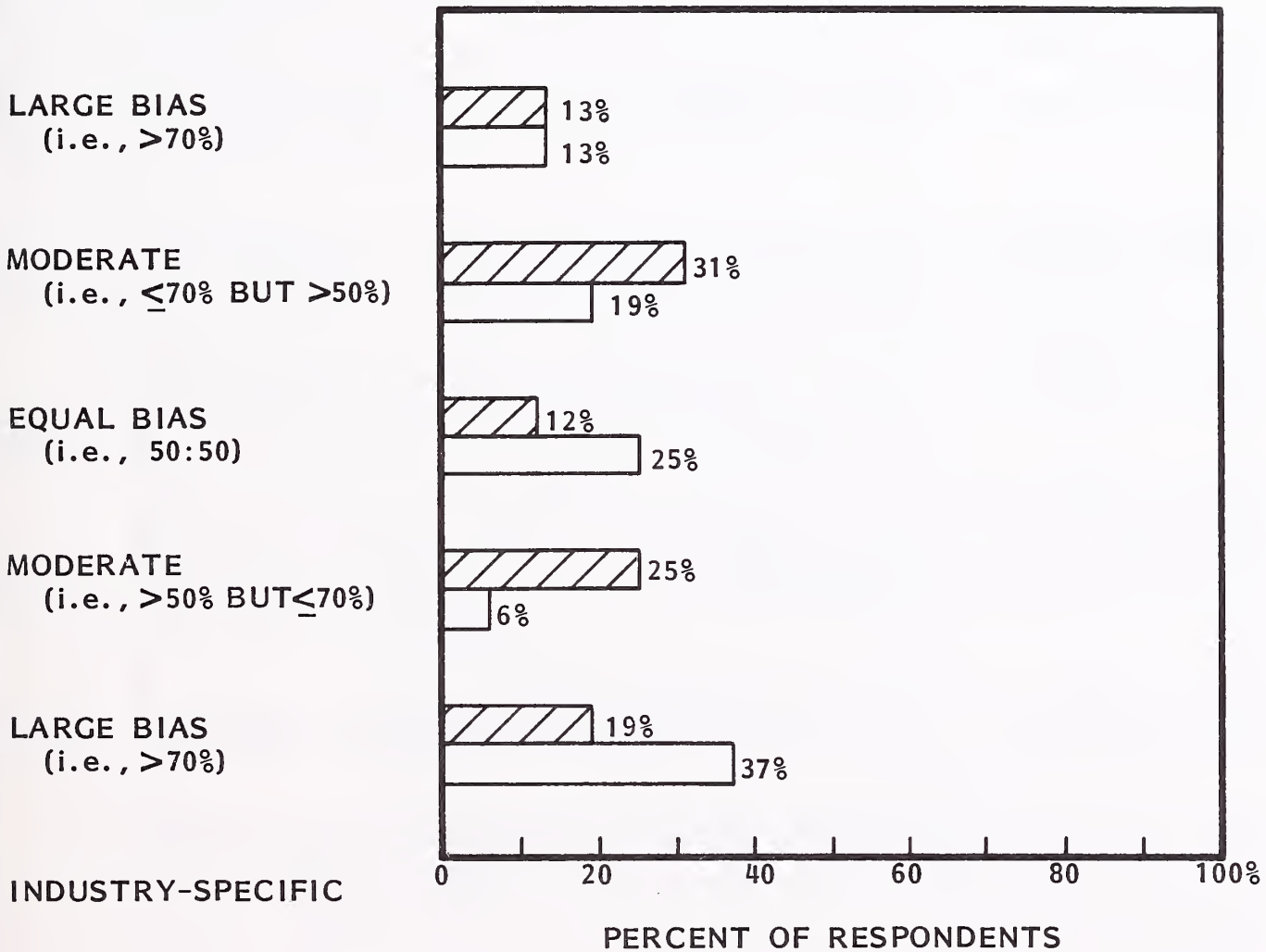
EXHIBIT IV-2

PROPORTION OF RESPONDENTS' PRODUCT DEVELOPMENT, AS SPLIT BETWEEN CROSS-INDUSTRY AND INDUSTRY-SPECIFIC PRODUCTS

VENDOR WITH PRESENT BIAS   TIMEFRAME

AVERAGE PROPORTIONAL SPLIT

Category	2 YEARS	5 YEARS
BUREAUX – WITH CROSS-INDUSTRY BIAS	70% / 30%	2 YEARS
	87% / 13%	5 YEARS
BUREAUX – WITH INDUSTRY-SPECIFIC BIAS	45% / 55%	2 YEARS
	40% / 60%	5 YEARS
BUREAUX – WITH EQUAL EMPHASIS	60% / 40%	2 YEARS
	55% / 45%	5 YEARS
OTHERS – WITH CROSS-INDUSTRY BIAS	62% / 38%	2 YEARS
	30% / 70%	5 YEARS
OTHERS – WITH INDUSTRY-SPECIFIC BIAS	35% / 65%	2 YEARS
	20% / 80%	5 YEARS
OTHERS – WITH EQUAL EMPHASIS	70% / 30%	2 YEARS
	65% / 35%	5 YEARS

Scale: 0   20   40   60   80   100%

⬚ (hatched) = CROSS-INDUSTRY

☐ = INDUSTRY-SPECIFIC

INPUT

general-purpose commercial services bureaux with a batch or remote batch delivery method. A comment from one of these vendors sheds an interesting light on the way European country markets lack the economy of scale of the U.S.

-       'We sell industry-specific solutions, but we only fund development of cross-industry packages due to the smallness of industry markets. Tailoring the product to the industry sector requirements is part of the sales cost. Our products are built so that the initial fit is good anyhow (80% upwards), so that our tailoring costs are not high.'

- A well-known timesharing company saw the trend towards industry-specific marketing constrained by the people-orientation of the business, staff with knowledge of industry sectors being needed to market and supply their services by this route.

- The same vendor viewed the functional (horizontal) versus industry-specific (vertical) debate as inappropriate. He saw the problem as identification of the business-worthy elements of a two-dimensional matrix, with industry along one dimension and functional area on the other.

- Such a highly pinpointed approach, INPUT believes, requires very accurate market planning and a good degree of initial fit for the program products. For these reasons it is not going to have a wide appeal to vendors at this stage in U.K. market development.

3.   DECLINE IN CUSTOMER REVENUES

- Vendors were asked to estimate the size of average customer revenue in order to determine the strength of the impetus away from direct selling and towards indirect methods, as a result of sales costs' forming an increasing percentage of total costs. This assumes that percentage sales cost is an inverse function of average revenue -- a reasonable assumption but not necessarily true in all cases.

- 53 -

INPUT

- Interview results revealed a 5:1 ratio of responses showing non-declining average revenues. Of the 20% who reported a decline:

  - Ten percent stated that this was the reason for increasing the per- centage of revenues gained from products as opposed to services.

  - Five percent stated that the decline was merely a relative one -- relative to unit sales costs, that is.

4. EFFECT OF ECONOMIC CLIMATE

- To deal with the combined impact of inflation and recession, U.K. vendors were primarily content to stay with the positions they had adopted to face these challenges over a strategic timeframe - the five-year forward period.

- Inflation factors featured in 85% of vendors' plans. Price increases are expected to continue in line with inflation. Synchronisation of these increases with the RPI (Retail Price Index) increases has not occurred. In specific cases, vendors were aware of being months (and in one case, years) behind the inflationary forces.

- One vendor regarded inflation-following as a tactical, not a strategic, exercise.

- Half the respondents said they ignored the recession in their planning. Some comments from this group were:

  - 'A time of recession is good for computer services.'

  - 'Recession's impact is small, as information is addictive.'

  - 'Not concerned. Recession is the time to make acquisitions.'

  - 'In specific industries, we have taken recession's effect into account.'

- 54 -

INP

- Of the 50% who had considered the strategic effect of recession, software and system houses were rated less vulnerable. Comments from this group included:

    - 'Don't expect it to continue.'

    - 'It brings increased opportunities.'

    - 'Users need RCS more.'

    - 'Redundancies are happening among the mini manufacturers.'

- One respondent said he had three plans to cope with recession in case:

    - Recession remains at its present level.

    - Recession recedes.

    - Recession increases.

- Day-to-day planning involved switching between these three options.

5. STAFF SHORTAGES

- Sixty-five percent of replies indicated a shortage of staff in one or more grades as a real obstacle to company growth, while only 10% saw it as a perceived obstacle.

- Exhibit IV-3 illustrates the force of the impact of staff shortages in the different job functions. This is shown according to the percentages of responses marking each category of impact.

- The method of scoring each category of impact was to use 3 for high impact, 2 for medium, 1 for low and -1 for no impact. This was applied to the

INPUT

EXHIBIT IV-3

IMPACT OF STAFF SHORTAGES
IN DIFFERENT GRADES
ON VENDORS' GROWTH PROSPECTS

OVERALL
RATING*

SALES EXECUTIVES	40% / 20% / 40%	+1.2
SALES SUPPORT	40% / 15% / 45%	+0.5
SOFTWARE PROFESSIONALS	20% / 25% / 15% / 40%	+0.85
OPERATIONS STAFF	5% / 12% / 18% / 65%	-0.1
TECHNICAL SUPPORT/ ENGINEERS	35% / 15% / 50%	+0.35
MANAGERS	17% / 33% / 5% / 45%	+0.75
OTHER	5% 5% / 90%	-0.65

PERCENT OF RESPONDENTS IMPACTED
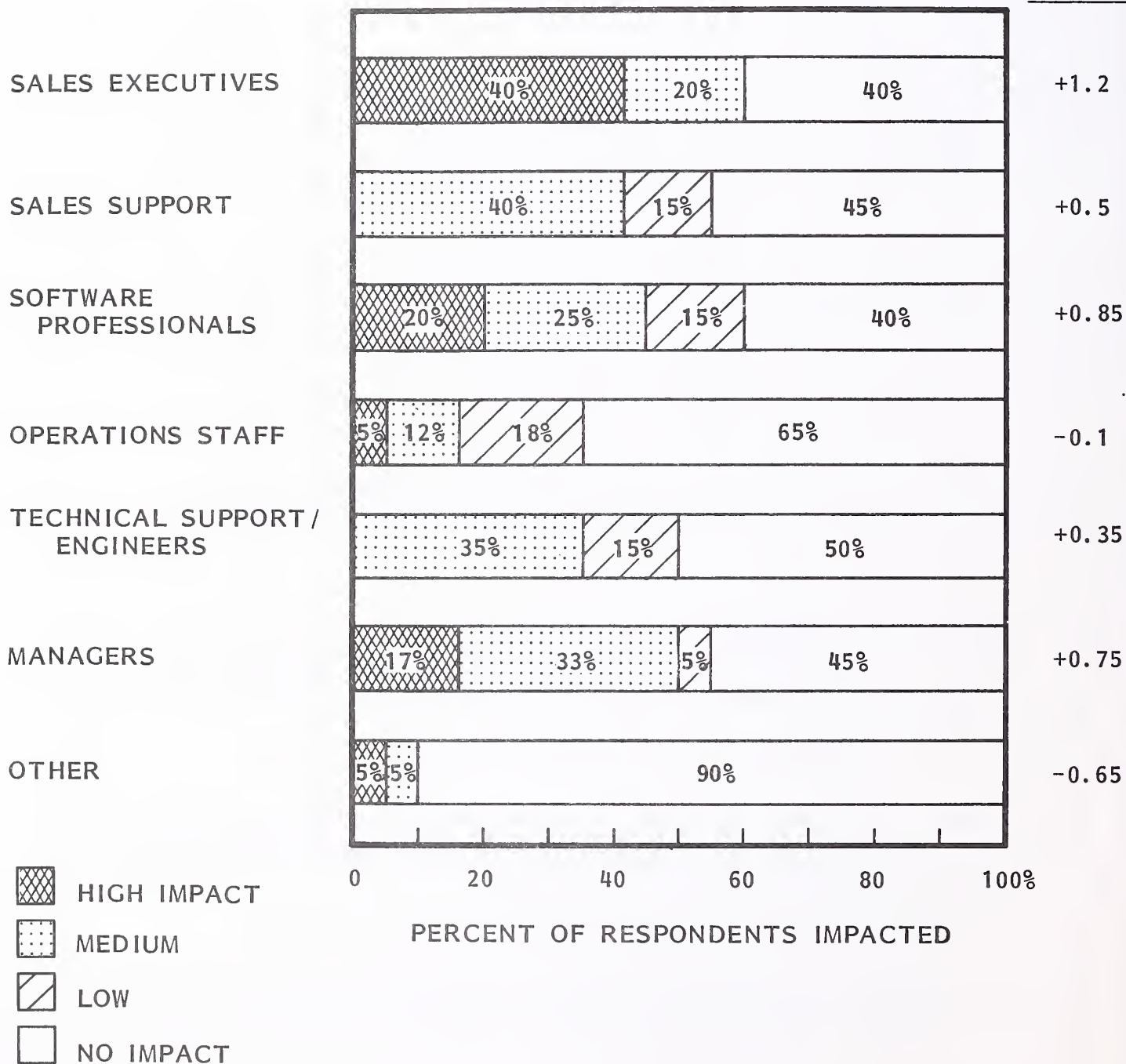
HIGH IMPACT
MEDIUM
LOW
NO IMPACT
*SEE TEXT

- 56 -

© 1980 by INPUT, LTD. London. Reproduction Prohibited.

INPUT

percentage of respondents in each category to give a rating between 3 (high impact throughout) and -1 (no impact at all). On this method, highest-scoring staff grades were, in sequence:

- Sales.

- Software professionals.

- Managers.

• 'Other' staff grades which got mentions were:

- Market planners/brand managers.

- Project Manager.

• The results showed that overall staff shortages were a significant, but not a major, problem impeding company growth.

6. · MOST SERIOUS COMPETITION

• Exhibit IV-4 lists the competitors or solutions most frequently mentioned by respondents. This question often drew the comment: 'We don't really have any competition'. It was with some reluctance that names were disclosed.

• The highest number of mentions was seven.

• Other 'competitors', all of which obtained less than three (3) mentions, were:

- CMG.

- Honeywell.

INPUT

EXHIBIT IV-4

MOST FREQUENTLY MENTIONED COMPETITORS

MENTION RANKING	TYPE*
IBM (IN-HOUSE/RCS)	M
GEISCO**	S
COMSHARE	S
IN-HOUSE SOLUTIONS	M
SIA	S
ADP	S
BOC	S
CENTREFILE**	S
SCICON**	S
DEC/UNIVAC	M
MINI-MANUFACTURERS**	M
CAP/SOGETI	S
PRIME**	M

*S = SERVICES COMPETITOR
 M = IN-HOUSE/MANUFACTURER SOLUTION
**INDICATES EQUAL RANKING WITH THE PREVIOUS ENTRY

INPUT

-       Industry packages.

-       UCC.

-       Other processing bureaux.

-       Computel.

-       ICL.

-       Logica or SDL.

7.   COMMUNICATIONS ENVIRONMENT

• Of the eighteen vendors completing module 7 of the questionnaire, half thought their growth prospects would be harmed (positively impacted) by Post Office monopoly positions over the next two years. At the end of the five-year period, three vendors saw their situations changing, one for the better, one for the worse and one adopting an undefined position.

• Analysis of the factors in Post Office practice, which were rated for severity of impact, confirms the general impression gained during interviews that the telecommunications authority is regarded very much as an unreal competitor when it comes to outright competition in the computer services business. The highest ratings for impact on vendor growth turned out to be (in order of decreasing severity):

-       Degradation of the leased-line service in terms of availability, line quality, maintenance and general support.

-       Obstruction to trans-border data flow by restrictive practice.

-       Tariff increases.

- 59 -

INPUT

- However, none of these items rated higher than 1.66 on a scale ranging from 3 (severe impact) to -1 (impact beneficial or negative). Exhibit IV-5 shows details of the perceived impact in terms of percentage of respondents.

- Qualitative information on vendors' views can be obtained from the list of their comments given in Exhibit IV-6. The sum total of opinions received on this subject point to a consensus well expressed by one respondent:

  - 'The PTTs are more of an annoyance than a true obstacle to growth'.

- Having said that, what is significant is that even respondents who felt their own positions were not affected could point to specific aspects which did have impact.

8. RESPONSE TO THE IMPACT OF THE PTTs

- Of the 10 respondents who perceived an impact on their growth in either the two- or the five-year timeframe:

  - Two would try to diversify to other areas.

  - Two would stay in and try to improve their competitive edge.

  - Three more would follow both of these options simultaneously.

  - Two would set up local, in-country processing centres. This option was attractive to U.S.-headquartered vendors presently without European mainframe data centres.

9. FUTURE OFFERINGS

- Leading vendors expect to enhance their offerings by adding further added-value services over the next five years. Of the options presented to them:

INF

EXHIBIT IV-5

PERCEIVED IMPACT OF PTT
(BRITISH TELECOM)
MONOPOLY POSITION ON VENDOR GROWTHS

INPUT

EXHIBIT IV-6

- 62 -
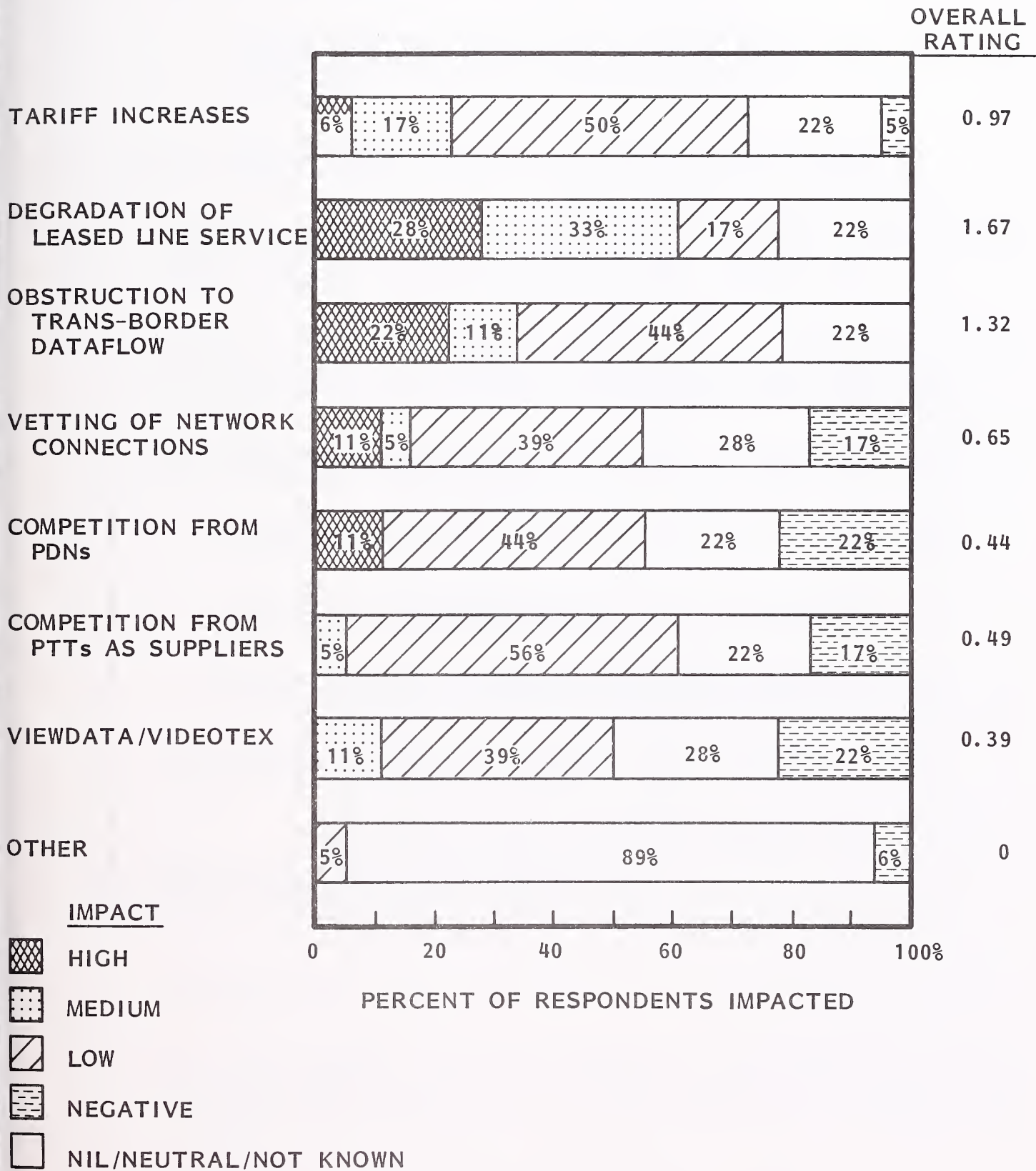
VENDORS' COMMENTS ON PTT MONOPOLY

- 'British Post Office is slow.'

- 'Our attitude is governed by the potentially large telesoft-
  ware market. Line problems are not so critical.'

- 'Post office can't respond quickly enough.'

- 'Technology sometimes slow in coming, but our network
  sales are not affected.'

- 'It's all noise. They can't do it. The customer base are
  our allies. Post Office is wasting public money.'

- 'We'll adjust to less of our own network and more of the
  PDNs!'

- 'Videotex can resolve shortage of manpower, but no
  commercial opportunity for 2-3 years.'

- 'Inefficiency of monopoly supplier is the main problem.
  Movable delivery dates allow 100% achievement!'

- 'The Germans in 1981 won't get away with it. Our
  confidence is based on experience dating back to 1964.'

- 'Tariff changes are forcing users towards PSS.'

INPUT

-       Use of Public Data Network (PDNs) had the highest growth potential, moving from only 6% of respondents using them now to 83% in five years' time. Exhibit IV-7 shows details of respondents' answers.

●   This was followed by:

-       On-line database offerings via Euronet in the short (two-year) timeframe.

-       Other database offerings in the three- to five-year period.

●   Viewdata services are anticipated to rise from a small base over the next two years.

●   Among the 'office-of-the-future' areas which have business potential for services companies, vendors ranked the following, in order of importance:

-       User-site word processing.

-       Electronic mail.

-       Image processing systems/graphics.

●   Facsimile and multifunctional equipment are less favoured as business areas. Exhibit IV-8 illustrates the vendors' perception of their future business volume associated with the new office concepts.

B.   ANALYSIS OF USER MANAGEMENT DATA

I.   INTRODUCTION

●   One of the principal aims of the MAS/Europe 1980 programme has been to examine the wider issues posed by the steady distribution of intelligence into

INPUT

EXHIBIT IV-7

ANTICIPATED ENHANCEMENTS
TO VENDOR PRODUCT RANGES

BUREAU NETWORK	73% 10% 6% 11%
USER OF PDNs	6% 51% 28% 15%
OFFERING VIEWDATA SERVICES	17% 6% 77%
OFFERING DATABASE VIA EURONET	5% 22% 7% 66%
OFFERING DATABASE OTHERWISE	39% 6% 22% 33%

0   20   40   60   80   100%

PERCENT OF RESPONDENTS

� IN TWO YEARS

IN FIVE YEARS

NOW

NEVER

INPUT
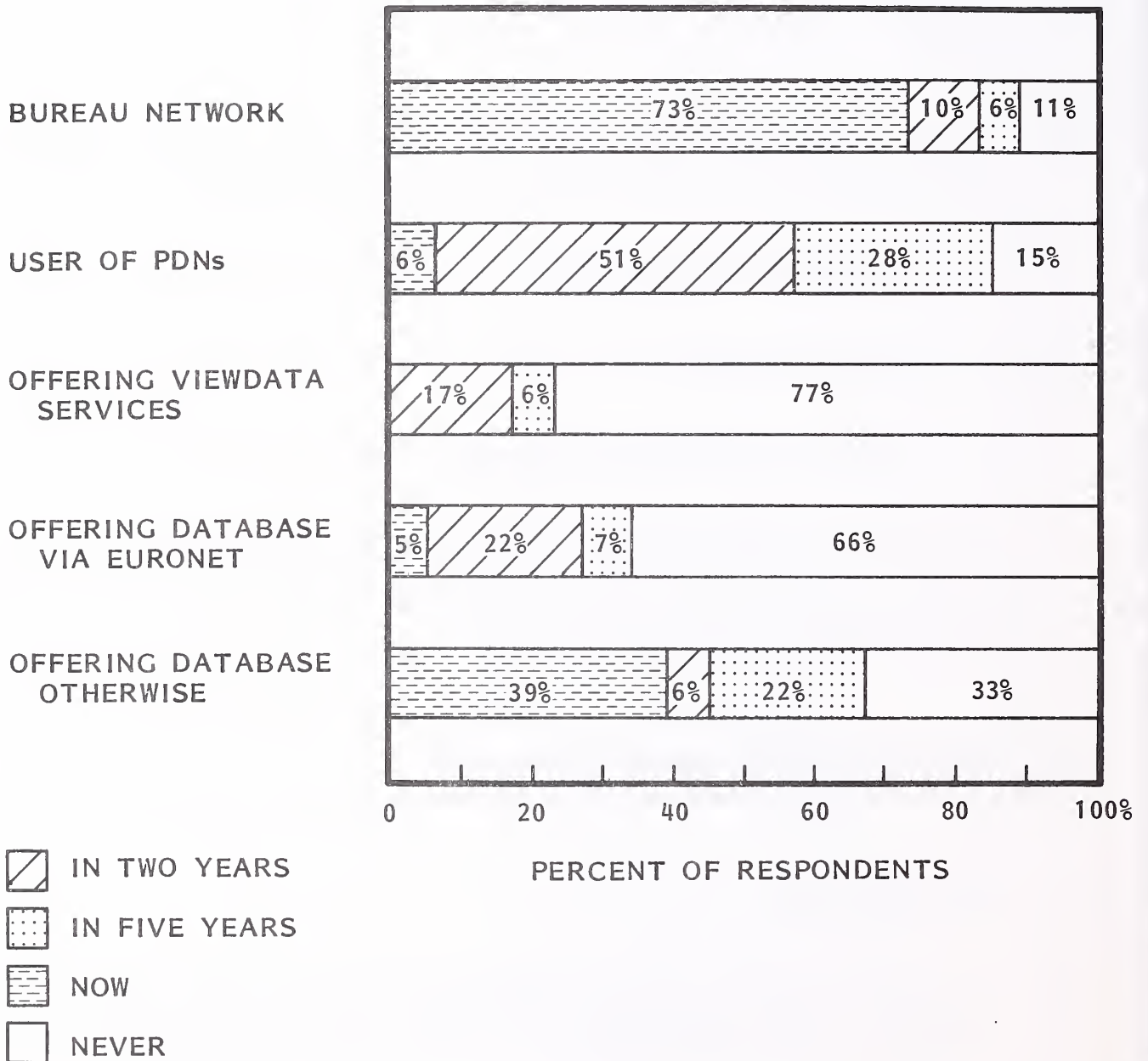
EXHIBIT IV-8

PERCEIVED OPPORTUNITIES FOR
COMPUTER SERVICES VENDORS IN ASSOCIATION
WITH 'OFFICE-OF-THE-FUTURE' APPLICATIONS

OFFICE PRODUCT

USER-SITE WORD PRO-
CESSING CENTRES /
NETWORKS — 76% / 24%

ELECTRONIC MAIL — 65% / 35%

FAX/TELECOPIER — 24% / 76%

IMAGE PROCESSING/
CRT GRAPHICS — 53% / 47%

MULTIFUNCTION
EQUIPMENT — 35% / 65%

0   20   40   60   80   100%

PERCENT OF RESPONDENTS PERCEIVING
ASSOCIATED OPPORTUNITIES

YES

NO

- 65 -

INPUT
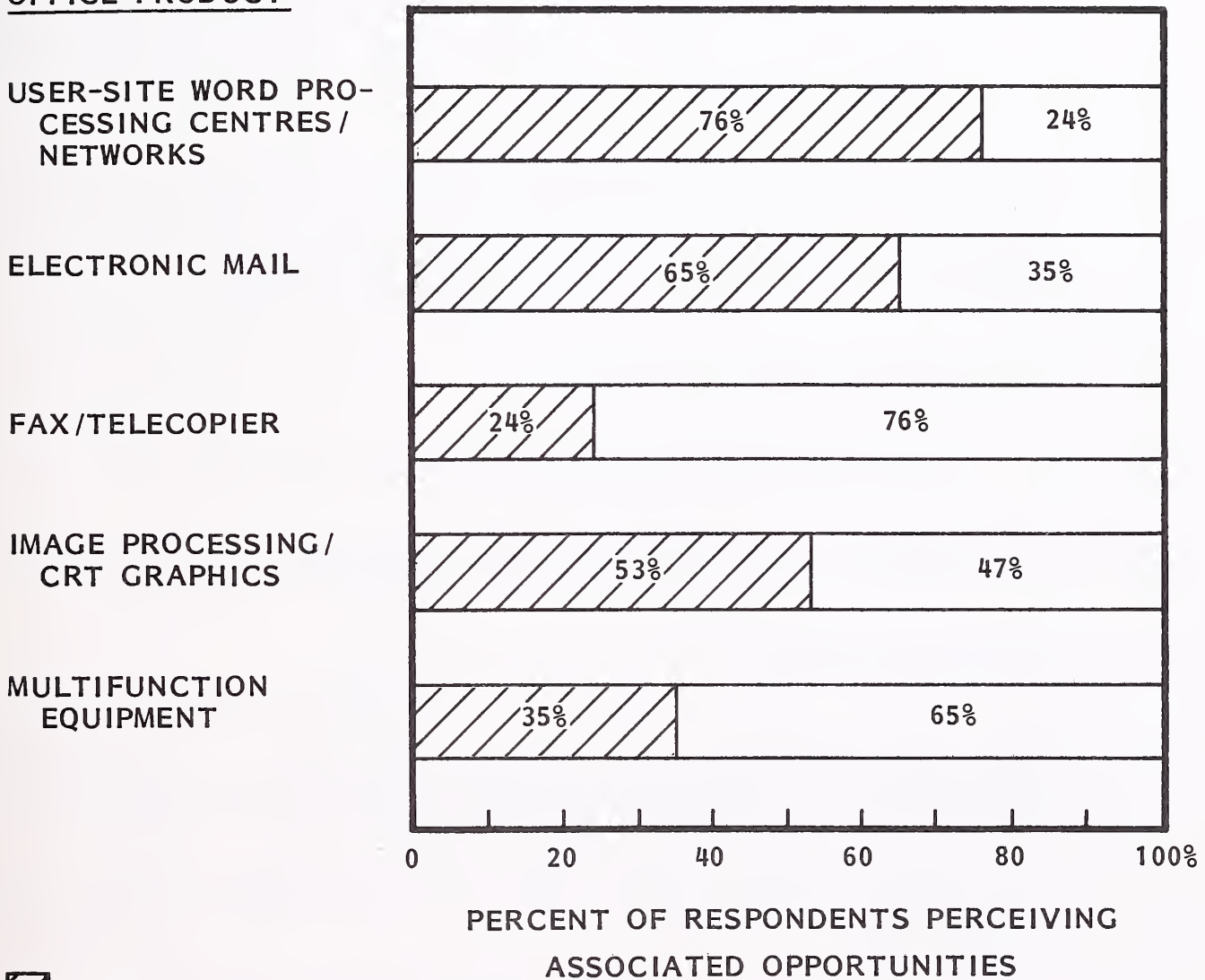
smaller and smaller working units of the nation's productive effort. One tool used to probe the market on attitudes generated by this technological driving force was the user Management Questionnaire. (See Appendix D.)

- The original objectives were:

    - To interview companies of different sizes and of varying degrees of involvement in international operations.

    - To interview general managers as well as EDP managers.

    - To study organisational issues relating to the changing control of data processing as it evolves within the wider context of total business information needs.

- In practice, the use of the Management Questionnaire was mainly limited to multinational or large national companies in the U.K. However, a very representative cross-section of companies was interviewed:

    - European HQs of U.S. parents.

    - Subsidiaries of U.S. corporations.

    - Worldwide HQs of large, U.K.-owned multinationals.

2.   INTERVIEW SAMPLE

- One hundred and twenty-seven (127) companies answered the Management Questionnaire, and 53 of these also completed the EDP User Questionnaire.

o   The breakdown by industry group, using the coarse grouping chosen for sample balancing, was:

- 66 -

INP(

Discrete Manufacturing	45
Process Manufacturing	26
Services and others	56
Total	127

- The breakdown by national orientation was:

Multinational Headquarters	45
Divisions or subsidiaries of multinationals	20
Headquarters of major national organisations	15
Divisions or subsidiaries of national companies	5
Smaller national firms	42
Total	127

- Only 52% of the sample (66) completed the whole questionnaire.

- Exhibit IV-9 summarises the geographical aspects of respondent companies' operations.

3.   DP POLICY-MAKING

- On the question of the decentralised control of computer purchasing and related services, respondents by and large chose either central control or restricted autonomy.

    -    The options were rated as follows:

INPUT

EXHIBIT IV-9

LOCATION OF MANUFACTURING, OPERATIONS,
HEADQUARTERS AND INTERVIEWEES
FOR MANAGEMENT RESPONDENTS

CATEGORY	CHARACTERISTIC	ORGANIZATIONS	
		COUNT	PERCENT
LOCATION OF MANUFACTURING (OR OPERATING FOR A SERVICE COMPANY)	IN ONE CONTINENT	85	67%
	IN MORE THAN ONE	42	33
	IN ONLY ONE COUNTRY	43	34
	IN MORE THAN ONE	84	66
LOCATION OF HEADQUARTERS	IN WESTERN EUROPE	111	87
	ELSEWHERE	16	13
LOCATION OF INTERVIEWEE	AT HEAD OFFICE OR HEADQUARTERS	86	68
	AT EUROPEAN HEADQUARTERS	15	12
	IN A SUBSIDIARY	26	20

INPUT

Complete autonomy	9%
Autonomy under restricted conditions	46%
Stipulated use of a central DP department	42%
Not known	3%

- This set of replies indicates a growing awareness at the board level (the majority of respondents were Financial or other Directors) that the attitude of 'central control at all costs' may be diminishing.

4. DP RESPONSIBILITY

- The other factor which needs to be weighed in conjunction with a decentralisation policy is the board position responsible for EDP and communications. In many cases, this was found to lie with the interviewee himself; i.e., the Financial Director.

- Exhibit IV-10 illustrates the main types of executive who are responsible for EDP at the board level. INPUT could discover no real difference in interviewees' minds between data processing and communications on this question. The occasional reply indicated that they were separate responsibilities, but in 99% of cases responsibility was in the same hands.

- Out of the 48% of the sample where the Financial Director had the responsibility, he shared it with a Chief Executive/M.D. or, in a few cases, with a Management Services Director. These cases in all amounted to 3% of the sample.

- The term Management Services Director covers a number of other titles also found in use:

  - Computer Controller.

INPUT

EXHIBIT IV-10

ALLOCATION OF BOARD RESPONSIBILITY FOR
DATA PROCESSING AND COMMUNICATIONS

EXECUTIVE	COMPANIES PERCENT
FINANCIAL DIRECTOR	48%
CHIEF EXECUTIVE OR MANAGING DIRECTOR	11
MANAGEMENT SERVICES DIRECTOR	14
OTHERS*	25
NOT KNOWN	2
TOTAL	100%

*INCLUDES: BOARDS OF DIRECTORS
DEPUTY CHIEF EXECUTIVES
VICE-CHAIRMEN
VICE PRESIDENTS
DIVISIONAL DIRECTORS
OTHER DIRECTORS

INPUT

-       Systems Director.

-       DP Manager.

-       General Services Manager/Director.

● The split between the executives did not vary significantly from one industry group to another, except in process manufacturing, where Chief Executives out-numbered Management Services Directors in the role.

● Among the other executives mentioned, no single title or group of similar titles (e.g., Deputy Chief Executive, Deputy Managing Director) obtained more than 4% of the responses.

5.   DECISION-MAKING

● Moving to the actualities of policy implementation, a question was asked on who in practice purchased equipment, software and bureau services from outside suppliers. The answers to this question are tabulated for all respondents in Exhibit IV-11. This shows the traditional picture of the DP Manager/Director as the main purchasing agent, but with less likelihood of deciding on hardware than on software or processing services. Remote site hardware finds him less likely to be the purchaser than for central or head office sites.

● Divisional Managing Directors and Managers are second to the DP Manager in the purchase of remote site items, while the Financial Director is second to him for the purchases of central site. This picture establishes the existence of a DDP purchasing capability, already well utilised, in the U.K. private sector economy. Very little of the sample was from the public sector.

INPUT

EXHIBIT IV-11

DISTRIBUTION OF THE DECISION-MAKING
FUNCTION FOR DATA PROCESSING
PRODUCTS/SERVICES OVER DIFFERENT EXECUTIVES

MAJOR DECISION-MAKER PURCHASING	HARDWARE		SOFTWARE		PROCESSING SERVICES	
	CENTRAL SITE	REMOTE	CENTRAL SITE	REMOTE	CENTRAL SITE	REMOTE
DATA PROCESSING DIRECTOR/MANAGER	41%	37%	49%	49%	48%	48%
DIVISION MANAGEMENT DEVELOPMENT	6	23	4	27	8	17
ACCOUNTANT/ ADMINISTRATORS	6	2	4	2	3	2
FINANCIAL DIRECTORS	20	14	16	8	17	13
EXECUTIVE BOARD OR JOINT DECISION	14	11	8	6	8	6
GROUP SYSTEMS MANAGERS/ADVISORS	8	7	11	8	10	7
OTHERS*	5	6	7	–	6	7

*'OTHERS' INCLUDE: COMPANY SECRETARY, DEPUTY CHAIRMAN, MANAGING DIRECTOR OR OTHER DIRECTORS, NOT ONE OF WHICH OBTAINED MORE THAN A 2% RESPONSE.

INPUT

- The impetus towards DDP can now only be retarded by centralising policies which are either not updated or being defended in a traditionalist manner. Answers to the previous question on policy show that a policy of 'constrained devolvement' is currently most likely to be encountered.

- Exhibit IV-11 should surely also put to rest the myth that accountants and administrators are in charge of U.K. computers. Certainly, the Financial Director will most probably be a trained accountant, and that explains the prevalence with which computers and financial applications are regarded as synonymous.

- Two other groups of executives deserve mention:

    - A non-trivial percentage of joint decisions are being made. In some cases this is done formally by an Executive Board, in others by two directors acting together, one advising the other or one funding the other.

    - Group Systems Managers/Advisors come nearest to representing the 'ultimate end user', a title which incidentally drew no affirmative responses at all from any of the questionnaires. Mention of this grade (response varied between 7% and 11%) shows that there is a management layer designed to bring user requirements to light, and that this layer can be quite separate from the DP Manager, reporting directly to the board member responsible for EDP.

- The corollary is that the DP Manager/Director must encompass this latter function also, if he is not to be isolated as the minder of computing hardware. Hence the requirement of the EDP function to broaden its skills to cover all aspects of providing information.

- Variations on these results were noted between the different industry groups. The two most noticeable were:

INPUT

-    Discrete manufacturing differed from the other sectors and from the overall pattern by opting mostly for use of a central DP department.

-    Discrete manufacturing was also out of step with the other sectors and the whole sample in putting purchasing decisions more into the hands of the Financial Director for both central and remote sites.

6.   ATTITUDES TO SERVICE COMPANIES

- Exhibit IV-12 documents the attitudes towards the increasing relevance of computer services companies to all offerings in the DP industry, whether product, service or any combination or mix of the two. The contrast which INPUT wished to engender in the mind of the interviewee with this question was between the traditional hardware manufacturer-biased approach and an open attitude to all classes of supplier. This was studied by asking respondents to pick the comment which most closely matched the attitude they would adopt to the hypothetical instance of their using a computer service organisation for a set of products or services.

- The results clearly show that, at the management level at least, the organisations largely believe themselves to be impartial across the spectrum of products and services considered. Where views were expressed more in favour of, or more against, the services vendor, the view was more likely to be associated with hardware, and centralised hardware at that. An increasing degree of uncertainty was encountered as the product discussed became:

  -    Remote rather than central.

  -    More 'service-orientated' and less 'product-orientated'.

- In only one cell of the table does the choice of a product become more likely at a remote than at a central site.

INPU

EXHIBIT IV-12

USERS' ATTITUDES IN COMPARING COMPUTER SERVICES VENDORS WITH HARDWARE VENDORS AS SUPPLIERS

COMPUTER SERVICES — MORE FAVOURED ←——————————→ LESS FAVOURED

PRODUCT / SERVICE \ MOST APPROPRIATE COMMENT	HARDWARE		SOFTWARE		BUREAU SERVICES	
	CENTRAL SITE	REMOTE SITE	CENTRAL SITE	REMOTE SITE	CENTRAL SITE	REMOTE SITE
'THE NATURAL CHOICE EVERY TIME'	24%	16%	11%	11%	8%	5%
'WE DO (AND WILL) USE THEM'	8	5	17	16	22	17
'COMPLETELY NEUTRAL ("BEST MAN WINS")'	38	35	46	41	30	29
'OCCASSIONALLY USED, BUT INCREASINGLY'	2	2	8	8	13	14
'AN UNLIKELY CHOICE'	27	24	11	8	10	6
'DEFINITELY SECOND-BEST'	2	2	2	2	2	2
NOT ANSWERED OR NOT KNOWN	-	17	5	14	16	27

- 75 -

INPUT

- A striking negative conclusion can be drawn from this evidence: computer services vendors have yet to establish themselves in the managerial mind as the proponents of 'distributed' (or dispersed) data processing.

- Variations between the three industry groupings in the sample were slight.

7. FUTURE TRENDS

- Respondents were asked about certain trends in their organisations. The replies were extremely varied, with comments being added, and gave rise to conflicting and opposite viewpoints on:

    - Future industry offerings.

    - Major DP changes within their companies over the next two years.

    - Reservations they might have about the way the industry is heading.

- Analysis of perceived trends in the control of their implementation of future offerings yielded a picture of major indecision (greater than 30% on all four topics) at top management levels. Only in the use of personal computers was there any real evidence to suggest that a locally controlled, autonomous policy would get going, but in this area the amount of indecision was greatest (at 37% of the responding sampled). Exhibit IV-13 gives details of the trends studied.

- Exhibit IV-14 lists some of the more significant comments, mostly culled from the major organisations in the sample. The issue of control over dispersed intelligence is very obviously still unresolved in the user's mind. This means that vendors should:

    - Not jump on an industry bandwaggon just because it's being loudly hailed.

INPUT

EXHIBIT IV-13

USER TRENDS IN THE CONTROL OF
THEIR IMPLEMENTATION OF FUTURE
INFORMATION INDUSTRY PRODUCT OFFERINGS

USE OF OUTSIDE COMPUTER SERVICES — 32% / 34% / 34%

OFFICE AUTOMATION — 30% / 27% / 33%

MULTIFUNCTION TELECOMMUNICATIONS — 37% / 30% / 33%

PERSONAL COMPUTERS — 23% / 40% / 37%

PERCENT OF RESPONDENTS
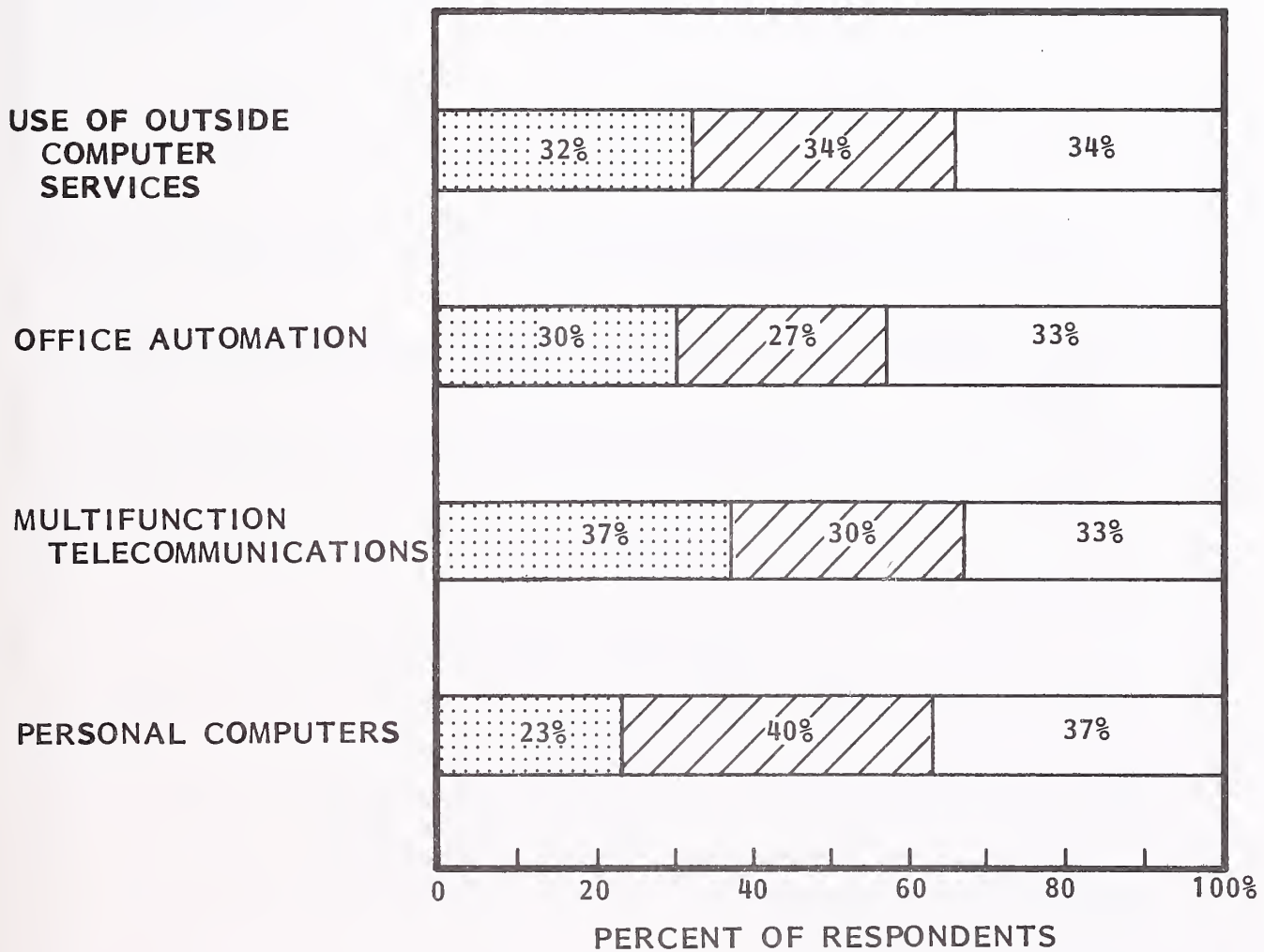
⬚ TREND TOWARDS CENTRALISATION

▨ TREND TOWARDS DECENTRALISATION

☐ TREND NOT KNOWN OR THOUGHT NOT APPLICABLE

- 77 -

INPUT

EXHIBIT IV-14

SIGNIFICANT USER COMMENTS ON FUTURE TRENDS

- 'Dispersed intelligence is leading to fragmentation and to the growth of non-productive technical specialists.'

- 'Our trend is towards decentralisation and minis.' (A well-known shoe manufacturer)

- 'Investigating decentralisation.' (A brand name in soaps)

- 'Possible loss of control with personal computers.'

- 'In computing, everything invested in is out of date.' (A household name in building products)

- 'We're totally flexible about the use of services companies. We do know, however, that more user involvement is required than we thought.'

- 'Introducing office automation now.' (The most famous advertiser in the liquor business)

- 'Trend's towards decentralisation.'

- 'It is getting more difficult to make buying decisions.'

- 'Software development is slower than that of the industry as a whole.' (Major engineering company)

- 'More use of applications and communications in all our subsidiaries.' (Instrument and terminal manufacturer)

- 'Becoming more centralised.'

- 'Remaining centralised.'

- 'Hope to have terminals in all 99 branches.' (Finance house)

- 'Greater use of minis in our subsidiaries.' (Merchant banking group)

- 'Trend towards a large on-line system.' (Tour operator)

INPUT

- Understand that, in order to satisfy user aspirations, offerings (if they are to be sold via top management) should be balanced between the needs of centralisation and decentralisation.

- Forty-nine percent of users envisaged major changes in their application usage of DP within two years. Of this subsample, 85% had no major reservation about the present trend towards dispersal of intelligence. For the 15% who were concerned, the reasons ranged through:

  - Loss of control.

  - Need for more standardisation.

  - Obsolescence of investment.

  - Bad linkage of applications software products.

  - Slow speed and expense of software development.

  - High cost dominance of the industry.

  - Growth of computer specialisations.

  - Overestimation of minis' capabilities.

  - Confusion at what is going on.

  - Belief in the need to depreciate one's investment in centralised systems to a point where they become uneconomic, before reinvesting.

- Out of these various reasons, INPUT gathered two strands of continuing concern:

INPUT

-    An understanding of the high cost of change to the user population; this cost offsets the simplistic cost/benefit analysis of some vendors, particularly hardware vendors.

-    The complexity of implementing systems, which is only partially offet by dispersal of intelligence.   For example, systems design becomes more crucial as increased use of communications tools means that end users must all agree on what they are talking about before they send messages around the networks.   In other words, the information content of data becomes more critical.

C.   ANALYSIS OF USER DP DATA

1.   INTRODUCTION

●   A client questionnaire was circulated in March 1980 to the MAS/Europe client base which had subscribed to the programme by that date.   This enabled INPUT to draw up a priority list of topics to be included in the research for the year.   (See Exhibit I-7 in the earlier report 'Strategies for the Computer Services Industry in Western Europe - 1980-1989'.)   The most important topics selected were built into the EDP User Panel Questionnaire for Europe, while at the same time retaining a large measure of compatibility with the corresponding research being conducted in the U.S.   This compatibility is to be used in making intercontinental (U.S. vis-a-vis Europe) comparisons in the European Summary Report that completes the 1980 programme.

●   User research topics were ranked in interest as follows:

-    Application usage and trends.

-    Users' comments on vendors' services.

-    Impact of DDP on large users.

- 80 -

INPU

-    Buying trends of small users.

- The last-named topic was hard to research from the user end due to the difficulty of interviewing the large numbers of small users required to make a trustworthy sample.   However, small companies were polled, and vendor research aimed to reinforce this area by the inclusion of questions on first-time users.

- Users' comments on vendors' services will be dealt with in succeeding chapters on each type of vendor. The general areas of user research are handled in the present chapter.

2.   APPLICATION USAGE AND TRENDS

- The primary objectives of DP management in 1980, as well as for the next two years, are analysed in Exhibit IV-15.

- The relative importance of each objective has been derived by weighting each priority mention (i.e., first priority counts 5, second 4, down to 1 for the fifth) and calculating it as a percentage of all weighted mentions. Allowance was made for unanswered responses and unused priorities.

- The installation of on-line applications stands out as the number-one priority for the whole three-year period. The only comparable element is the amount of uncertainty in management objectives - an uncertainty which increases naturally enough, as one looks more into the future.

- Development of new batch applications and of long-range EDP plans are the next most important objectives.

- Two objectives which increase in importance over the period are:

-    Design/install a DDP network.

INPUT

EXHIBIT IV-15

EDP PLANS - PRIMARY OBJECTIVES IN 1980, 1981 AND 1982, WEIGHTED ACCORDING TO THE NUMBER OF MENTIONS IN EACH PRIORITY

	1980	1981	1982
CONVERT APPLICATIONS	4%	4%	2%
DEVELOP NEW BATCH APPLICATIONS	8%	6%	7%
INSTALL ON-LINE APPLICATIONS	19%	15%	14%
DESIGN/INSTALL DBMS	3%	5%	3%
DESIGN/INSTALL DDP NETWORK	2%	3%	5%
INSTALL NEW MAINFRAME	2%	4%	2%
INSTALL MINICOMPUTERS	8%	4%	2%
INSTALL NEW PERIPHERALS	3%	3%	3%
CHANGE OPERATING SYSTEMS	4%	3%	2%
CENTRALISE EDP CONTROL	1%	3%	3%
DECENTRALISE EDP CONTROL	2%	2%	1%
DEVELOP LONG-RANGE EDP PLANS	10%	6%	7%
MEET DEVELOPMENT/CONVERSION SCHEDULES	8%	6%	6%
IMPROVE EDP PERSONNEL PRODUCTIVITY	6%	5%	6%
INTEGRATE OFFICE AUTOMATION WITH EDP	3%	5%	7%
OTHER	6%	5%	3%
NOT KNOWN OR NOT USED	11%	18%	27%

PERCENT OF MENTIONS WEIGHTED

ACCORDING TO PRIORITIES

- 82 -

INPUT

- Integrate office automation with EDP.

● This indicates the trend towards a broadening of EDP objectives away from the mere machine-minder role of the traditional DP manager.

● The issue of centralising or decentralising EDP control within the organisational structure is not a high-priority item. INPUT concludes that DP management, at least, is giving a low profile to this potentially emotive issue.

● In Exhibit IV-16, problems perceived by managers as most significant have been ranked in order of significance. A similar weighting to that used for ranking EDP plans was applied here.

● Personnel-related problems appear at the head of the table. It is not until item six ('need for improvement in operations') that the first technical problem is mentioned.

● The applications that are under development in 1980, and the comparison with applications already installed, are shown in Exhibit IV-17:

- The major 'new application' area is that of accounting and finance, which is continuing to take 25% of new development mentions.

- The next two in order of importance are:

   . Order entry and associated applications such as invoicing, purchasing and point-of-sale.

   . Production and inventory control.

- Payroll and personnel applications, though obtaining the highest number of mentions for an existing application, have for this year's development fallen behind marketing/sales in importance.

INPUT

EXHIBIT IV-16

MOST SIGNIFICANT PROBLEMS FACED BY EDP MANAGERS IN
1980 - RANKED BY NUMBER OF MENTIONS WEIGHTED BY THEIR PRIORITIES

PROBLEM	PERCENT OF MENTIONS IN EACH PRIORITY					
	PRIORITY 1	PRIORITY 2	PRIORITY 3	PRIORITY 4	PRIORITY 5	ALL PRIOR-ITIES
EXCESSIVE APPLICA-TIONS DEVELOPMENT TIME	16%	16%	6%	17%	18%	14%
PERSONNEL RECRUITING	19	9	20	3	-	10
NEED FOR BETTER PLAN-NING AND CONTROL	9	19	6	16	13	13
LACK OF USER INVOLVE-MENT IN SYSTEMS DEVELOPMENT	15	9	9	13	3	10
LACK OF GENERAL MANAGEMENT UNDERSTANDING	6	12	17	3	9	9
NEED FOR IMPROVEMENTS IN OPERATIONS	7	13	2	9	8	8
PERSONNEL TRAINING	6	10	-	9	10	7
NEED TO IMPROVE DATA COMMUNICATIONS	3	6	6	8	9	7
INDADEQUATE EDP FINDING (BUDGETS)	9	-	10	-	10	6
INADEQUATE SYSTEMS SOFTWARE	4	-	12	10	6	6
OTHERS	6	-	2	3	-	3
UNSATISFACTORY HARD-WARE MAINTENANCE	-	-	4	-	-	1
NOT KNOWN OR NOT USED	-	6	6	9	14	7
TOTAL	100%	100%	100%	100%	100%	100%

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

EXHIBIT IV-17

COMPARISON OF RESPONDENTS'
EXISTING APPLICATION
AREAS WITH THEIR 1980 DEVELOPMENTS

	EXISTING APPLICATION	NEW DEVELOPMENT
INDUSTRIAL/MANUFACTURING CONTROL	7%	5%
ENGINEERING/DESIGN/RE-SEARCH AND DEVELOPMENT	5%	5%
ORDER ENTRY/BILLING/PUR-CHASING/**POINT-OF-SALE**	16%	17%
PRODUCTION/INVENTORY CONTROL	13%	15%
DISTRIBUTION/TRANSPORT	3%	2%
MARKETING/SALES	10%	13%
PERSONNEL/PAYROLL	21%	9%
ACCOUNTING/FINANCE	18%	25%
OTHER	8%	8%

0   5   10   15   20   0   5   10   15   20   25   30%

PERCENT OF MENTIONS WEIGHTED

ACCORDING TO PRIORITIES

- 85 -

INPUT

- An examination of the modes of operation for which these applications are being developed yields the results pictured in Exhibit IV-18:

  - Overall, 72% of new development is being conducted for use on a central site machine, and only 28% of mentions are for remote sites.

  - The most frequently centralised application area (excluding the miscellaneous "other") is personnel/payroll, followed by marketing/ sales, and with engineering/design/R&D and accounting/finance tying for third place.

  - The most frequently decentralised application areas are, in order:

    - Distribution/transport.

    - Order entry, etc.

    - Industrial/manufacturing control systems.

  - However, only in the first two of these is the emphasis put more onto remote operation than central.

- Exhibit IV-19 illustrates the respondents' preferences for the procurement of new applications effort from in-house or outside suppliers. This set of findings is of great relevance to software products and professional services vendors, especially when taken in conjunction with the previous exhibit and used for sizing the DDP software systems markets.

- Personnel/payroll heads the ranking in importance for outside suppliers and is the only application area in which outside supply is preferred to in-house procurement, 59% to 41% respectively. The payroll element is the dominant one in this area. This application has several characteristics which separate it from others:

INP

EXHIBIT IV-18

PRIMARY MODES OF OPERATION
FOR NEW DEVELOPMENTS -
CENTRAL VERSUS REMOTE SITES

INDUSTRIAL/MANUFAC-TURING CONTROL	57%	43%
ENGINEERING/DESIGN/RESEARCH AND DEVELOPMENT	75%	25%
ORDER ENTRY/BILLING/PURCHASING/POINT-OF-SALE	44%	56%
PRODUCTION/INVEN-TORY CONTROL	73%	27%
DISTRIBUTION/TRANSPORT	33%	67%
MARKETING/SALES	81%	19%
PERSONNEL/PAYROLL	93%	7%
ACCOUNTING/FINANCE	75%	25%
OTHER	100%	
OVERALL	72%	28%

0   20   40   60   80   100%

PERCENT OF RESPONDENT MENTIONS

FOR CENTRAL
OPERATIONS

FOR REMOTE
SITE OPERATIONS

- 87 -

INPUT

EXHIBIT IV-19

SOURCES OF NEW APPLICATION DEVELOPMENTS –
IN-HOUSE VERSUS OUTSIDE PURCHASE

Category	In-House	Outside
INDUSTRIAL/MANU-FACTURING CONTROL	86%	14%
ENGINEERING/DESIGN RESEARCH AND DEVELOPMENT	80%	20%
ORDER ENTRY/BILLING PURCHASING/POINT-OF-SALE	61%	39%
PRODUCTION/INVEN-TORY CONTROL	64%	36%
DISTRIBUTION/TRANSPORT	67%	33%
MARKETING/SALES	87%	13%
PERSONNEL/PAYROLL	41%	59%
ACCOUNTING/FINANCE	63%	37%
OTHER	71%	29%
OVERALL	65%	35%

PERCENT OF RESPONDENT MENTIONS

☑ IN-HOUSE DEVELOPMENT

☐ OUTSIDE PURCHASE

INPUT

- Longest usage.

- Centralised operation.

- Low level of requirement update.

- Lack of vulnerability to changes in business practice.

- Though obviously a good area for outside services companies, only 10% of DP managers are installing developments in this area in 1980. This indicates the saturation of the central in-house component. The untapped market is for small companies, to whom it is a second- or even third-priority item behind accounting/finance and order processing.

2. BUDGET

- Only 39 users out of the total sample of 121 were prepared or able to furnish full-budget details. However these included some of the largest companies and in all amounted to a total expenditure potential of £48 million. This is estimated to be equivalent to 1.5% of the total U.K. DP expenditures in 1980. Exhibit IV-20 shows the analysis of the responses to the detailed question on budget breakdowns and growth through 1981.

- Personnel, the largest component, is mainly spent on central staff and is set to grow half as fast again as the overall growth.

- Mainframe processors, though occupying second place, are anticipated to decline in absolute terms. The only other element scheduled to see a decline is the usage of processing services through DP management, the two declines being of 11% and 19% respectively. The size of this decline is less than might be expected from knowledge of the DP managers' traditional antipathy to outside contractors.

INPUT

EXHIBIT IV-20
RESPONDENTS' BUDGET CATEGORIES,
BREAKDOWN BETWEEN CENTRAL
AND REMOTE SITES, ANTICIPATED
GROWTH IN 1981

BUDGET CATEGORY	1980 BUDGET		PERCENT SPLIT BETWEEN SITES		CHANGE ANTI-CIPATED 1980-1981
	£ MILLION	PERCENT OF TOTAL*	CENTRAL	REMOTE	
PERSONNEL	£20.9	43%	85%	15%	18%
MAINFRAMES	9.8	20	76	24	-11
PERIPHERALS	6.0	13	87	13	20
MINICOMPUTERS	1.8	4	37	63	9
TERMINALS	1.8	4	55	45	11
COMMUNICATIONS	1.3	3	65	35	38
SOFTWARE	1.1	2	79	21	30
MAINTENANCE	2.2	5	86	14	13
PROCESSING SERVICES	1.8	4	65	35	-19
SUPPLIES AND OTHER, INCLUDING PROFES-SIONAL SERVICES	1.3	3	88	12	16
TOTAL/OVERALL	£48.0	100%	79%	21%	12%

*ROUNDED

INPU

- Adjusting for the bias towards large companies in the present sample and for categories which were not always correctly stated, INPUT has derived a total EDP market as measured by user expenditures, and this market size has been broken down into categories which correspond exactly to the market sectors used in INPUT's current subscription programmes. The results of this analysis are shown in Exhibits IV-21 and IV-22.

- Exhibit IV-21 applies the respondents' anticipated growth rates to the 1980 market to derive the 1981 expenditure, while Exhibit IV-22 graphically illustrates the slowly changing breakdown of the total outside products and services purchased:

    - Mainframes down in percentage and absolute terms.

    - Peripherals, communications hardware and software products up.

    - Other categories holding steady near their present percentage values.

- The effects of inflation and recession on budgets were researched, with somewhat conflicting results:

    - Sixty-nine percent of budgets were reported to have been affected by inflation, with an average 15% increase.

    - On the other hand, only 38% of respondents claimed that their budgets were affected by recession, of whom 31% reported a consequent average 21% decrease.

    - Between these two groups there was an overlap comprising 21% of the responding sample; they reported an average net effect on budget of the two opposing forces amounting to a decline of -4%.

    - The net effect over the whole sample was calculated at +4% between 1979 and 1980.

INPUT

EXHIBIT IV-21

TOTAL EDP EXPENDITURES BY
DATA PROCESSING MANAGEMENT

BUDGET CATEGORY	EXPENDITURE				ANTICI-PATED GROWTH PERCENT
	1980		1981		
	£ MILLION	PERCENT	£ MILLION	PERCENT	
PERSONNEL*	£1,442	45.1%	£1,702	47.6%	18%
MAINFRAMES	570	17.8	507	14.2	-11
PERIPHERALS	350	10.9	420	11.8	20
MINIS	107	3.4	117	3.3	9
TERMINALS	105	3.3	117	3.3	11
COMMUNICATIONS HARDWARE	68	2.1	94	2.6	38
SOFTWARE, INCLUDING SOFTWARE MAINTENANCE	99	3.1	129	3.6	30
HARDWARE MAINTENANCE	234	7.3	264	7.4	13
PROCESSING SERVICES	109	3.4	88	2.5	-19
PROFESSIONAL SERVICES AND OTHER	116	3.6	135	3.8	16
TOTAL	£3,200	100%	£3,573	100.1%	11.7%

*INCLUDES RECRUITMENT AND TRAINING

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPU

EXHIBIT IV-22

GROWTH OF EXPENDITURES FOR INFORMATION PROCESSING,
AS ANTICIPATED BY DATA PROCESSING
MANAGEMENT, 1980-1981

	1980	1981
PERSONNEL (INCLUDING TRAINING)	45%	48%
MAINFRAME PROCESSORS	19%	14%
PERIPHERALS	11%	12%
MINICOMPUTERS	3%	3%
TERMINALS	3%	3%
COMMUNICATIONS HARDWARE	2%	3%
SOFTWARE, INCLUDING MAINTENANCE	3%	4%
HARDWARE MAINTENANCE	7%	7%
PROCESSING SERVICES	3%	3%
PROFESSIONAL SERVICES AND OTHER	4%	4%

0 10 20 30 40   0 10 20 30 40 50%

PERCENT OF TOTAL BUDGET

- 93 -

INPUT
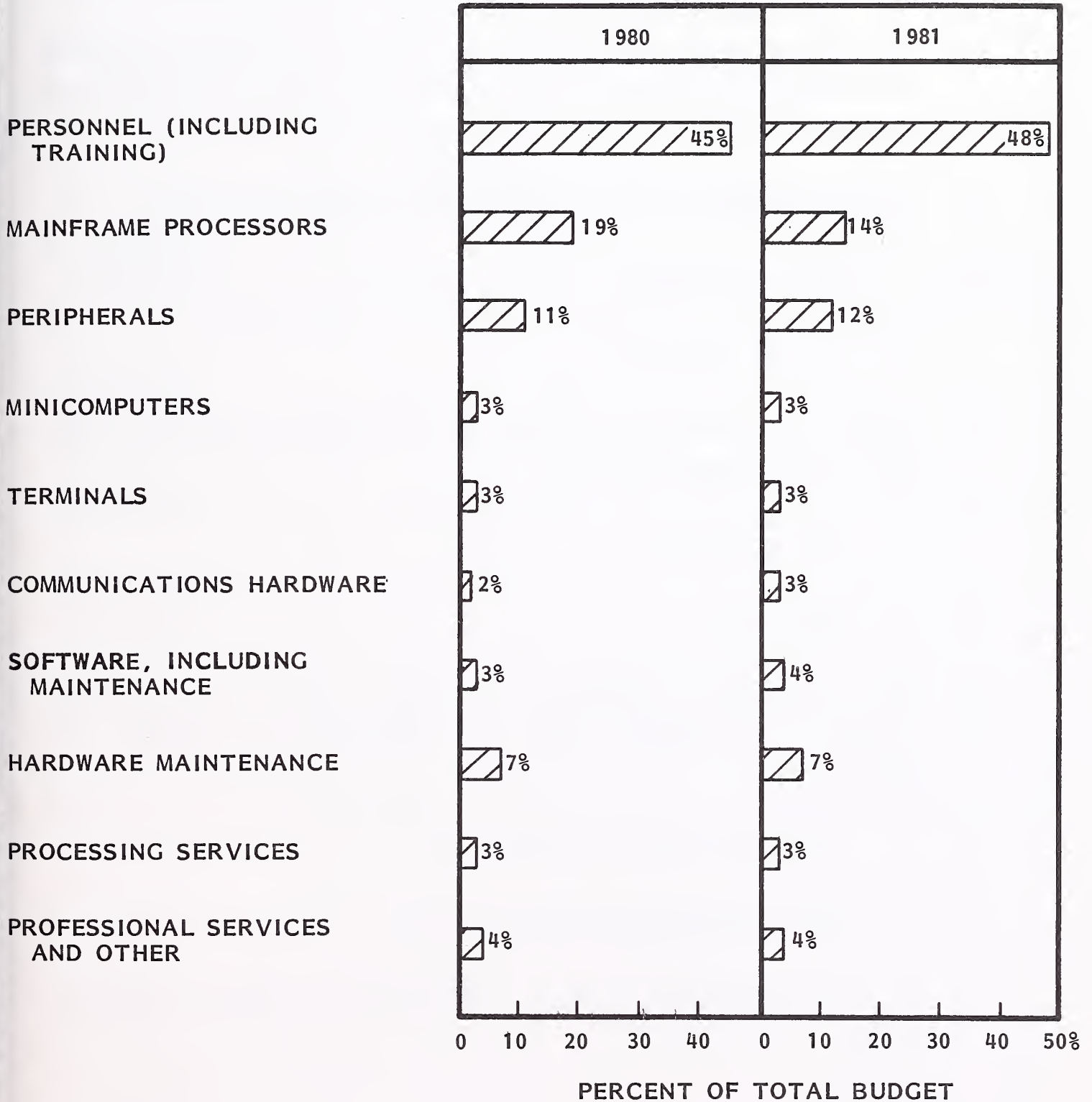
3. OUTSIDE COMPUTER SERVICES AND SOFTWARE

- Sixty-three (63), or 52% of all respondents, reported that within their companies or groups there were independent sources of expenditure for outside services and software. Most were able to give an approximate figure for 1979 expenditures of this kind, the average of which came out at just under £60,000.

- For the whole sample, estimated end user expenditures totalled £4 million out of a total for the whole of the U.K. of £265 million, again a 1.5% sample of the universe.

- Growth rates quoted by DP managers for this type of purchase were:

    - +7% for 1979-1980.

    - -3% for 1980-1981.

- Exhibit IV-23 compares the computer services revenues for the whole market from the two categories of users:

    - DP management.

    - End users.

- End user purchasing predominates (in a ratio of roughly 2:1) in processing services. In both the other major sectors, DP management buys the major portion:

    - In software products, the ratio is 6:1.

    - In professional services the ratio is 6:5.

- The overall balance lies in favour of DP management, but the difference is small.

INPU

EXHIBIT IV-23

- 95 -

COMPARISON OF SOURCES OF USER EXPENDITURES IN 1980, BY MAJOR CATEGORY OF COMPUTER SERVICE

TYPE OF COMPUTER SERVICE	VIA DATA PROCESSING MANAGER		VIA END USER		BOTH SOURCES
	£ MILLION	PERCENT SPLIT	£ MILLION	PERCENT SPLIT	
PROCESSING SERVICES	£109	36%	£196	64%	£305
SOFTWARE PRODUCTS	99	86	16	14	115
PROFESSIONAL SERVICES	106	54	91	46	197
TOTAL	£314	53%	£303	47%	£617

INPUT

- A ranking of expenditures from different end user departments shows that the finance department spends over three times as much as its next nearest rival, personnel. Coupled with the amount of board responsibility for EDP enjoyed by the Financial Director as a class, as shown earlier in Exhibit IV-19, this fact reveals the degree to which British management is sitting on the fence with regard to committing all DP responsibility to one executive. This finding is in total agreement with that from another survey INPUT conducted in 1980, in which over 200 Finance Directors or Chief Accountants were interviewed. Besides being in the main responsible for DP, these executives were also the biggest spenders on outside services.

- Exhibit IV-24 is a guide to the usefulness of the different buying points within an organisation and to the size of the respective segments of the market which they represent.

4.   USER SATISFACTION

- Questions on users' satisfaction with services were answered from the view-point of the DP manager, with the few exceptions when ultimate users in end user departments were interviewed. The results are shown in Exhibit IV-25.

- Mentions were given a rating (3 points for high satisfaction, 1 for medium and -1 for low) to establish the position of each type of service and each sector on a scale ranging between +3 (all satisfaction mentions high) and -1 (all mentions low).

- Best ratings were obtained, in this order, by:

    -    Hardware maintenance.

    -    RCS interactive.

    -    Batch services.

INPU

EXHIBIT IV-24

OUTSIDE COMPUTER SERVICES AND
SOFTWARE EXPENDITURES

DEPARTMENT	NUMBER OF MENTIONS	PERCENT OF ALL OUTSIDE PURCHASES	PERCENT OF ALL RESPON-DENTS	AVERAGE PERCENT SPEND	END USER MARKET (£MILLION)
OPERATIONS/ MANUFACTURING	10	16%	8%	6%	£ 18
RESEARCH AND DEVELOPMENT ENGINEERING	13	21	11	12	36
CORPORATE	12	19	10	10	30
MARKETING/SALES	10	16	8	6	18
PERSONNEL	12	19	10	13	38
FINANCE	35	56	29	42	127
OTHER	7	11	6	11	34
TOTAL	99	158%	82%	100%	£303

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

EXHIBIT IV-25

USERS' SATISFACTION WITH SERVICES

| TYPE OF SERVICE | NON-USER MEN-TIONS | USERS' SATISFACTION | | | | |
| | | ALL MEN-TIONS | MENTIONS | | | OVER-ALL* RATING |
			HIGH	MEDIUM	LOW	
RCS - INTERACTIVE	91	30	19	8	3	2.1
RCS - REMOTE BATCH	103	18	8	9	1	1.8
BATCH SERVICES	89	31	17	12	2	2.0
FM	111	9	2	7	0	1.4
TOTAL PROCESSING SERVICES	394	88	46	36	6	1.9
TURNKEY SYSTEMS	97	22	5	10	7	0.8
HARDWARE MAINTENANCE	23	98	62	32	4	2.2
TOTAL HARDWARE SERVICES	120	120	67	42	11	1.9
SYSTEMS SOFTWARE	24	97	41	53	3	1.8
APPLICATIONS SOFTWARE	33	88	27	55	6	1.5
TOTAL SOFTWARE PRODUCTS	57	185	68	108	9	1.6
CONSULTANCY	68	51	17	24	10	1.3
TAILORED SOFTWARE	72	47	17	26	4	1.6
EDUCATION/TRAINING	28	93	42	44	7	1.8
TOTAL PROFESSIONAL SERVICES	168	191	76	94	21	1.6

*WEIGHTED ACCORDING TO GRADE OF SATISFACTION

INPUT

- While lowest ratings were obtained by:

  - Turnkey systems.

  - Consultancy.

  - Facilities management.

- Only turnkey systems obtained a rating below I (the mid-point of the range), and to this extent it is the only service which can be considered less than adequate in the eyes of DP management.

- The growth rates expected between 1980 and 1982 were analysed, as shown in Exhibit IV-26. Together with the rates given in the budget category replies, and the rates applied to outside services and software, these rates have been used as evidence from which INPUT has estimated the growth rates in the formal forecasts given in Chapter III, as shown in Exhibit III-5.

- The different version of the AAGRs of services purchased through DP management for the major sectors of the Computer Services market are:

	Budget category 1980-1981	Associated with Satisfaction 1980-1981 and 1981-1982
Processing Services	-19%	-15%
Software Products	+30%	+37%
Professional Services	+16%	+9%

5. OFFICE-OF-THE-FUTURE ISSUES

- The overall usage picture is summarised in Exhibit IV-27.

INPUT

EXHIBIT IV-26
USERS' ESTIMATES OF THE
LIKELY GROWTH IN USAGE OVER 1980-1982

TYPE OF SERVICE	MENTIONS FOR:				AVERAGE OF GROWTH RATES (AAGR %)
	DECLINE	NO CHANGE	GROWTH	ALL	
RCS - INTERACTIVE	8	12	10	30	- 6%
RCS - REMOTE BATCH	4	7	7	18	- 7
BATCH SERVICES	11	14	7	32	-24
FM	4	6	-	10	-31
SUBTOTAL - PROCESSING SERVICES	27	39	24	90	-15%
TURNKEY SYSTEMS	4	8	12	24	+11
HARDWARE MAINTENANCE	5	48	40	93	+27
SUBTOTAL - HARDWARE SERVICES	9	56	52	117	+23%
SYSTEMS SOFTWARE	-	36	56	92	+40
APPLICATIONS SOFTWARE	2	29	58	89	+33
SUBTOTAL - SOFTWARE PRODUCTS	2	65	114	181	+37%
CONSULTANCY	12	31	11	54	- 6
TAILORED SOFTWARE	7	22	23	52	+10
EDUCATION/TRAINING	5	51	34	90	+18
SUBTOTAL - PROFESSIONAL SERVICES	24	104	68	196	+ 9%
TOTAL FOR ALL SERVICES	62	264	258	584	+17%

INPUT

EXHIBIT IV-27
PRESENT AND FUTURE USAGE
OF TELECOMMUNICATIONS
AND OFFICE AUTOMATION FACILITIES

CATEGORY OF SERVICE	NUMBER OF MENTIONS OF USE				
	NOW	1980-1982	1983-1985	NO PLANS	DON'T KNOW
DIAL-UP	61	13	9	35	3
LEASED LINE	69	13	7	29	3
PACKET NETWORK	12	10	7	73	19
TELEX/TWX	88	-	1	30	2
PRESTEL	12	6	5	90	8
EURONET	1	1	3	105	11
IN-HOUSE VIEWDATA	5	7	10	90	9
OTHER DATABASE	7	4	2	77	8
ELECTRONIC MAIL	10	15	11	71	13
WORD PROCESSING	55	21	12	29	3
IMAGE PROCESSING	7	3	7	87	16
TELECOPIER/ FACSIMILE	37	8	2	63	11
CRT GRAPHICS	10	12	7	80	10

INPUT

- For all type of services, the 'don't knows' and those with 'no plans' far outweigh the definite plans to implement a facility within the five-year forecast period.

- The following table shows the estimated average annual growth rates for the two timeframes, according to respondent data.

	Short-term AAGR 1980-82	Longer-term AAGR 1983-85
Dial-Up	9%	5%
Leased line	8	3
Packet network	35	9
Telex	--	--
Prestel	20	12
Euronet	50	50
In-house viewdata	50	30
Other database	29	8
Electronic mail	70	16
Word processing	18	8
Image processing	21	20
Telecopier/facsimile	11	5
CRT graphics	60	15

- Three new facilities show steady growth throughout the period:

    - Euronet.

    - In-house viewdata.

    - Image processing.

- Electronic mail and CRT graphics appear to have explosive short-term growth, followed by a sharp fall-off to growth rates around 15%. Given the new

INPUT

developments that will take place in both these areas (computer-aided design, for example) the data appear to show a rather short-sighted attitude.

- One concludes from the responses analysed in Exhibit IV-28 that, with the exception of Telex, the services with present high usage are already mainly under the EDP umbrella.

- The pattern of anticipated future responsibility also follows the pattern of new future usage very closely. This reaction is, however, too simple, and is representative of wishful thinking. One must take into account the indecision of general management when questioned on the centralisation or decentralisation of control of future product offerings, as shown in Exhibit IV-13. The large number of 'no plans' replies indicates that no firm conclusions can yet be drawn on the question of where the buying points for these new products will lie. INPUT believes that more complex decision-making will be required of users, and that this will involve both end users and DP management. RCS vendors will continue to be in demand, with updated decision support systems for a new type of management decision involving the informational content of their business control. In the 1980s, information will be more closely weighed in financial terms. This will demand more sophisticated modelling systems.

INPUT

EXHIBIT IV-28

RESPONSIBILITY AND PLANS FOR THE DATA PROCESSING DEPARTMENT IN CONNECTION WITH TELECOMMUNICATIONS AND OFFICE AUTOMATION

CATEGORY OF SERVICE	EDP RESPONSIBILITY FOR SERVICES: NUMBER OF MENTIONS				
	NOW	1980-1982	1983-1985	NO PLANS	DON'T KNOW
DIAL-UP	60	11	7	11	3
LEASED LINE	66	12	5	11	3
PACKET NETWORK	13	9	6	33	14
TELEX/TWX	32	–	1	62	2
PRESTEL	9	5	3	44	7
EURONET	3	1	2	51	7
IN-HOUSE VIEWDATA	5	7	10	43	7
OTHER DATABASE	5	3	1	40	5
ELECTRONIC MAIL	10	10	11	30	13
WORD PROCESSING	35	17	8	32	7
IMAGE PROCESSING	5	2	6	39	15
TELECOPIER/ FACSIMILE	17	6	1	46	9
CRT GRAPHICS	7	10	5	41	10

INPUT

V STRATEGIC ISSUES

V STRATEGIC ISSUES

A. THE U.K. ECONOMY

1. GENERAL

- Almost every big country is now moving towards attempted stimulation of both export and internal demand except for Great Britain, which entered this recession with high interest and exchange rates and plans to reduce the budget deficit steadily from 1980-81 to 1983-84 right through the recession, executed by the government's tolerance of unused capacity and Britain's inelasticity of supply.

- The manufacturing industry remains the hardest hit by the recession. Its output for the first half of 1980 is 3.5% lower than the average level of the same period last year. Indicators confirm the decline in industrial output and rising redundancies. Output is expected to continue declining, accompanied by a sharp drop in the volume of orders over the next few months. This is the result of an almost simultaneous fall in domestic and export demand coupled by a rapid deterioration in the competitive position of British goods.

- There are also indications that the impact of the recession is spreading to the distribution and services sectors. Britain today is in a serious position and bankruptcies, especially among small- and medium-size firms, are increasing alarmingly.

INPUT

- The government has carried out many of its promises: exchange controls have been abolished along with dividend restraint and the prices and incomes policy. In theory, at least, we are living in a changed political and economic climate. Yet the economic indicators tell a rather different story. The year-on-year rate of inflation has recently come down substantially to 16%; but that is several points higher than when the government took office. And for all but a minority of the population, inflation has more than eroded the benefits of the income tax cuts.

- The rise in unemployment began late but has been sharper than expected and, at 7.8%, is the highest since the 'soup kitchen' days of 1930. The figures indeed have probably become the most important political indicator already compelling certain changes in industrial policy.

- Over the next year, the prospects for the world economy in general, and for Britain in particular, look bleak. But the British economy should recover after 1981. The recovery depends decisively on what happens to wages and industrial competitiveness.

- But while the prospects for the British economy look grim, there is one ray of hope: North Sea oil. Government oil revenues are expected to jump to $8.3 billion this year and to about $28.5 billion in 1984.

- Britain is, of course, cushioned by North Sea oil. Last year's increases in oil prices have been equivalent to last year's 7% rise in the rate of V.A.T., which added 3% to prices and reduced GDP by 2-2.5%. Britain's balance of payments and terms of trade are not damaged by higher oil prices, although manufacturing industries suffer from contracting export markets and sterling's oil-boosted strength.

- Britain is becoming more and more dependant on North Sea oil to keep its trade figures from total disaster. But if certain industrial policies are not changed, particularly with regards to wages, industrial competitiveness and unemployment, then the five years over which North Sea oil will be making its

INPU

greatest contribution to the economy will have been wasted, and Britain will see a shrinking, not an expanding, of its industrial base which is needed when the oil runs out.

- Surprising the experts in recent weeks, U.K. exports have held up in the face of the high pound and the domestic recession. People are at last beginning to realise that the strength of the pound is not an excuse for poor export performance; neither Japan nor West Germany have suffered from the strength of their currencies.

- Basic U.K. economic indicators are shown in Exhibit V-1.

2. IMPACT ON COMPUTER SERVICES

- Vendors interviewed during the first half of 1980 were confident that the computer services industry was recession-proof. By the autumn, the effect on processing services had become known; manufacturers and software houses have drastically cut their graduate intake levels, and systems companies are starting to work off their order books at an unhealthy rate.

- Longer-term movements within the economy must be built into services companies' five-year plans:

    - The U.K. is experiencing a shift of resources from manufacturing to services industries, at a rate which is higher than the global average.

    - The manufacturing industry accounts for approximately 24% of computer services revenues.

- The U.K. has an immediate export opportunity in people-based services, particularly to continental Europe.

INPUT

EXHIBIT V-1

BASIC ECONOMIC STATISTICS:
UNITED KINGDOM

INDICATOR		YEAR	
		1979	1980
GDP[1]	£B	£120.54	£125.06
	$B[2]	$280.8	$291.3
POPULATION (MILLIONS)			
– TOTAL		56.17	56.23
– TOTAL WORKING		25.203	25.385
. AGRICULTURE, ETC.		0.673	0.675
. MANUFACTURING		9.14	8.32
. SERVICE INDUSTRIES		15.39	15.79
NUMBER OF ORGANISATIONS[3]		–	849,915
NUMBER OF ESTABLISHMENTS[3]		–	1,400,000

NOTES: 1. AT MARKET PRICE
      2. AT £1 = $2.33
      3. THESE FIGURES INCLUDE THE NUMBERS ENGAGED IN AGRICULTURE, FORESTRY
         AND FISHING, BUT EXCLUDE BUSINESSES RUN FROM HOME PREMISES

SOURCES: COI AND INPUT ESTIMATES

INPU

B.   TELECOMMUNICATIONS POLICIES

● The British Post Office has been rightly castigated for its long lead-times, late deliveries and poor response to technological change. The situation is predicted to change slowly for the better with:

-   The recent split between the postal and communications sides, and the formation of British Telecom.

-   The lowering of the monopoly barrier to the provision of terminal equipment by private suppliers.

● Nevertheless, London is not anticipated to be adequately served with telephone-grade lines until 1982, when System X-based exchanges have been brought into service in most of the capital. Change-over to System-X throughout the whole country is due for completion by 1992, making it in all a 20-year development programme.

● British Telecom (BT) sees itself as the VAN (Value-Added Network) of the U.K., providing not only the pure network but additional services as well. By 1983 it is aimed to have implemented the first part of its Integrated Services Digital Network (ISDN), and by 1986 to have linked 30 major metropolitan areas to it. ISDN is designed to offer 64 kbit/sec switched digital channels capable of handling voice, data and visual telecommunications. Its implementation schedule means that vendors should not plan for use of this network in their current five-year plans, since it is not going to have wide coverage until the second half of the decade.

● With the slowing down in the rate of growth of established services, such as the basic telephone, BT is faced with a challenge to its marketing capability. Without expecting BT to match the sort of marketing edge which private vendors are accustomed to achieve, INPUT forecasts a much greater marketing push in future years. Opportunities will abound for joint ventures

INPUT

with outside organisations, particularly for launching 'office-of-the-future' developments.

- BT is involved in developing the following systems and markets:

    - Prestel.

    - Facsimile.

    - Audio-conferencing.

    - Electronic funds transfer.

    - Communication between word processors.

- This heavy programme means that for any one particular requirement, vendors may wish to pursue their own developments in order to offer service earlier than the official BT due date.

- BT expects the network to grow in revenue-earning capacity by 44% over the next 10 years and, more importantly, expects tariffs to be halved in real terms in the same period.

C.   EQUIPMENT MANUFACTURERS AND THE MAINLINE VENDOR ROLE

- The "mainline" concept was introduced in the European Strategy Report, the first report from this year's MAS/Europe programme. The concept pertains to the stabilisation or maturing of a market situation to a state in which the principal vendors in the market control their own medium-term destinies by controlling the distribution channels to the users of their products or services. Marks and Spencer (M&S) is a classic case of this in the field of merchandising.

INPU

- M&S do not manufacture their own merchandise, but they control their subcontracted suppliers through control of the outlets through which they can guarantee their suppliers a flow of goods, assuming the quality is to standard.

- Another example comes from the position of the oil companies, who don't necessarily own either oil fields or filling stations, but nevertheless control substantial portions of the market to their own objectives.

- Hitherto, IBM and the leading mainframe hardware vendors have controlled the mainline in the computing field, and done this in a very comprehensive fashion by controlling:

    - Product manufacture.

    - Direct selling outlets to their customer base.

- Technological developments have upset this situation of equilibrium, which had survived through the greater part of the 1970s. This loss of equilibrium in the market has come about through the drastic reduction in the cost of hardware production. Manufacturers are consequently faced with the dilemma of having to move closer to their user base in terms of 'user friendliness' of product and service, at the same time maintaining a high rate of new product developments to satisfy the demands of a competitive environment. Even the largest of them is stretched to cover all fronts.

- This situation offers opportunities to services companies, who have previously played second fiddle to the hardware vendors, to assume the major "mainline" role. INPUT has examined the suitability of each type of supplier to fulfill such a role and also looked to see who among them has the will to seize its chance.

- Exhibit V-2 illustrates the relationships of the different activities of vendor types, as the industry stands today. The market has evolved to a point where the role of manufacturers as "distributors" of their own products has become

- III -

INPUT

EXHIBIT V-2

EVOLUTION OF THE MAINLINE ROLE

INPU
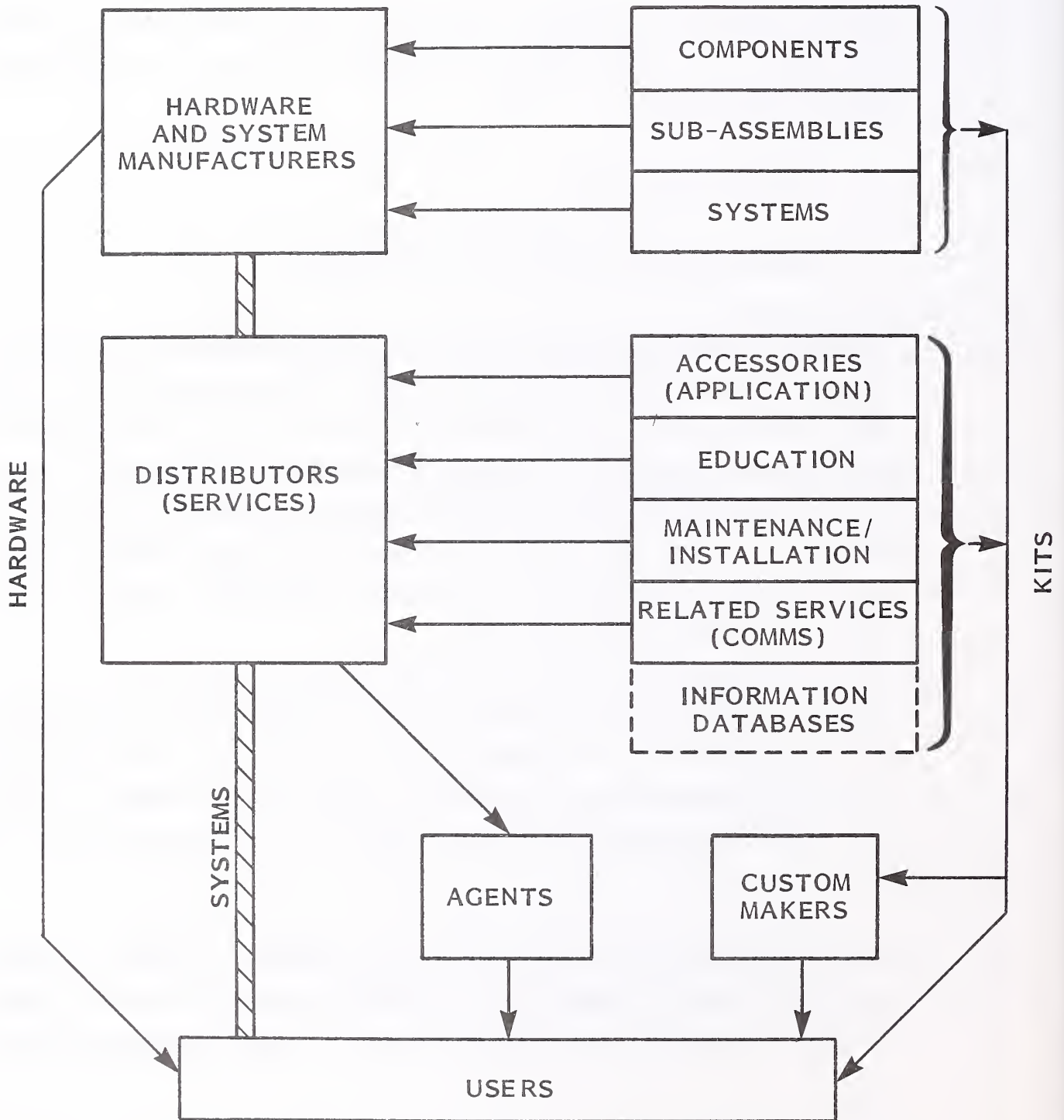
untenable, but it's not yet clear who (singular or plural) will assume the mantle. Types of vendors who have stood so far on the 'sidelines' can now move into centre stage.

- Processing services companies are best placed both physically and psychologically to accept the challenge:

    - Physically, because they have acquired the necessary commercial and financial skills.

    - Psychologically, because they have been tempered by their history of being the alternative solution.

- Software product companies, system and software houses are not currently displaying the necessary qualities, perhaps due to a long record of subcontractor status.

- Turnkey system vendors are being brought quickly to the realisation that to operate as such offers a similar opportunity to go for the mainline. Few have accepted the challenge; fewer still have been able to meet it. Both large and small system houses have looked at the prime contractor turnkey position and withdrawn to safer specialist areas. Gamma was one that went for the prize and fell; Systime now appears to have a clear field in the U.K. until the small business hardware vendors get into contention.

D. OFFICE AUTOMATION

- The driving force toward office automation comes from the increasing economies of scale in multinational operations:

INPUT

- Manufacturing and engineering companies have consolidated into large units under pressure of the escalating costs of new product development.

- Distribution and service companies have grown into giants in order to handle the increased volume and complexity of world trade.

- Government also has followed in the path of sheer complexity and size.

- In all three cases the administrative head is clearly visible as an area of labour-intensity which can be attacked with the weapons of the capitalist school:

  - Standardisation.

  - Rationalisation.

  - Mechanisation.

- Some major points of difficulty arise:

  - Though labour-intensive, the activities of the administrative head of an organisational unit (which is what an office is at all levels) are much more variable and spontaneous than the activities of either the factory or the clerical staff of yesterday's counting houses.

  - With the office appearing to be the last refuge of the working man or woman, the emotive resistance to the invasion of labour-displacing machinery is set to reach a pitch hitherto undreamt of in the U.K.

- The panorama opening out over the course of the 1980s is of a whole new layer of equipment supported by a whole new generation of communications systems gradually being implemented over a wide range of large- and medium-sized organisations. At the same time the small enterprises move through one or

INPU

two generations of small systems of increasingly multifunctional sophistication.

- There is an enormous amount of work in this revolution. The principal partners in the enterprise are the hardware suppliers and the leading system houses. A lot of auxiliary work will spin-off both to processing services and to the smaller software vendors. The semiconductor companies will become involved as suppliers of firmware components.

E.   PENETRATION OF THE U.S. INDUSTRY LEADERS

- Eighty million pounds of 1979 revenues were gathered in the U.K. by U.S.-owned vendors in the 20 leading companies. (The U.S. had four companies in the top ten, and seven in the top twenty.) This sum amounted to 36% of top-twenty revenues and excludes any software product revenues from U.S. hardware suppliers.

- Taking all revenue components into account, U.S.-owned companies turned over 30% of the £459 million of the 1979 U.K. market.

- INPUT does not foresee that this penetration will be greatly increased in the period to 1984.

  - Large national vendors of all types are now established.

  - Smaller vendors will move into software products.

- Therefore, though end user expenditures with U.S.-based companies will remain stable as a proportion of total services expenditures, U.S. companies will be able to sell considerably more software products through U.K. national system companies of varying types and sizes.

INPUT

F. GOVERNMENT AND THE SERVICES INDUSTRY

- The DP industry in the U.K. has been characterised by very limited government support for computer services, and much higher support for one indigenous hardware manufacturer, ICL. The U.K. differs from France in that the support policy, when it existed, did not take into account the far-reaching effect of computing on the ways in which working life can be conducted. The support has been for individual companies or types of company:

  - ICL.

  - INMOS.

  - Software companies via the NEB or CCTA (CCA that was).

- After a period of panic action at the tail end of the Callaghan government, when the power of the microchip became apparent for all to see, H.M. Government has now become enmeshed in the much wider problem of curing the malaise in Britain's economic and industrial fabric.

- The danger with this concentration on the part of the present government on curing the ills of inflation and industrial debility is that it ignores the possibility that the patient may have reached a state of weakness in which he first needs to be given the will to live before he can be given medicine of any sort, strong or mild.

  - In this context it is tragic to see the waste of young talent which is represented by CAP-CPP and ICL having to turn away their graduate recruits because of the economic climate.

- Assuming that unemployment in the U.K. is going to be around for some time yet, and that the computer services industry sees its very future put in jeopardy, were the total collapse of British industry to become a reality,

INPU

enlightened self-interest dictates that the representatives of that industry should be putting concrete, practical proposals to government at the highest levels at this juncture.

- The Computer Services industry, through all its major wings, must trigger the process. This means joint action by ICL, IBM (UK), the BCS, the CSA, the NCC and any other large company that wants to join in. The key people who know the problems are all already present in those organisations.

INPUT

VI PROCESSING SERVICES

VI PROCESSING SERVICES

A. INTRODUCTION

- The processing services sector of the industry remains the largest sector within the computer services field and is forecast to maintain this lead for the next five years.

- However, processing services has an in-built vulnerability in that it is still widely regarded as the alternative solution to the in-house approach.

- Not all the consequences of this prevailing attitude to the sector have been bad. Processing services vendors have responded to the continual challenge to their position:

    - By developing some of the best management teams in the industry, certainly overshadowing the majority of software houses in this regard.

    - By beating the in-house solution in speed of development of new products and services.

- The most important stage of the development of processing services will take place during the next five years. During this time public services, such as Prestel and other videotex and database services, will be developed and marketed to an extent and at a pace which will put the processing services

INPUT

solution into a permanent niche within the industry. Vendors who reinforce their position within the sector in this critical time will emerge as the market leaders in the second half of the eighties. The environment, as it will be at that time, is described in more detail in a companion INPUT report: 'Strategies for the Computer Services Industry in Western Europe, 1980-1989'.

B.   MARKET DEVELOPMENT (1979-1984)

1.   OVERVIEW

- Processing services achieved a market of £249 million in 1979. This measure of size is taken in terms of end user expenditures made within the calendar year.

- The sector is forecast to grow at an average annual rate of 18%, to reach a 1984 total of £562 million.

- The breakdown of the sector by mode of service is shown in Exhibit VI-1.

- Exhibit VI-2 gives the breakdown by type of service.

2.   GROWTH IN 1979-1980

- The growth in processing services between the last two years for which published financial returns exist, indicates an increase from 1978 to 1979 of 26% overall. This rate of growth has not been matched in 1980, due to the impact of the U.K. recession on industry, and especially on the manufacturing sector, so that a rate of only 22% was achieved.

- Exhibit VI-3 summarises the manner in which the sector has grown between 1978 and 1980. In addition, it shows a reconciliation between the 1978 figures published in the 1979 Annual Report and those resulting from 1980 research:

INPU

EXHIBIT VI-1

PROCESSING SERVICES MARKETS,
BY MODE OF SERVICE

FM £9 MILLION (4%)

RCS
£110 MILLION
(44%)

BATCH
£130 MILLION
(52%)

1979 – £249 MILLION

FM £16 MILLION, 11% AAGR

RCS
£320 MILLION
24% AAGR

BATCH
£226 MILLION
12% AAGR
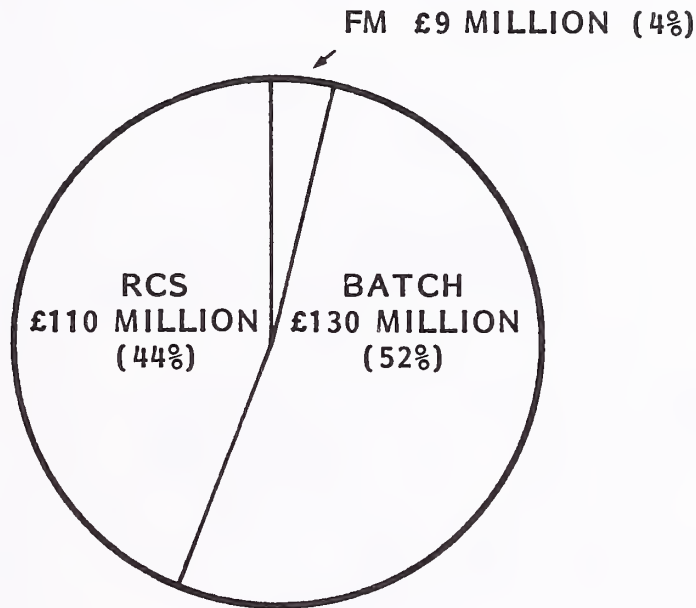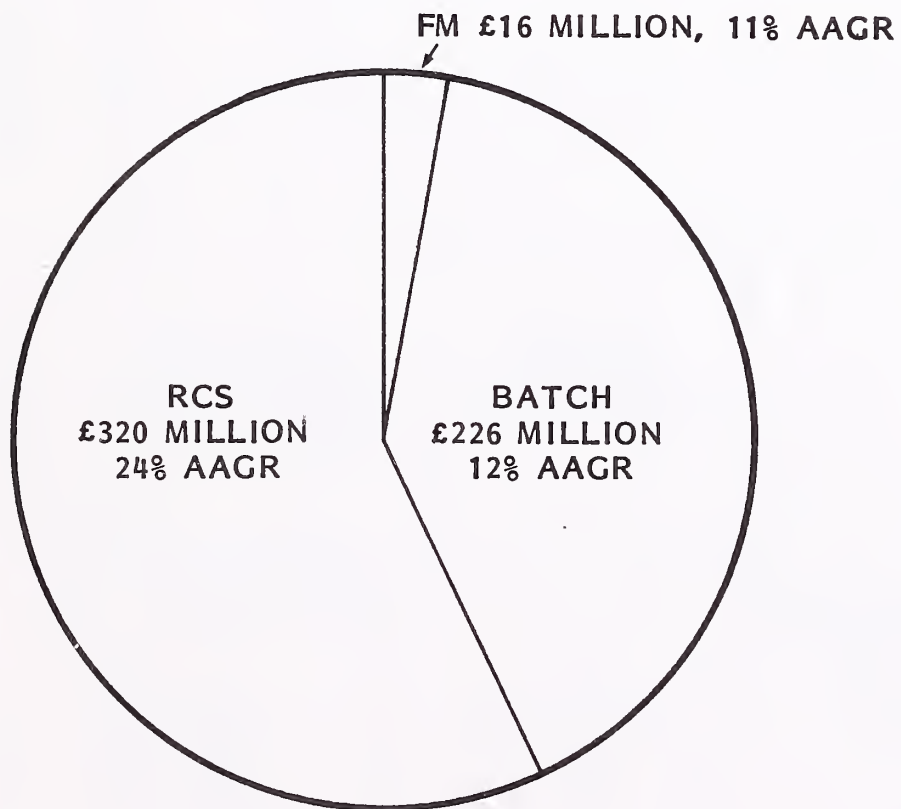
1984 –£562 MILLION, 18% AAGR

SOURCE: INPUT FORECAST

INPUT

EXHIBIT VI-2
PROCESSING SERVICES MARKETS,
BY TYPE OF SERVICE

INDUSTRY SPECIALTY
£60 MILLION
26%

UTILITY
£77 MILLION
30%

SCIENTIFIC AND
ENGINEERING
£44 MILLION
17%

GENERAL
BUSINESS
£68 MILLION
27%

1979

GENERAL
BUSINESS
£170 MILLION
20% AAGR

INDUSTRY
SPECIALTY
£166 MILLION
23% AAGR

UTILITY
£151 MILLION
14% AAGR

SCIENTIFIC AND
ENGINEERING
£75 MILLION
11% AAGR

1984 - 562 MILLION, 18% AAGR

SOURCE: INPUT FORECAST

- 122 -

INPUT

EXHIBIT VI-3
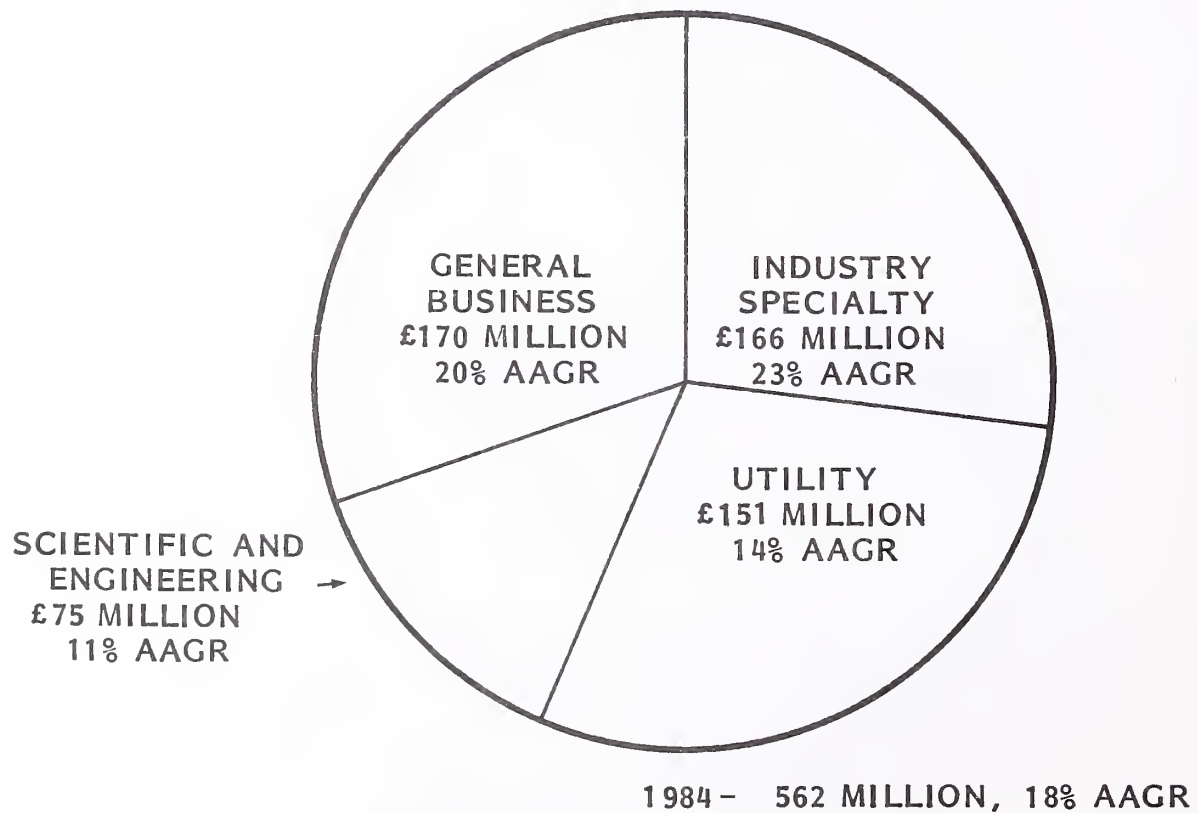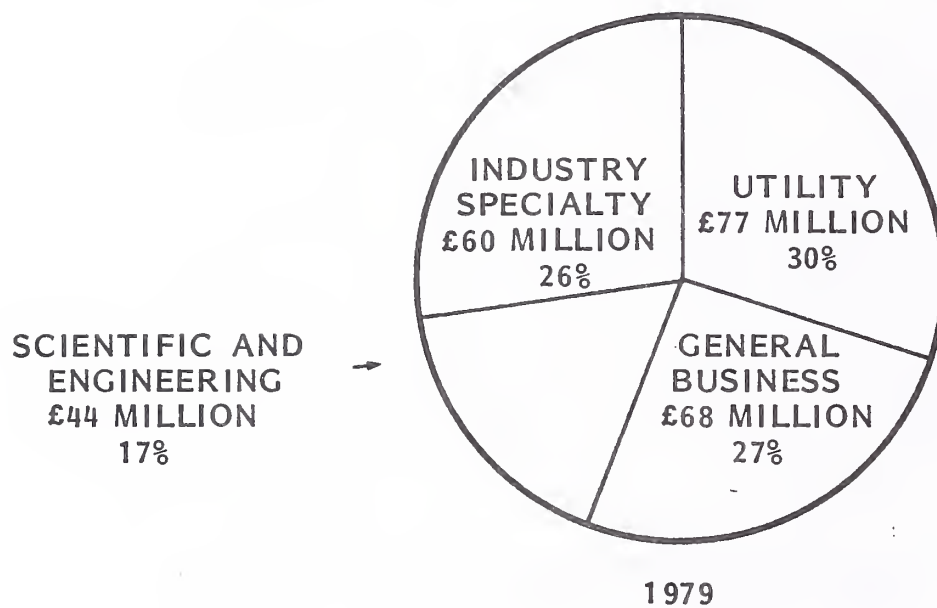
U.K. PROCESSING SERVICES MARKET SIZES, 1978 AND 1979, WITH RECONCILIATION TO PREVIOUS (1978) MARKET DEFINITION

SERVICE	1978 (AS REPORTED) £ MILLION	PERCENT	1978 (REVISED) £ MILLION	PERCENT	REVISED AAGR 1980–1979 PERCENT	1979 £ MILLION	PERCENT	1980 (PREDICTED) £ MILLION	PERCENT	AAGR 1979–1980 PERCENT
PROCESSING SERVICES										
RCS	£94	46%	£85	43%	29%	£110	44%	£138	45%	25%
– INTERACTIVE	–	–	40	20	35	54	22	72	24	33
– REMOTE BATCH	–	–	33	17	15	38	15	42	14	11
– DATABASE ENQUIRY	–	–	9	5	44	13	5	16	5	23
– USHS	–	–	3	2	48	5	2	8	3	48
FM	8	4	8	4	13	9	4	10	3	11
BATCH	103	50	105	53	24	130	52	157	51	21
TOTAL	£205	100%	£198	100%	26%	£249	100%	£305	100%	22%

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

-       FM has been separated from batch services.

-       RCS revenues have been decreased in favour of batch as a result of a more accurate assessment of the market.

● Growth rates in 1980 have decreased (in all cases save User-Site Hardware Services) due to the recession which was felt as early as the first quarter of the year:

-       RCS down from 29% to 25%.

-       Batch down from 25% to 21%.

-       FM down from 13% to 11%.

● The USHS submode of RCS had a steady 48% growth in both years, although from a small base of £3 million in 1978.

● Growth rates reported by some leading RCS companies indicate that they are, in 1980, lower than the national average. Market share is being lost in these cases, due to:

-       Faster growth coming from two categories of U.K.-headquartered company:

        ● Established batch bureaux converting accounts to remote batch working as their configurations become upgraded.

        ● Spin-off bureau companies loading more batch work into some now well-tried group networks.

-       Data Sciences and RHM Management Services are examples of these two categories.

INPU

- A second wave of international U.S.-headquartered vendors, such as CSS International and CSC Europe with their INFONET network, expanding into Europe with an up-to-date range of products, and now making their presence felt.

- The opposite is true of the batch services sector, where leading vendors report above average growth. The appearance is of a well-consolidated marketplace in which the leaders can extend their share at the expense of the smaller companies, which lack:

  - Established 'brand name' services.

  - Demonstrable growth paths to cater to the day when batch technology has run its full course.

- Centrefile stands out as an example of this type of tactical operation, reaping profitable batch business at a time in the product life cycle when, having all the growth it can cope with, it can afford to be selective about services offered and accounts accepted.

- Though still a small submarket, USHS has emerged during the 1979/1980 period as a measurable entity. Originally conceived as a defensive measure on the part of many RCS vendors, it has now been assimilated into the product catalogue of leading companies and can be used in both positive and defensive ways. Major names associated with this mode of delivery are:

  - ADP Network Information Services, with its DEC System 20-based ONSITE offering.

  - GSI (UK), which has implemented DEC and IBM systems, for parts of its group.

- At the lower end of the hardware scale, a number of vendors are now offering and installing on-site systems:

- 125 -

INPUT

- ICL Baric, with the ICL 1500-based Datacare service.

- CMG, with Datapoint systems.

- UCC's UCC-3 service.

- NDPS, which offers a British-built, micro-based system.

● The period 1979-1980 has seen the Interactive portion of RCS draw ahead of remote batch in revenue terms, having first overtaken it in 1978. Interactive is scheduled to grow at 33% in 1980, as against 11% for remote batch. This widening of the gap has in some part been due to a blurring of the boundaries between the two types of delivery and the degree to which large RCS vendors have reconsidered the way they are reporting this breakdown:

- A question one often meets is: 'When is interactive really interactive? Does a job transferred to overnight background through a terminal count as interactive or remote batch?'

- Similarly, looked at from the other way, does a job input via a HASP terminal, but run under TSO or GUTS, count as remote batch or interactive?

● Without examining the detail of users' account logs or of a vendor's operating system log, INPUT has relied on the informed judgement of its respondents to make sensible evaluations for the market as a whole.

● Facilities management continues to be a small perceived market in the U.K. However, defined simply as long-term (greater than one year) bureau contracts, a case can be made for there being a larger component if one includes sales to a regulated or semi-regulated industry, where dealing through a regulatory industry body involves the vendor in the planning and control of the operation as well as the processing.

INPU

- An example of this type of facility is Centrefile's service to the Law Society.

3.   FORECASTS FOR 1980 TO 1984

- Exhibit VI-4 gives the detailed long-range projections for each mode of service. These forecasts are made in current pounds sterling and include the variable factor shown in Exhibit III-2, which represents the predicted price increases for processing services resulting from inflationary measures.

- The major feature of the chart is that RCS will overtake batch as the largest revenue sector in 1982, due to its having a growth rate twice the size of the other's, 24% against 12%.

- The main contributors to the RCS performance are:

    -    Interactive.

    -    Database enquiry.

- The breakdown between the submodes of delivery will develop as follows:

	1979	1984
Interactive	50%	52%
Remote Batch	34	18
Database Enquiry	11	24
USHS	5	7
	100%	100%

- Interactive owes its predominance to the flexibility of services which can be offered by this mode, and to a lesser extent to the higher costs of remote batch terminals, which is one of the factors contributing to the decline in percentage terms of remote batch.

INPUT

EXHIBIT VI-4

THE U.K. COMPUTER SERVICES MARKET:

PROCESSING SERVICES - FORECASTS BY MODE OF SERVICE, 1979-1984

MODE OR SUBMODE OF SERVICE	MARKET FORECASTS IN £ MILLIONS								AAGR PERCENT 1979-1984
	1978	1979	GROWTH 1978-1979 PERCENT	1980	1981	1982	1983	1984	
INTERACTIVE	£ 40	£ 54	35%	£ 72	£ 87	£104	£130	£166	25%
REMOTE BATCH	33	38	15	42	47	50	52	56	8
DATABASE ENQUIRY	9	13	44	16	22	32	50	78	43
USHS	3	5	48	8	11	14	17	21	31
RCS SUBTOTAL	£ 85	£110	29%	£138	£166	£200	£247	£320	24%
FACILITIES MANAGEMENT	8	9	13	10	11	12	14	16	11
BATCH	105	130	24	157	171	192	210	226	12
TOTAL	£198	£249	26%	£305	£348	£404	£471	£562	18%

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

- 128 -

INPUT

- Database enquiry is the liveliest subsector, with an exceptional 43% growth over the period. This growth comes from:

    - Its present low usage, i.e., it starts from a small base.

    - The driving forces from data base creators who hope to earn large revenues from having their databases on-line for enquiry purposes.

- Database enquiry excludes the associated revenues generated as a result of an enquiry. These pull-through revenues are aggregated into the appropriate mode of delivery in which the total job surrounding the enquiry was made.

- Forecasts for USHS show the next best growth rate at 31%. Though regarded somewhat disparagingly by several vendors interviewed, INPUT has rated the growth potential of this delivery vehicle as substantial. In many cases examined, it will prove the best vehicle with which to launch upgraded versions of existing offerings.

- Database services are currently often accessed off-line, via magnetic tape cassette or in non-machine readable form sent through the postal service to the enquiror. When the access is on-line it is very often a connection via a remote batch terminal. Lloyds Register of Shipping information services are an example of this method.

- This present status of the market points to a very complex set of organisational relationships being set up in the next five years, as creators and providers of data, RCS vendors with networks, publishers and regulatory agencies all strive to carve themselves a niche in a new industry. RCS vendors control a key technological component of this new sector. INPUT believes that the growing importance of information in the national consciousness will establish the processing services industry with an economic platform with which to dispel once and for all the image of the 'temporary expedient' which it currently carries.

INPUT

- In Exhibit VI-5, processing services are forecast by type of service provided. The general trend is away from scientific and engineering, and utility by 5% and 4% respectively between 1979 and 1984, and towards general business and industry specialty by 3% and 6% respectively.

- This trend varies from one mode of delivery to another. The pattern is reflected more accurately in batch than in RCS (see Exhibit III-I for forecast details), with FM having a highly industry-specialised profile. Within RCS, each submode has its own change in the pattern of business:

  - Interactive will:

    - Increase in the utility sector with the increasing use of database management languages (such as NOMAD and MANAGE) especially in the pull-through revenues generated by Database Enquiry.

    - Decrease in general business as other types of service grow at a faster pace.

  - Remote batch will be typical except for:

    - Eventual predominance of the general business component as other types decline or grow less quickly.

  - Database enquiry will experience greatest growth in the use of industry-specialty databases at the expense of the scientific and engineering share:

    - Utility database type is reserved for miscellaneous revenues associated with management and maintenance of the data by the providers, or for advertising revenues paid by them to the RCS vendors.

INPU

EXHIBIT VI-5

THE U.K. COMPUTER SERVICES MARKET:

PROCESSING SERVICES - FORECASTS BY TYPE OF SERVICE, 1978-1984

SERVICE SECTOR	MARKET FORECASTS IN £MILLIONS								AAGR PERCENT
	1978	1979	GROWTH 1978-1979 PERCENT	1980	1981	1982	1983	1984	
GENERAL BUSINESS	£ 52	£ 68	31%	£ 86	£102	£120	£143	£170	20%
SCIENTIFIC AND ENGINEERING	39	44	13	51	55	62	66	75	11
INDUSTRY SPECIALTY	44	60	36	75	87	105	128	166	23
UTILITY	64	77	20	93	104	117	134	151	14
ALL TYPES OF SERVICES	£199	£249	26%	£305	£348	£404	£471	£562	18%

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

- USHS will grow initially in general business and industry specialty systems, but these will be overtaken in share during the 1983-1984 period by utility services as users become more adept at handling their own development on-site and as more software products become available for this mode of working.

● Exhibit VI-6 summarises the detailed market forecasts for RCS.

C. USER ATTITUDES AND THE DISPERSAL OF INTELLIGENCE

1. INTRODUCTION

● This section describes the user attitudes to processing services as gleaned from:

- Comments recorded from question 31, part 1 of the EDP User Questionnaire.

- Other comments relating to planning and control of minis, micros and terminals.

- Other relevant analyses from any of the questionnaires.

2. ATTITUDES TOWARD RCS

● Satisfaction with processing services, as shown earlier in Exhibit IV-25, is higher than for either of the other two major sectors of the computer services industry.

● Interactive RCS had the highest rating among processing services, followed by batch services.

INPU

EXHIBIT VI-6

REMOTE COMPUTING SERVICES MARKET FORECAST BY
SUB-MODE AND TYPE OF SERVICE – TOTAL, 1979-1984

COMPUTER SERVICE		USER EXPENDITURES								
MODE	TYPE	1978 (£M)	1979 (£M)	GROWTH 1978-1979 (£M)	1980 (£M)	1981 (£M)	1982 (£M)	1983 (£M)	1984 (£M)	AAGR 1979-1984 (%)
INTER-ACTIVE	GEN. BUS.	£ 7	£ 10	39%	£ 13	£ 15	£ 17	£ 20	£ 24	19%
	SCI. & ENG.	8	9	13	11	14	16	18	21	18
	IND. SPEC.	10	14	37	18	23	29	39	55	31
	UTILITY	15	20	32	29	35	42	53	66	27
SUBTOTAL		£40	£ 54	35%	£ 72	£ 87	£104	£130	£166	25%
REMOTE BATCH	GEN. BUS.	7	8	14	9	11	13	15	19	19
	SCI. & ENG.	6	8	31	9	9	8	7	7	-3
	IND. SPEC.	7	9	29	9	11	12	12	12	6
	UTILITY	13	14	8	15	16	17	18	18	5
SUBTOTAL		£33	£ 38	15%	£ 42	£ 47	£ 50	£ 52	£ 56	8%
DATABASE ENQUIRY	GEN. BUS.	3	5	56	6	8	11	19	29	42
	SCI. & ENG.	4	5	27	5	7	10	13	16	26
	IND. SPEC.	2	3	47	4	6	9	15	28	56
	UTILITY	–	–	–	1	1	2	3	5	60
SUBTOTAL		£ 9	£ 13	44%	£ 16	£ 22	£ 32	£ 50	£ 78	43%
USHS	GEN. BUS.	1	2	14	2	3	4	5	6	31
	SCI. & ENG.	–	1	67	1	1	2	2	2	37
	IND. SPEC.	2	2	25	3	3	4	4	5	20
	UTILITY	–	1	270	2	3	4	6	7	41
SUBTOTAL		£ 3	£ 5	48%	£ 8	£ 11	£ 14	£ 17	£ 21	31%
ALL REMOTE COMPUTING SERVICES	GEN. BUS.	18	25	39	30	37	45	59	78	26
	SCI. & ENG.	18	22	22	27	31	36	38	46	16
	IND. SPEC.	21	28	33	34	43	54	70	100	29
	UTILITY	29	35	21	47	55	65	80	96	22
TOTAL		£85	£110	29%	£138	£166	£200	£247	£320	24%

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

- Of the 64 respondents who commented on vendor services from their own experience, 38 incorporated some words rating their satisfaction, and two of these (though they didn't use them) rated processing services highly.

- The most frequent comment referred to the expense of using a processing services vendor, 23% of the 64. The comment was often qualified by the phrase: 'but they are good'.

- On the other hand only 3% said they were an economic buy.

- IBM was the most frequent name appearing in a comment, but on the whole vendors were not willing to include names. Other RCS vendors mentioned in comments were IP Sharp and ADP.

- Four respondents mentioned the inflexibility of the service bureau approach.

- There was evidence that minicomputers are regarded as a mixed blessing. Of the three respondent mentions of minis, two propose to take their mini configuration in-house, and one is thinking of a USHS solution to move the machine in-house.

3.   ATTITUDES TOWARD BATCH SERVICES

- Central batch services are dominated by payroll, which obtained six mentions (of the total 64). All mentions were favourable.

- Use of COM bureaux was mentioned twice.

- Vendor names appearing in a comment are:

    - CDC for batch.

    - Eurocom ('We would recommend them').

INPI

- Midland and Barclays Banks.

4. ATTITUDES TOWARD FM

● Only one respondent mentioned FM, and that was in the context of ad hoc usage for system conversion!

5. GENERAL ATTITUDE TOWARD PROCESSING SERVICES

● Nineteen comments included criticism, ranging from:

- 'Medium to poor performance. We'll replace with an in-house mini.'

to:

- 'Traumatic experience.'

● Exhibit VI-7 lists a representative sample of adverse comments, while Exhibit VI-8 presents a selection from the 30 favourable comments received.

● For those who use them, the balance of criticism lies in favour of the processing services vendors, but one must remember that only 64 of the sample of 121 professed to purchase processing services from outside vendors for central DP-controlled use.

● Similarly, 63 companies using outside services, not under DP management control, contributed to the survey.

● Management's attitude to services companies, as seen earlier in Exhibit IV-14, is neutral when they are in contention with hardware vendors.

● Central management, in the forms of the DP Manager or the Financial Director, plays a major role in the purchase of processing services at both central and remote sites, as was shown in Exhibits IV-13, IV-24 and IV-25.

- 135 -

INPUT

EXHIBIT VI-7

ADVERSE COMMENTS ON
PROCESSING SERVICES

- 'The initial attention and service we received has not been maintained.'
- 'They are expensive and inflexible.'
- 'The applications system is good, but the documentation leaves a lot to be desired.'
- 'Our company doesn't like using them.'
- 'Very expensive and not so good.'
- 'The service is satisfactory but not the quality of the support.'
- 'They must become more flexible.'
- 'They could be better; their days are numbered in this organisation.'
- 'Not personally happy.'
- 'We shall diminish our use of them. Our service bureau has made mistakes.'
- 'They are inflexible.'

INPUT

EXHIBIT VI-8

FAVOURABLE COMMENTS ON
PROCESSING SERVICES

- 'Quite satisfied.'
- 'They are good for some jobs; e.g., payroll.'
- 'Very good, but they are expensive.'
- 'We use them principally for timesharing. It's mostly IBM and we're very satisfied.'
- 'Good but expensive.'
- 'Economic to use them.'
- 'Very good and very expensive.'
- 'Used for payroll only – good service.'
- 'It is expensive but it helps to speed development.'
- 'One group company uses a service bureau and is very pleased.'
- 'It is a very good bureau, better than our previous one.'
- 'We always use the same bureau, and are happy with them.'
- 'We will continue and even have a slight increase in our usage.'
- 'We will link a mini to the service bureau mainframe.'

INPUT

- End user management, in the person of the divisional manager, is well represented in decision-making at remote sites, but he is more likely to be involved in hardware purchase than in software, and even less so in obtaining processing services.

- At central sites, Group Systems Advisors play a moderate role in decision-making for all three end-products:

    - Hardware.

    - Software.

    - Processing services.

- Group Systems Advisors are an institutionalised way of controlling end user requirements from the centre.

6. SPECIFIC ISSUES

    a. Sector-Specific Marketing

- It was clear from analysis of vendor questionnaires in Chapter IV that the trend is towards industry-specific product development and away from the functional or cross-industry approach which has prevailed up to now and which forms the basis of much of processing services' general business offerings. This trend is only partly confirmed by the evidence from user interviews:

    - Industry-specific services will ease the software productivity problem by providing solutions which require less tailoring to industry and company requirements.

    - The purchasing trend associated with dispersed processing is towards end user divisional management, who are more aware of problems and needs raised by the specialties of the company or industry they are in.

INPL

- Much of the evidence still points to a fair degree of central control and plans, problems and application areas which are likely to be tackled on a general, functional basis. Hence INPUT, while welcoming and applauding the industry-specific approach derived from the less-fragmented U.S. market, sees its implementation in the U.K. happening much more among smaller companies who are currently targets for local, batch or medium-sized bureaux, than among the larger targets to which the RCS vendors have been used to aiming their offerings.

b.   Database Services

- The long-term future for processing services lies with the provision of general information to all types of customers, businesses, government, education establishments and the 'man in the street'. These services will be provided increasingly through networks, and during the next five years, companies will be assuming their positions in this marketplace under competitive and fast-changing conditions:

    - Evidence from DP user data shows only a slight recognition on their part that it will be an important topic.

    - Evidence from DP management data reinforces the view that database services form an end user-orientated market. To quote the distinction made in INPUT's earlier MAS/E report 'Strategies for the Computer Services Industry in Western Europe, 1980-1989' between management information and operational computing, database services lie within the province of operational computing, providing, as they do, information to assist an ultimate user to perform his job successfully.

INPUT

D. VENDOR ISSUES AND THE IMPACTS ON PROFITABILITY

1. INTRODUCTION

- Seventeen of the companies interviewed completed the processing services module of the vendor issue questionnaire, which is included in Appendix C. Of these, one was a manufacturer who was not strictly in the service bureau business, and the rest were processing services vendors.

2. GROWTH IN REAL NEW BUSINESS

- Five companies out of 16 that responded reported a slow-down in the rate of growth of real new business. Two of these were batch-inclined vendors with a cross-industry product bias; two were strongly remote batch RCS, with strong industry-specific bias; and one specialised in very specific marketing of interactive services.

- Some RCS vendors reported good growths such as '58% up between QI 1980 over 1979' and '40-50%'. One vendor with a comprehensive range of services was looking for 16% real growth in its five-year plan.

- In two years' time, only one vendor anticipated still suffering from the same slow-down. This was one of the remote batch RCS companies; it was also the only vendor who could supply a percentage rate. He stated that his new business was increasing at 8%, which, at a 12% inflation rate in 1979, indicates a -4% real growth. His particular concern was how to break into interactive services.

- INPUT concludes that, apart from immediate recessionary pressures which have increased in recent weeks, processing services will in the medium-term, (two to three years) be able to maintain real positive growth in new business.

INPUT

3.   IN-HOUSE DDP

● The majority (12) of responses obtained indicate an increase in the number of accounts lost, due mainly to migration to standalone minicomputers.   The average percentage of accounts lost is 5%.

● The numbers and their major destination for lost accounts are:

Standalone minis	42%
Connection to in-house network	25
Batch on in-house mainframe	0
More than one destination	33
	100%

● Three companies in the last category said it was an even split between minis and the in-house network, and with one it was split between minis and in-house batch.

● There was no discernible pattern connecting the types of business of the 12 companies suffering impact and the profiles of their losses.   The inroads being made by minis are affecting all types of vendor.

4.   NEW TYPES OF USER

● New user types such as small businesses, professionals and heads of departments are unbiased when it comes to choosing between processing bureaux and in-house solutions.

● Eight of the 17 respondents reported some reluctance to choose a bureau solution.   In one case a vendor ascribed losses to a failure to choose a system at all.

INPUT

- Timesharing vendors are less impacted by this type of prejudice on the part of the first-time user. A large batch vendor had experienced heavy prospect losses to the mini/micro solution.

5. USHS

- When asked about the usefulness of USHS as a means of ensuring growth, respondents indicated that they favoured this in the longer term, but were sceptical of its immediate impact.

- Exhibit VI-9 analyses the ratings given and shows that the picture is one of steadily increasing importance.

- One sceptical reply opined that its rating would only get above a low level if, as an offering, USHS was integrated into industry-specific products.

- Other reservations dealt with the need to develop new hardware skills.

6. FACILITIES MANAGEMENT

- Vendors in the U.K. did not show any great enthusiasm for the FM concept. Answers were split 50:50 in all three timeframes.

- Among its proponents, there were two schools of thought:

    - Those who couldn't distinguish it from integrated industry-specific or cross-industry products, perhaps delivered via USHS.

    - Those who saw it as a trade association type of contract.

7. THIRD-PARTY DISTRIBUTION

- In a majority of cases (59%) business is more costly to obtain than a year ago, and the average percentage increase is 11%. There is, therefore, steady

INPUT

EXHIBIT VI-9

RESPONDENTS' RATINGS OF THE
CAPABILITY OF USHS
AS A MARKETING TOOL

CAPABILITY	PERCENT OF RESPONDENT RATINGS	WEIGHTED RATING
- NOW	6% 12% 82%	21
- IN TWO YEARS	19% 44% 37%	29
- IN FIVE YEARS	44% 25% 31%	34

0   20   40   60   80   100%
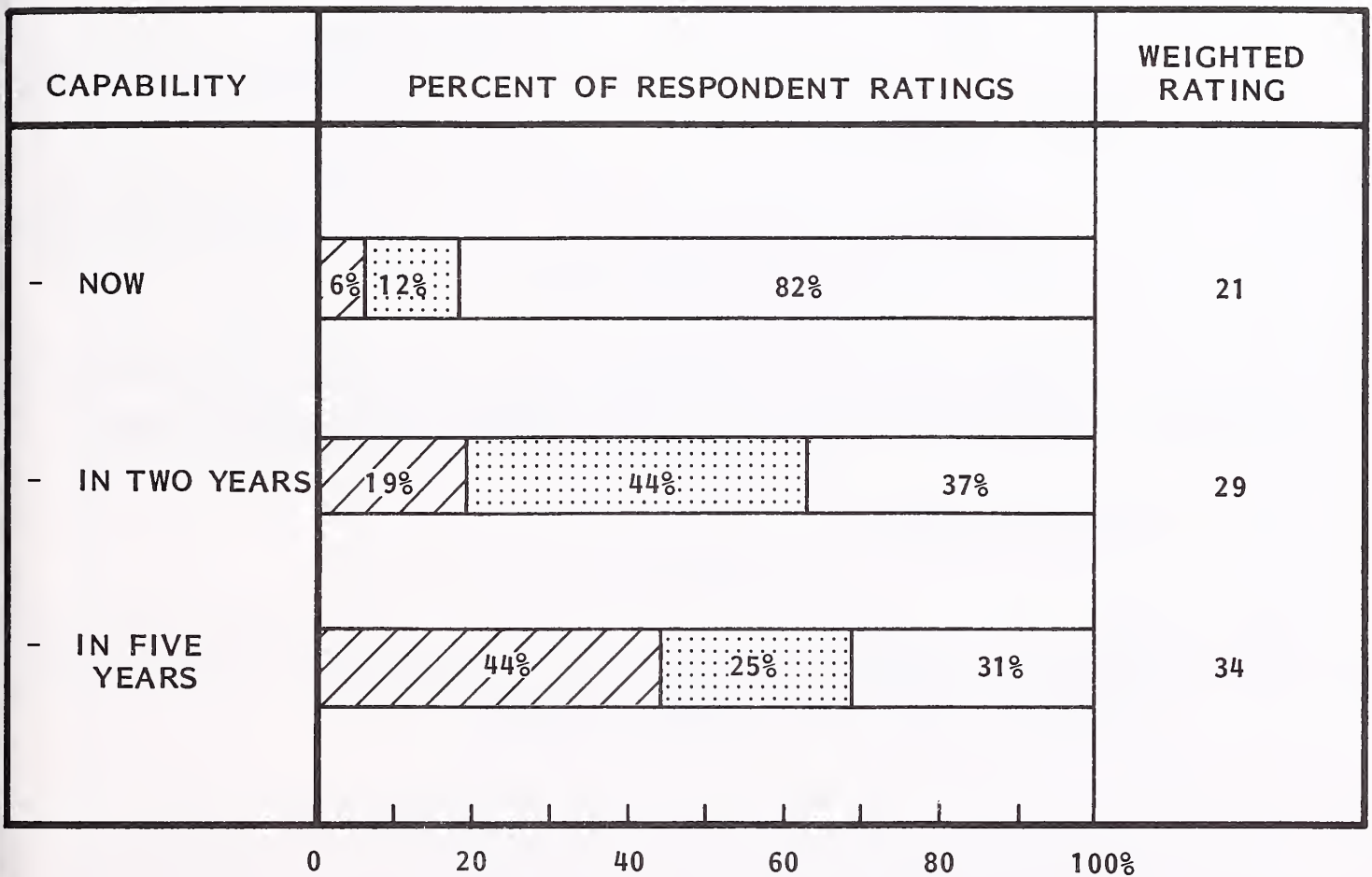
☑ = HIGH RATING

▦ = MEDIUM RATING

☐ = LOW RATING

INPUT

pressure on margins from this factor, an aspect which pushes organisations to adopt third-party distribution methods.

- However, less than a third of the companies retail their services now and this is not scheduled to increase much in the short term:

	Respondents Retailing	Revenue Retailed
Now	29%	4%
In two years' time	35%	5%

- Processing services vendors are therefore reluctant to relinquish their selling to others. This indicates:

    - That they have a precarious hold on their own existence, in line with their past as the 'alternative solution'.

    - That much of the justification for their use revolves around the 'user-friendliness' which has marked them out from the hardware vendors.

8. PRICING ELEMENTS

- Almost all the organisations used all the pricing elements listed in the first question. In addition, transaction pricing was mentioned as the chief method for batch services by the mainly batch vendors.

- One respondent viewed the whole problem connected with pricing as the hardware/software ratio expected by customers. As the environment becomes more competitive, the need to charge for elements separately (to unbundle) grows. With processing this bears the risk of exposing the hardware/software ratio and provoking a poor customer reaction.

- Fixed capacity pricing (FCP) was used by only 17% of companies, and in only one case was a maximum ceiling percentage quoted - at 70% target, 68% actual.

- One vendor was examining FCP with a view to help in handling the type of customer whose processing is neither well-structured nor ill-defined, the sort of middle ground where the other pricing methods become unwieldy.

- Methods for setting prices were used by companies as follows:

Historical cost plus	24%
Market value	41
Combination of these two	35
	100%

9. SOFTWARE PROCUREMENT/DEVELOPMENT

- Exhibit VI-10 illustrates the amounts of software bought or developed by vendors from one or other of three sources:

  - Using a hardware manufacturers'.

  - Buying-in software from an outside source (including software used on a royalty basis to a third party).

  - Building software with an in-house team.

- The third option is the largest in two out of the three types of software. Only in systems software is it beaten into second place by the manufacturers'. Weighting the options in the ratio of 30:25:45, an overall figure is obtained showing that half of the hardware execution time is spent in in-house developed code, and half in licensed or procured code.

INPUT

EXHIBIT VI-10

COMPARISON OF SOFTWARE
PROCUREMENT SOURCES

TYPE OF SOFTWARE	PERCENT USAGE OF METHOD		
	USE OF MANU-FACTURER'S	BUY-IN OUTSIDE	BUILD OWN
SYSTEMS SOFTWARE	53%	5%	42%
UTILITIES	30	15	55
APPLICATIONS	4	42	54
OVERALL*	25%	24%	51%

*CALCULATED BY WEIGHTING ACCORDING TO TIME OCCUPANCY IN EXECUTION HARDWARE

INPUT

- Respondents were asked to estimate how many accounts/sales were used, as a rough guide to recovery of software costs. Very few respondents could give an answer in these terms. The most common answer was that new products and services are justified in terms of specific business plans prepared on an ad hoc basis when a product development is proposed. This confirmed the view of the hardware manufacturer in the sample that integrated business planning is still rare among the processing services companies.

- Many vendors stated that they would continue to use third-party software on a royalty basis. This was an obvious trend to avoid risk, but it indicated a reluctance to grasp the nettle of continuing product development in a product life-cycle.

10. PROFITABILITY

- Out of 16 responses on the effect of external factors on profits, 13 saw some impact from one or other of the named factors.

- On the basis of a weighted rating to measure the effect, the factors would be ranked as follows:

	Score out of 39
Depreciation on equipment	14
Increase in prices matching inflation	14
Falling hardware costs	13

- Two vendors mentioned other factors, both of which were of their own making and rated highly for their contribution to profits:

    - Strong financial management.

    - Increased sales.

- 147 -

INPUT

- Out of the thirteen vendors responding on the question of time spent on day-to-day profit management at the expense of planning, six felt too much time was spent to be good for the medium term, and six for the long term. Two responses gave opposite answers for the two timeframes; the rest thought both types of planning were impacted. The hardware manufacturer believed that, in general, planning staff did not exist in processing services companies!

11.   IMPACT OF POLICIES ON PROFITABILITY

- Profitability among the leading processing services vendors was lower in 1979 than it was in 1978, down from 13% to 8.9%, whereas for the computer services market as a whole profitability rose marginally from 9.0% to 9.2% of revenues before tax.

- Profits are forecast to fall several percentage points in 1980, and not to pick up until the recession bottoms out.

- After a period of reasonably fast growth in the last three years, vendors are starting to turn their attention to the subject of profits since:

    - These have see-sawed up and down since 1976.

    - Recession has impacted revenue growth rates. Vendor companies see this as the time to review their future and plan or make investment decisions.

- In the short term:

    - Profits are being, and will be, impacted by failure to meet previously set revenue targets.

INP

- Inflation has a secondary effect in this area since many vendors have not been able to synchronise their price increases with their cost increases and may now be very reluctant to close this gap if such an action were to turn away business in the present climate.

- National salary and wage increases are reported well ahead of the current rate of rise in the cost of living.

- In the longer term, two policy areas stand out as crucial to profitability and therefore to the continuing ability of vendors to fund their necessary ongoing investment programmes.

  - Too fast a pace on the movement towards industry-specialisation will result in an inability to respond to the volatility of the marketplace, and this will cause vendors to be priced out of specific market areas.

  - The impact of staff shortages is felt most in sales and in software professional grades. Recession will shake out staff to ease this problem. Vendors must have coherent marketing plans laid, in order to take advantage of this situation by taking on the right sort of staff to suit their plans.

- Plans need to include flexible and more market-orientated pricing schemes. This is the whole area of unbundling and rebundling which needs to be examined fully by vendors and incorporated in their plans.

E. COMPETITIVE ANALYSIS

- Exhibit VI-11 ranks the leading processing services vendors (by market share) of all processing services in 1979.

INPUT

EXHIBIT VI-11

TOP SUPPLIER RANKING AND
SECTOR MARKET SHARES – 1979

TYPE RANK	PROCESSING SERVICES	
	SUPPLIER NAME	SHARE
1	IBM (DCS/RCS)	7.6
2	CENTREFILE	5.6
3	GEISCO	5.4
4	BOC (CSD)	5.0
5	COMSHARE	4.3
6	ICL BARIC	3.4
7	SIA	2.8
8	UCSL	2.5
9	ADP-NIS	2.2
10	ATKINS ON-LINE	2.2
11	NCC	2.0
12	SCICON CSL	1.8
13	CMC	1.6
14	NDPS	1.6
15	COMPOWER	1.5
16	HOSKYNS	1.5
17	GSI (UK)	1.5
18	RHM MANAGEMENT SERVICES	1.4
19	ADP-MD	1.4
20	CDC	1.4

INPI

- Eleven of the top twenty bureaux shown are owned by multinationals. All except SIA and GSI (UK), are headquartered in the U.S. These eleven take 32% of the market sector revenues.

- The other nine companies are owned and based in the U.K. They account for 23% of sector revenues.

- With 55% of the revenues coming from the leading 20 companies, this sector is more consolidated than the computer services market as a whole, where the top twenty take 45%.

- Exhibit VI-12 ranks the leaders, up to twenty in number, for each of the three subsectors of processing:

  - RCS is headed by GEISCO, followed by IBM and COMSHARE.

  - Facilities management is led by Hoskyns; then come Dataskil and Scicon Computer Services.

  - Batch services are led by Centrefile, IBM and ICL Baric, in that order, and all are fairly close together in market share.

- Interestingly, BOC Computer Services Division, the overall U.K. leader, is in fourth place in all three subsectors, indicating its spread of capability. This profile parallels what happens nationally, where it is fourth and second in the major two sectors.

- Eighty-eight percent of RCS revenues derive from the 20 leaders in that field, while only 39% of batch revenues come from its leading 20 companies.

- Six companies earn 68% of FM revenues.

- These comparisons show that:

INPUT

EXHIBIT VI-12

TOP SUPPLIER RANKING
AND SECTOR MARKET SHARES,
BY SERVICE SUBSECTOR - 1979

RANK / TYPE	BATCH SERVICES £130 MILLION		REMOTE COMPUTING SERVICES £110 MILLION		FACILITIES MANAGEMENT (FM) £9 MILLION	
	NAME	SHARE	NAME	SHARE	NAME	SHARE
1	CENTREFILE	5.0%	GEISCO	13.7%	HOSKYNS	18.8%
2	IBM	6.4	IBM	11.2	ICL DATASKIL	14.4
3	ICL BARIC	4.3	COMSHARE	9.5	SCICON CSL	11.1
4	BOC (CSD)	3.4	BOC (CSD)	6.4	BOC (CSD)	10.4
5	CMG	2.6	SIA	5.8	CENTREFILE	7.9
6	NDPS	1.9	ATKINS ON-LINE	4.9	NDPS	5.6
7	EXTEL*	1.5	ADP-NIS	4.9		
8	DATA SCIENCES*	1.5	CENTREFILE	4.5		
9	COMPOWER	1.5	UCSL	4.2		
10	GEC-MIDLAND	1.5	UCC	3.7		
11	RHM-MANAGEMENT SERVICES	1.5	GSI (CRC)	3.2		
12	ADP-MD	1.5	CDC	3.2		
13	CEGB	1.4	SCICON CSL	2.6		
14	HOSKYNS	1.3	COMPUTEL	1.7		
15	UCSL	1.2	ICL BARIC	1.6		
16	LOWNDES-AJAX	0.9	LOWNDES-AJAX	1.5		
17	UCC	0.8	LNCS	1.4		
18	GORDON & GOTCH	0.7	IP SHARP	1.3		
19	BCS (BOEING)	0.7	RHM	1.3		
20	GEEST	0.7	TYMSHARE	1.0		

*INDICATES EQUAL RANKING WITH NEIGHBOUR

INPUT

- Batch services have growth potential by acquisition but, because of its ageing technology, its vendors are vulnerable to both competition and acquisition from vendors specialising in RCS.

- Traditional RCS will be increasingly competitive and vendors must therefore either diversify or expand the scope of their services into fresh market areas such as on-line databases.

- FM remains as a relatively unexplored territory.

INPUT

VII SOFTWARE PRODUCTS

VII   SOFTWARE PRODUCTS

A.   INTRODUCTION

- The software products market is undoubtedly the most exciting market to be in at this juncture. Its very high growth rates are fueled by the current fast pace of unbundling. Even in the trough of a recessionary period, all industry surveys being conducted at this time report a consistent expectation on the part of users that their 1981 software package expenditures will increase over those of this year.

- However, the sector differs from processing services in a number of important characteristics:

    - Selling is chiefly through DP managers.

    - The hardware manufacturers dominate.

    - There is a large technical competence, as opposed to commercial competence, factor in success in the field; more products being systems software than applications.

    - The market is segmented by machine type and therefore suffers from being parasitic to an extent.

INPUT

- On the other hand, there is the similarity with processing services that regular or repeat revenue can be generated by:

    - Multiple sales to similar installations.

    - Product licensing on a regular monthly fee basis.

- For this reason the sector does not suffer from the project-orientation of professional services (or turnkey systems).

- INPUT's measurement of the software products sector excludes revenues gained through royalty sales to bureaux, as these are not part of user expenditures.

B.   MARKET DEVELOPMENT (1979-1984)

I.   GROWTH IN 1979-1980

- Software products achieved a market of £70 million in 1979, which was up 75% over 1978.

- Growth at this rate is not expected to continue, though a substantial rate is being recorded in 1980, forecast to gross £115 million, up 64% on 1979.

- Over the next five-year period the sector is predicted to grow at an average annual rate of 47% to reach £485 million by 1984, as shown in Exhibit VII-I. These measurements include:

    - Both systems and applications products.

    - Products from hardware manufacturers and from independent suppliers.

INP

EXHIBIT VII-1

SOFTWARE PRODUCTS MARKETS
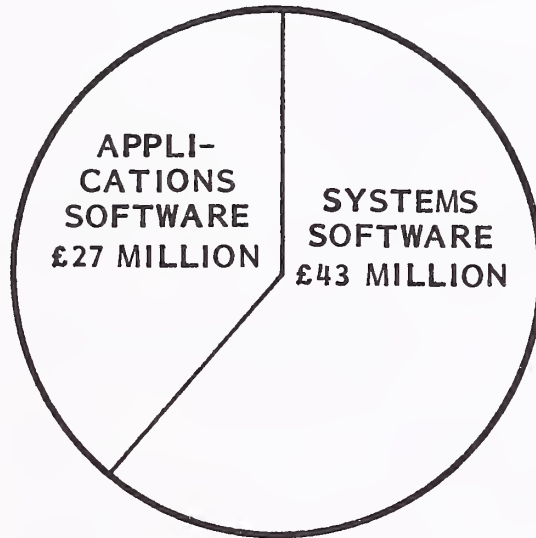
1979   TOTAL MARKET: £70 MILLION
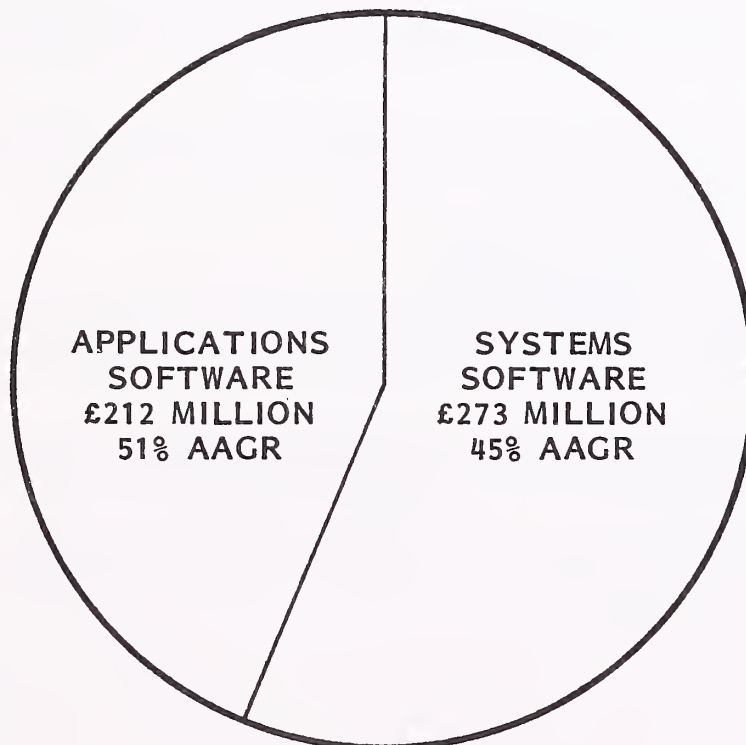
1984   TOTAL MARKET: £485 MILLION,
                     AAGR 47%

INPUT

- This growth will mean that software products will exit from the five-year period as the second largest major sector after processing services, having overtaken professional services in 1984.

- Exhibit VII-2 shows how the growth rates affect the breakdown between hardware vendors and independents.

- Summarising both breakdowns gives:

	1979	1984
Systems software	61%	56%
Applications software	39	44
	100%	100%
Hardware suppliers	76%	69%
Independents	24	31
	100%	100%

- The trends are in favour of applications software to the extent of a 1% per annum change, and in favour of the independents to the extent of taking an additional 7% of market share from the hardware manufacturers.

- IBM gave this impetus to the marketplace in 1979 with the announcement of the 4300 processors and:

    - Further unbundling of systems software products, so that the licensed portion of the SCPs was moved closer to the hardware interface.

    - Rebundling of systems software into System IPO/Es.

    - Notice of intent to charge for on-site software maintenance from January 1980.

INPL

EXHIBIT VII-2

SOFTWARE PRODUCTS MANUFACTURERS
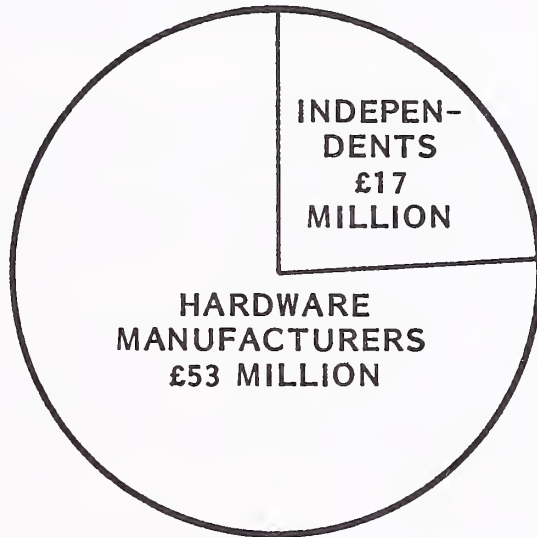
1979 TOTAL: £70 MILLION
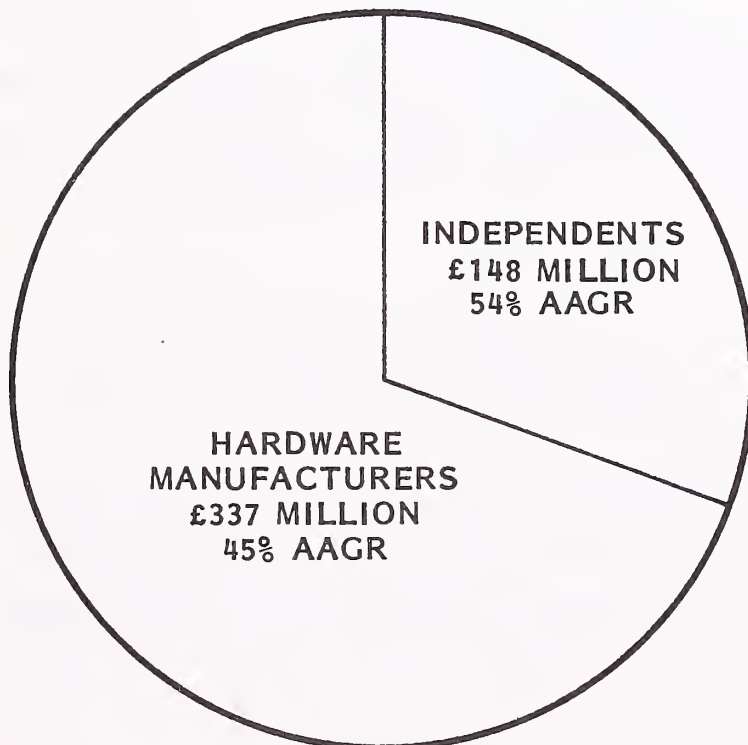
1984 TOTAL MARKET: £485 MILLION,
AAGR 47%

INPUT

- The impact of these attendant software changes have been summarised in INPUT's Vendor Watch reports for 1979.

- The traditional reluctance of DP management to consider 'not-developed-here' products has been further eroded in 1980 under the continual pressure from end users for more and better systems, and under the perennial inability of the in-house solution to come up with satisfactory time-scales.

- Software products still largely consist of systems software (over 60% by value and more in number of installed units) and though this bias is being steadily modified, the trend is only very slowly in favour of applications. The reasons for this are not hard to find.

    - Systems software can be more readily defined, and therefore developed and marketed with less risk than applications software.

    - Hand-in-hand with the trend for more end user programming goes the need for newer and more usable software implementation tools, such as DBMS modules, data dictionaries, table processors, text editors, etc.

    - Standardisation of requirements for application products is still too difficult to make the market for any product easily identifiable and targettable, though some of the obstacles to this (e.g., different accounting practices, the language barriers) are in the course of being dismantled.

        . EEC commission hopes to rationalise European accounting practices by 1983 or 1984.

        . Language translators and dictionary look-up routines are now more commonly system modules offered for implementation and configuration of complex application packages.

INPUT

- Tailored software developments projected in the professional services sector are increasingly being assisted by system tools.

• The development of the sector in 1979-1980 and the reconciliation of previously quoted figures for 1978 are both given in Exhibit VII-3.

2. FORECASTS (1980-1984)

• One component of the market which is growing at a rate well above the sector average, is that of software for personal computers. Some 45,000 micro-processor-based units had been installed in the UK by December 1979. Of these, 19,000 were single board computers for incorporation into other systems, and the remainder were configured personal computers destined for three market areas:

- Education.

- Small businesses.

- Home and hobbyist markets.

• The software sold initially for these systems amounted to £3.5 million, which was mainly derived in 1979. During 1980, another £5 million is expected to be earned in software sales through:

- Manufacturers.

- Distributors and systems houses.

- User groups and the trade press.

• The total from initial and ongoing software product sales for personal computers is forecast to rise to £100 million by 1985.

INPUT

EXHIBIT VII-3

THE U.K. SOFTWARE PRODUCTS MARKET SIZES, 1978 AND 1979, MILLIONS
WITH RECONCILIATION TO PREVIOUS (1978) MARKET DEFINITION

TYPE OF SERVICE	1978 (AS REPORTED)		1978 (REVISED)		REVISED AAGR 1978-1979 PERCENT	1979		1980 (PREDICTED)		AAGR 1979-1980 PERCENT
	£ MILLION	PERCENT	£ MILLION	PERCENT	PERCENT	£ MILLION	PERCENT	£ MILLION	PERCENT	PERCENT
SOFTWARE PRODUCTS										
SYSTEMS SOFTWARE	£17	63%	£24	60%	79%	£43	61%	£ 70	61%	63%
APPLICATIONS SOFTWARE	10	37	16	40	69	27	39	45	39	67
TOTAL	£27	100%	£40	100%	75%	£70	100%	£115	100%	64%
HARDWARE MANU-FACTURERS	16	59	29	73	83	53	76	85	74	60
INDEPEN-DENTS	11	41	11	27	55	17	24	30	26	76
TOTAL	£27	100%	£40	100%	75%	£70	100%	£115	100%	64%

- 162 -

INP.

- The forecasts for the sector as a whole are shown in detail in Exhibit VII-4, where a market of 115 million is predicted for the current year.

- The growth rate will drop to 55% in 1981 as the recession has its impact on new installations, and it is predicted to dip further in 1982.

- The rate is forecast to rise again to 51% in 1983 as the impact of IBM's next generation of hardware starts to be felt in terms of numbers of installations. INPUT predicts that a further round of software unbundling will accompany this launch.

- The trend in favour of applications software is aided by the fast growth of personal computers, as this is a sector in which systems software takes only 30% of software sales.

- The trend against the manufacturers is fuelled by the increasing need to use third-party distribution channels as a means to sell the growing volume of unit sales. As micro-based personal and mini systems increase in market share, this need starts to take effect, since the sales price will not cover the traditional first-time-user support and sales costs.

C. USER ATTITUDES AND THE DISPERSAL OF INTELLIGENCE

1. ATTITUDES TOWARD SYSTEMS SOFTWARE

- In general, systems software provided by the manufacturers received more praise than systems software provided by independents. Of seven suppliers who received three or more mentions as preferred suppliers in question 32 of the EDP User Questionnaire, only one was not a hardware supplier. This was Westinghouse.

- The ranking, by number of mentions, was:

INPUT

EXHIBIT VII-4

THE U.K. COMPUTER SERVICES MARKET:

SOFTWARE PRODUCTS - FORECASTS BY SUBSECTOR, 1980-1984

SERVICE SUBSECTOR	1978	1979	GROWTH 1978-1979 PERCENT	MARKET FORECASTS IN £ MILLION					AAGR PERCENT
				1980	1981	1982	1983	1984	
SYSTEMS SOFTWARE	£24	£43	79%	£70	£95	£129	£197	£273	45%
APPLICATIONS SOFTWARE	16	27	69	45	68	97	144	212	51
SECTOR TOTAL	£40	£70	75%	£115	£163	£226	£341	£485	47%
HARDWARE MANUFACTURERS	29	53	83	85	118	159	239	337	45
INDEPENDENTS	11	17	55	30	45	68	102	148	54
SECTOR TOTAL	£40	£70	75%	£115	£163	£226	£341	£485	47%

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPU

-	IBM	28 mentions (25 of them first preference)
-	ICL	25 (19 of them first preference)
-	BURROUGHS	7
-	HONEYWELL	7
-	WESTINGHOUSE	4
-	CDC	3
-	DEC	3

TOTAL 77 out of 186 mentions for all suppliers.

- ICL's total is closer to IBM's if two mentions of DATASKIL are included.

- Some comments on systems software, as recorded in question 31 of the questionnaire, are shown in Exhibit VII-5.

2. ATTITUDES TOWARD APPLICATIONS SOFTWARE

- As might be expected, respondents' comments on applications software were much more likely to be adverse, or negative, to the concept of purchasing applications software outside.

- The main points mentioned were:

    - Flexibility of applications software is not the issue it was when studying processing services vendors; only twice was flexibility or 'user-friendliness' mentioned in a total of 109 comments.

    - Implementation stood out as a source of difficulty, and, in this context, the quality of the documentation was perceived as deficient.

    - Another issue which was mentioned several times was the need to evaluate software products after adequate research and benchmarking, where possible.

INPUT

EXHIBIT VII-5

RESPONDENTS' COMMENTS
ON SYSTEMS SOFTWARE

- 'Our new systems software is extremely good.' (303X USER)
- "The OCL is reliable.'
- 'Systems software is OK; applications software is not covered in the same way.'
- 'We're very satisfied with Honeywell's software.' (Honeywell level 66 user)
- 'We prefer IBM's, as the hardware manufacturer can give a comprehensive service.' (Large-scale IBM user)
- 'We mainly use IBM's and we are moderately happy.' (370/138 user).
- 'Honeywell and DEC have excellent systems software compared to IBM's.' (Honeywell Level 66 and PDP 11/70 user)
- 'Manufacturer's are fantastic.'
- 'Low reliability at our first installation.' (Referring to first 4300 processor)

- I66 -

INPUT

- Exhibit VII-6 lists some of the more pertinent comments on applications software.

- Among the independents, only Safes Computing and Hoskyns had more than two mentions in the responses to the preferred suppliers section (question 32).

- Vendors with more than one mention were:

  - Dataskil.

  - ADP.

  - Altergo.

  - BIS.

  - CAP-CPP.

  - Centrefile.

  - Berkeley Computers.

  - Macro 4.

  - NCC.

- Exhibit VII-7 shows the 1980 status of the applications software products market as broken down across the application areas used in question 15 of the EDP User Questionnaire. This split is derived from the amount of new development being obtained by outside purchase.

- Production and inventory control is the largest market sector by virtue of its high average unit selling price, though it comes fourth in number of installations behind:

INPUT

EXHIBIT VII-6

RESPONDENTS' COMMENTS
ON APPLICATIONS SOFTWARE

- 'Very disappointed with the applications software for our new system, a 4341.'
- 'Very pleased with Dataskil.'
- 'Our requirements would require too much adaptation.'
- 'Implementation was more difficult than we at first believed.'
- 'Good, but it needs to be more user-friendly.'
- 'We write our own applications and tailor the manufacturer's software.'
- 'We write our own tailored applications software.'
- 'Produced our own applications software and will convert it for our system/38.'
- 'It's good if the choice is well researched.'
- 'Software is having difficulty keeping up with hardware.'
- 'It's an implementation problem, due to poor documentation.'
- 'Want all our software tailor-made.'
- 'ADP has more applications software.'

INPUT

EXHIBIT VII-7

APPLICATIONS SOFTWARE PRODUCTS MARKET
IN 1980, BY APPLICATION AREA

APPLICATION AREA	NUMBER OF INSTAL- LATIONS PURCHASING OUTSIDE*	AVERAGE UNIT SALES PRICE (£THOUSAND)*	MARKET (£MILLION)
INDUSTRIAL AND MANU- FACTURING CONTROL SYS- TEMS (REAL-TIME)	270	£5.0	£ 1.4
ENGINEERING/DESIGN RESEARCH AND DEVELOPMENT	300	3.5	1.1
ORDER ENTRY/BILLING/ PURCHASE ORDERS/ PURCHASING	2,000	4.0	8.0
PRODUCTION AND INVEN- TORY CONTROL SYSTEMS	1,430	9.0	12.9
DISTRIBUTION AND TRANSPORTATION	290	6.0	1.7
MARKETING AND SALES	575	5.0	2.9
PERSONNEL AND PAYROLL	2,200	1.7	3.8
ACCOUNTING AND FINANCE	2,570	4.1	10.5
OTHER	550	5.0	2.8
TOTAL	10,185	£4.4	£45.0

*INPUT ESTIMATES

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

- Accounting and finance.

- Personnel and payroll.

- Order entry/billing/POS/purchasing.

● Accounting and finance in second place, promises to remain a large market because of among other reasons, the new current cost accounting rules (SSA16) which are due for introduction this year.

3. SPREAD OF SMALL COMPUTERS

● The majority of the revenues of the DP industry are generated in the mainframe area. Increasingly during the last decade, the minicomputer, whether operated in a standalone mode or in association with some form of mainframe-driven network, has grown to claim a larger proportion of the total revenues earned. On the back of this change, the software and system houses have continued to flourish, as the continued growth of the professional services sector witnesses.

● The 1980s present a major threat to project-orientated, people-based companies such as these because:

- Personal computers supplied with powerful software will be linked to in-house and processing vendors' networks to provide end users with capabilities presently only enjoyed by substantial minicomputer configurations.

- These microprocessor-based products will be provided with extensive software capabilities derived from a vast range of program products, mostly software, but more and more based on firmware modules designed, assembled and tested in the future program factories of the semiconductor companies.

INPU

- The spread of small computers in the U.K. between 1979 and 1985 is shown below:

	1979	1982	1985
Unit sales	40,000	150,000	400,000
Cumulative unit sales	50,000	350,000	1,250,000
Expenditure on software (£ million)	4.5	30.0	110.0

- The software products to run on these systems will be supplied through third-party distribution channels consisting of franchised distributors and dealers. The distribution networks will be both exclusive (to one manufacturer, one type of mainframe or one proprietary network) and non-exclusive.

- At the distributor level the main commercial requirements will be:

    - Sufficient capital finance to carry adequate spare parts stocking levels.

    - Field service capability to handle network connections and the more complex standalone installations; e.g., those with multiprocessor systems.

- At the dealer level the business will require:

    - Showrooms and sales staff.

    - First-line spare parts stocking.

    - Education and documentation capability.

    - Support to honour manufacturers' warranty commitments.

- Neither of these levels form a natural business fit with existing vendors in the computer services industry:

INPUT

- Processing services will need to evolve the USHS concept away from the account selling image it presently holds.

- Professional services companies are only used to direct selling to a DP manager or end user.

- Software products vendors of any size are still firmly wedded to the mainframe portion of the market where, even in 1985, over 70% of the product sales will be located.

- In the U.K., end user sales of small computer products will be dominated by the newest type of operator to the industry, the dealer/distributor. This is a type of vendor who specialises in supply and service without having any development capability. Together with his manufacturer, he is the long-term challenge to the "mainline" processing services company, which also claims to offer the total solution capability.

D. VENDOR ISSUES AND THE IMPACTS ON PROFITABILITY

I. INTRODUCTION

- The visibility of the software products vendors in the U.K. is low compared to that of the other kinds of services vendors. This is not so much due to any failings on the part of these vendors to utilise the appropriate marketing tools as to the already well-established images representing other solutions to other problems, which processing and professional services companies have already obtained, not to mention the all-pervading presence of IBM and ICL in the services as well as the equipment sectors.

- In addition to those vendors that specialise in software products, other types of vendors have diversified into software products for different reasons:

INPU

- Desire to dilute the service element of their business.

- Desire to be in the vanguard of any newly expanding sector.

- Unbundling as a form of switching revenue from one part of a configuration to another.

● The vendors who responded to module 6 of the MAS/E 1980 Vendor Issue Questionnaire comprised:

- Two manufacturers of very high standing in the industry.

- Two leading U.K. software and system houses.

- Two vendors more generally known for their processing service activities, one U.K.-owned and the other of U.S. origin, both of which have diversified into groups offering a range of computer services.

2. MOST HEAVILY USED PRODUCTS

● Naturally enough for the two hardware vendors, their most used products were the operating systems, with tens of thousands of installations in both cases for their three major items of software.

● For a number of years, one of the U.K. software houses has had the agency for a leading U.S. software vendor, and its products have built up a user base in the hundreds. Now establishing its own products for both the mainframe and the micro markets, it still numbered these installations in scores rather than in hundreds. The number of module items sold per installation for the latter products is between two and three, so it now has a few hundred of its own modules in the field.

● The other two U.K. companies had only sold a few dozen systems of their leading products.

INPUT

- The U.S. company has sold 500 installations in the U.K. and Europe, using agents in some continental countries.

3.   GROWTH RATES

- No companies envisaged a decrease in their present high growth during the five-year timeframe.

- Averages of the growths quoted were:

    In two years' time   37.5%

    In five years' time   36.0%

- Four companies saw their growth as steady over the two timeframes. One forecast higher growth in five years than in two, and one forecast the reverse.

4.   PROFITABILITY

- One company out of the six was finding the profitability of its products operation affected by the rate of expansion. Among the other five there were two who claimed the opposite was true; expansion was aiding profitability.

- The company impacted is in fact handling the highest growth rate quoted: 50%. The others stated rates between 30% and 40%.

5.   SOFTWARE DEVELOPMENT PLANNING

- The U.S. services vendor was not aware of how his headquarters planned the recovery of software investment, but INPUT does track this company in the U.S. and it has been involved in acquisitions as lately as 1979.

INPUT

- Of the other four vendors:

    - Two services vendors operated via a business plan for each new product.

    - One manufacturer and one systems house could quote actual numbers of systems (which were rough, rule-of-thumb guides) over which development costs were planned to be recovered. In the case of the systems house, the number was <u>ten</u> for all three types of software.

    - For the manufacturer, they were:

Systems software	-	greater than 100
Utilities	-	50
Applications software	-	less than 20

- Only with this last respondent was there evidence of an integrated system of future product planning. Services vendors will be obliged to improve their performance if they are to compete with the hardware firms in this product area.

6. COST OF SALES

- Replies to this question were ambiguous:

    - Both manufacturers claimed to see no rise in unit sales cost, but for one of them this is at variance with its Annual Report.

    - The two U.K. systems companies claimed that unit sales costs were rising. One could give an annual percentage increase of 15% and gave the cause as the failure to raise the salespersons' sales target in line with inflation. He quoted the figure of £120,000 per salesperson as having stood for several years.

INPUT

-   The other two companies claimed no rise. The U.S. vendor, when operating in Europe, always uses a local agent until sales in each country have risen to a volume sufficient to give an acceptable unit sales cost.

7.   COMPARISON WITH HARDWARE MANUFACTURERS

- Of the four independents interviewed, two followed manufacturers' pricing with their own, although for one vendor this was only done for mainframe sector products. This company also quoted a percentage differential which the market would tolerate between the manufacturer's and the independent's price - 100%.

- For one vendor, prices were set in the U.S.

- For another, small-scale products were sold at wholesale prices to small system houses for retailing as part of a turnkey project. This maintains a low cost of unit sale to the developer.

- Three of the four independents foresaw increased competition coming from hardware suppliers in both the short and the longer term.

- Tactics for avoiding this competition were:

    -   Keep out of IBM's critical area, and as this area pushes outward from the hardware, move more into total applications products.

    -   Watch what IBM and the others produce and then buy in 'competitive' products from software developers, chiefly in the U.S.

8.   SUPPORT AND SERVICING

- All, except one manufacturer, currently run phone-in support centres for software product queries.

INPU

- One manufacturer uses remote diagnosis and fixing, although this is a limited facility.

  - Three organisations plan to use it (including the other manufacturer), and one software vendor uses it for testing equipment in turnkey systems.

- The increasing use of Viewdata with associated 'telesoftware' is expected by one vendor to bring forward the date when he will use remote diagnosis.

9. IMPACT OF POLICIES ON PROFITABILITY

- The principal factors affecting the profits of software vendors in the short-term are as follows:

  - Recession will impact first hardware and then software sales. If expansion plans have been based on higher unit sales than recession permits, cash flow (to achieve early recovery of development and launch costs) will not be achieved.

  - Margins will be cut by inflationary pressures.

- In the longer term, the key issue for software products vendors is:

  - How to handle the implementation and servicing costs once a substantial (in the several thousands) user base of major applications products has been established. At present, support is very much an informal thing, handled by telephone calls and on-site visits. In time, rigorous and professional software maintenance will be required.

INPUT

- Pricing will not be an important question in the short term with mainframe software products, since the hardware vendors need increasingly to gain their revenue targets through other sources than central processors. This leaves them open to price competition in the software field. In the longer term, economies of scale will start to play a more crucial role.

E.   COMPETITIVE ANALYSIS

- Exhibit VII-8 ranks the leading independent suppliers of software products by market share of all software products revenues in 1979, including those gained through turnkey systems.

    - Systime and ICL Dataskil are the first and second leaders.

- Hoskyns is a wholly owned subsidiary of the Martin Marietta Corporation and reports in through the latter's Data Systems division, MMDS.

- The other suppliers in the leading ten companies are all, with the exception of CINCOM and Informatics, U.K.-owned companies. However, two have agency agreements for retailing products developed in the U.S.

    - PPL (Package Programs Limited) has the U.K. rights for the MMS General Ledger and Financial Reporting System developed by Software International Inc. of Massachusetts, among other of SII's accounting packages.

    - CAP-CPP is still the U.K. agent for the ADR range of IBM-compatible products, although ADR now has its own direct-selling operation in Europe.

- ABS develops its own software products, but sells them as part of turnkey systems built around GRI equipment produced in the U.S.

INPUT

EXHIBIT VII-8

TOP SUPPLIER RANKING AND
SECTOR MARKET SHARES, BY SERVICE TYPE,
UNITED KINGDOM – 1979

RANK / TYPE	SOFTWARE PRODUCTS – £70 MILLION (INDEPENDENTS)	
	SUPPLIER	SHARE
1	SYSTIME	3.8%
2	ICL DATASKIL	3.7
3	HOSKYNS	3.1
4	CINCOM	2.2
5	PETERBOROUGH	2.1
6	PPL	2.0
7	ABS	1.4
8	INFORMATICS	1.4
9	CAP-CPP	1.2
10	BIS	1.2
11	SOFTWARE AG	1.1
12	NCC	0.9
13	PACTEL	0.8
14	UCC (SPI)	0.7
15	MSA	0.6
16	IAL GEMINI	0.6
17	SCICON CONSULTANCY INTERNATIONAL	0.6
18	BOC (CSD)	0.5
19	PANSOPHIC	0.5
20	ALTERGO	0.4

INPUT

- Further down the list at number 18, the leading U.K. service company has a mere 0.5% market share. BOC also has an agency agreement for products:

    - It is U.K. agent for the Boston Systems Office (BSO) microprocessor system development aids and has so far licensed about 20 installations.

- Exhibit VII-9 ranks the hardware manufacturers in terms of their U.K. shares in 1979:

    - IBM is ahead of ICL, having now an almost totally unbundled software policy.

    - If Dataskil's shares were taken into account, ICL would be the overall leader.

    - Conspicuous by its absence is Univac, which has not unbundled.

- In total, manufacturers take 73% of the market. This share is more vulnerable to the present recession than that of the independents, because:

    - It is a function of the unit shipment rate, which is now decreasing and is expected to go on doing so into the second quarter of 1981.

    - Independents' price edge will allow them to continue unit sales in existing installations where particular applications are in demand, as shown earlier in Exhibits IV-19 through IV-21.

- IBM will be capable of controlling its user base through increasing use of software weapons:

    - Upgrade basic 4300 systems software.

    - Include further modules in system IPO/Es.

INPUT

EXHIBIT VII-9

TOP SUPPLIER RANKING AND SECTOR MARKET SHARES,
BY SERVICE SUBSECTOR,
UNITED KINGDOM - 1979

RANK / TYPE	SOFTWARE PRODUCTS (MANUFACTURERS)	
	SUPPLIER	SHARE
1	IBM (DPD & GSD)	18%
2	ICL (UKD)	16
3	DIGITAL	12
4	BURROUGHS	9
5	HEWLETT-PACKARD	5
6	HONEYWELL	4
7	DATA GENERAL	3
8	NIXDORF	1
9	PHILIPS	1
10	CDC	0.7
11	WANG	0.7
12	PRIME	0.7
13	CTL	0.6
14	OTHERS	<1.0

INPUT

- Charge for SCP modules closer to the kernel.

- Increase prices on new releases.

- Make old releases non-supportive of new hardware products and vice versa.

INPL

VIII PROFESSIONAL SERVICES

VIII   PROFESSIONAL SERVICES

A.   INTRODUCTION

● Professional services currently form the second largest U.K. market sector to processing services and (disregarding the turnkey systems sector, which in MAS/E 1980 is being treated as separate from the computer services market) were in 1979 twice the size of software products.

● Professional services consist of:

- Consultancy.

- Tailored software.

- Education and training.

- Other, including contract programming.

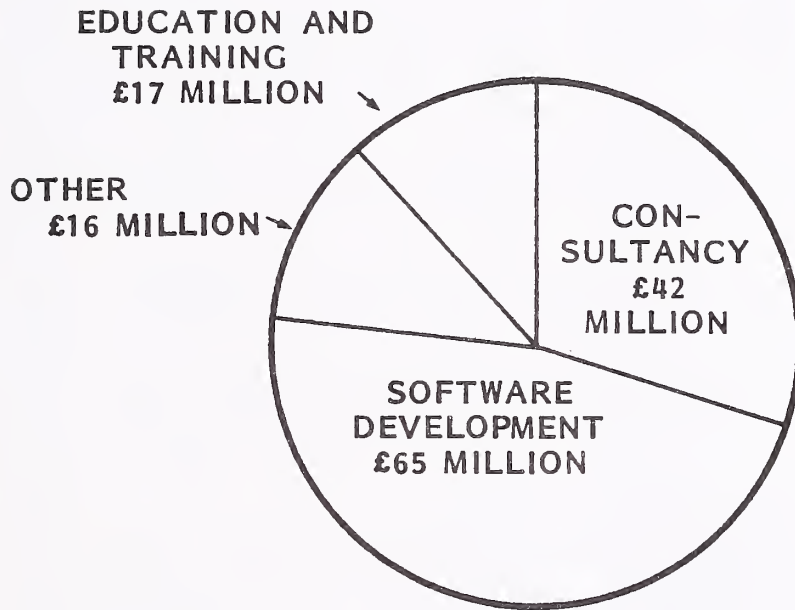## B.   MARKET DEVELOPMENT (1979-1984)

1.   GROWTH IN 1979-1980

● Presently standing at £140 million, the professional services sector is set to grow at an annual rate of 25% for the five-year forward period to reach £432

INPUT

million by the end of 1984, as shown in Exhibit VIII-1. However, by this time it will have been overtaken in size, as shown earlier, by software products.
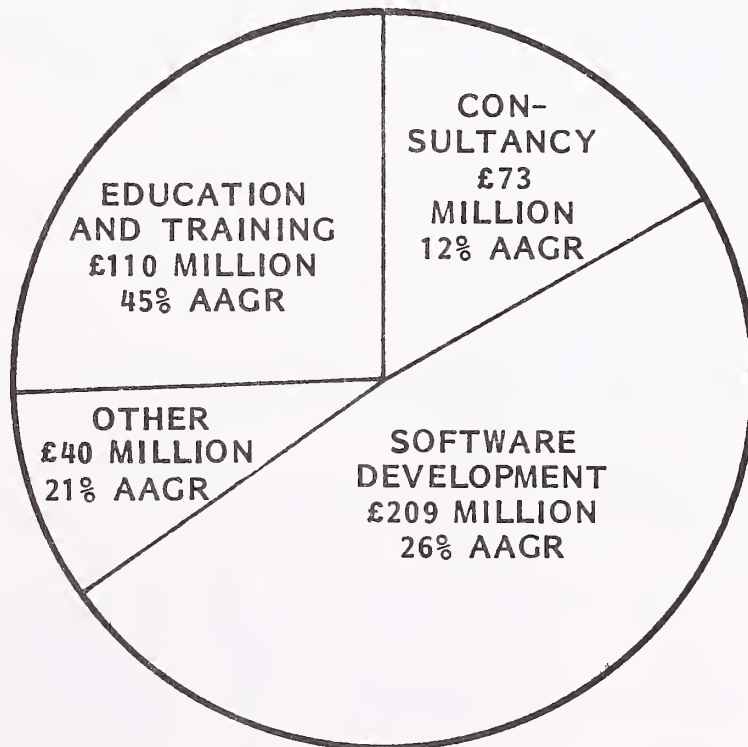
- In 1979, the sector grew 33% over 1978, at current values, this at a time of increasing inflation and consequent price increases. The project orientation of this sector has allowed, and will continue to allow, vendors to hide price rises more easily because of the difficulty in comparing one project with another. This applies particularly to fixed-price contracts in the tailored software services area, but less to time and materials or cost plus contracts. The last named, sometimes favoured in defence procurement, have during this period been:

  - Freed by the new government from the constraints of previous pay policies.

  - Undergoing a resurgence of orders as defence budgets move upwards at a time when other departmental spending is being cut.

- Exhibit VIII-2 shows the market development during the past two years, reconciled to INPUT's previously published figures:

  - The restated 1978 market shows a decrease caused by:

    . The addition of some revenues attributed to processing services.

    . The subtraction of turnkey systems.

- The breakdown of the sector in 1979 highlights immediately the marked increase in education and training caused by:

  - The previous government's policy of subsidising training boards and sponsoring new courses, such as the MAP microprocessor and the TOPS resettlement schemes.

INPU

EXHIBIT VIII-1

PROFESSIONAL SERVICES MARKETS

EDUCATION AND
TRAINING
£17 MILLION

OTHER
£16 MILLION

CON-
SULTANCY
£42
MILLION

SOFTWARE
DEVELOPMENT
£65 MILLION

1979   TOTAL MARKET: £140 MILLION

CON-
SULTANCY
£73
MILLION
12% AAGR

EDUCATION
AND TRAINING
£110 MILLION
45% AAGR

OTHER
£40 MILLION
21% AAGR

SOFTWARE
DEVELOPMENT
£209 MILLION
26% AAGR

1984 TOTAL MARKET: £432 MILLION
25% AAGR

SOURCE: INPUT FORECAST

INPUT

EXHIBIT VIII-2

THE U.K. PROFESSIONAL SERVICES MARKET SIZES, 1978 AND 1979,

WITH RECONCILIATION TO PREVIOUS (1978) MARKET DEFINITION

TYPE OF SERVICE	1978 (AS REPORTED)		1978 (REVISED)		REVISED AAGR 1978-1979 PERCENT	1979		1980 (PREDICTED)		AAGR 1979-1980 PERCENT
	£ MILLION	PERCENT	£ MILLION	PERCENT		£ MILLION	PERCENT	£ MILLION	PERCENT	
PROFESSIONAL SERVICES										
CONSULTANCY	-		£ 42	40%	1%	£ 42	30%	£ 48	22%	15%
SOFTWARE DEVELOPMENT	-		44	42	48	65	46	94	50	45
CONTRACT PROGRAMMING AND OTHER	-		12	11	33	16	11	22	11	35
EDUCATION AND TRAINING	-		7	7	160	17	12	34	17	100
TOTAL	£115	100%	£105	100%	33%	£140	100%	£197	100%	41%

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

- Manufacturers, who are either unbundling their training courses or lessening the amount and number of free courses offered.

- The growth of new consultancies specialising in DP education.

● Growth in this subsector was 160% between 1978 and 1979, and in 1980 is running at the rate of 100%.

● These rates are not expected to be maintained as:

- Recession impacts hardware shipments.

- The Conservative government cuts back on its predecessor's financial support measures.

● The tailored software market was the second fastest growing subsector in professional services. In the 1979/1980 period it has been fuelled by:

- Continued activity in the minicomputer field.

- An upswing in government spending on large defence contracts with a significant software or project management content.

● In recent weeks, vendors have reported a falling-off in orders, and this presages a dull year in 1981. The longer-term future of this type of work depends on two major driving forces:

- IBM's desire and need to work more closely with third parties.

- Systems work and support contracts for office automation.

● Consultancy is experiencing a reasonable growth of 15% in 1980, having virtually stood still between 1979 and 1978. However, the majority of this is inflationary and is due to increases in the charge-out rates being quoted.

- 187 -

INPUT

- Miscellaneous professional services, among which contract programming is the largest element, have stood up with reasonable real growth rates in both years. Contract programming has been affected by the way in which the U.K. recession has bitten into user budgets. Initially, the halting or suspension of recruitment programmes has caused DP managers to go outside to keep ongoing projects on schedule. More recently, DP managers have reported cutbacks to their previous 1981 budget expectations, and the hiring of outside staff is one of the first things to go.

- Vendors in the U.K. professional services field are among Europe's leading exporters. Names such as Scicon and Logica are responsible for the high regard with which British software is held worldwide.

2. FORECASTS FOR 1980 TO 1984

- Forecasts for 1981 are expected to be largely influenced by the impact of recession and the shift of resources from manufacturing into services.

- Only in education and training is any real growth likely to be seen, but at 55% this will be almost halved from 1980's 100%.

- The other sector growths will be:

  - Consultancy -   8% actual, 7% real

  - Software   -   25% actual, 10% real

  - Other   -   19% actual, 4% real

- By 1982, recessionary forces, principally interest rates in the case of the current U.K. recession, are predicted to be weakening. Growth rates will pick up, but price rises will be less of an important issue, assuming the inflation rate has by then reached and been maintained at single figures.

INPUT

- During the 1982-1984 timeframe:

    - Growth in education and training will have declined to a rate of 26%.

    - Growths in the other three sectors will be not more than 10% above inflation, but even consultancy will see some real growth as the business cycle reaches an upswing.

- The long-term forecasts are detailed in Exhibit VIII-3.

C.   USER ATTITUDES AND THE DISPERSAL OF INTELLIGENCE

1.   GENERAL ATTITUDE TOWARD PROFESSIONAL SERVICES

- In the eyes of the DP manager, professional services suffer from the handicap of appearing to overlap considerably with the role played by his own department:

    - DP departments offer computer consulting to their end users.

    - Software development is still mainly an in-house activity.

- This somewhat jealous, certainly defensive, attitude comes through in many of the comments made by EDP user respondents. Only in education and training does there appear an unqualified recognition of the applicability of this product or service. It is not a coincidence that education and training courses are a discretely packaged product/service and can therefore be more easily identified as not 'manufacturable in-house'.

INPUT

EXHIBIT VIII-3

THE U.K. COMPUTER SERVICES MARKET :

PROFESSIONAL SERVICES – FORECASTS BY SUBSECTOR, 1980–1984

SERVICE SUBSECTOR	1978	1979	GROWTH 1978-1979 PERCENT	1980	1981	1982	1983	1984	AAGR PERCENT
				MARKET FORECASTS IN £MILLION					
CONSULTANCY	£ 42	£ 42	1%	£ 48	£ 52	£ 55	£ 60	£ 72	12%
SOFTWARE DEVELOPMENT	44	65	48	94	118	140	174	209	26
CONTRACT PROGRAMMING AND OTHER	12	16	33	22	26	29	34	40	21
EDUCATION AND TRAINING	7	17	160	34	52	71	92	111	45
SECTOR TOTAL	£105	£140	33%	£197	£248	£295	£360	£432	25%

N.B.: MAY NOT TOTAL EXACTLY DUE TO ROUNDING

INPUT

- This is a distinct aid to their receptivity with the EDP function. Other types of service offerings should aim to imitate the better qualities of this subsector in order to overcome the age-old difficulties of project-orientated work, which are shared alike by:

  - Consultancy.

  - Software development.

  - Contract programming.

- Of 89 respondents, about half expressed general satisfaction. Along with software products, professional services is lower in rating than either of processing or hardware services.

- Only six comments instanced the question of the cost of professional services:

  - These ranged either side of the neutral position, three being coupled with a favourable statement and three with an expression of dissatis-faction, ranging from:

    . 'Expensive, but good value for money'

    to:

    . 'Expensive and not very satisfactory'.

- IBM was mentioned three times in comments, twice to praise their education courses and once to criticise them.

- Other suppliers mentioned by name were:

  - ICL (twice).

INPUT

- Hewlett-Packard.

- CDC.

- ADP.

- SIA.

● Three comments warned that it was essential to select suppliers carefully.

● Twelve comments stated that their use of these services was, at most, a rare occurrence:

- In eight instances, this was because it was against company policy.

- In four cases, it just happened rarely, because the work was normally done in-house.

2. ATTITUDES TOWARD CONSULTANCY

● Only seven comments mentioned consultancy. Of these, there were:

- One favourable.

- Two adverse.

- Four neutral.

● In the neutral comments, consultancy tended to draw supercilious remarks like:

- 'We try not to use consultants'.

- 'We don't need consultants; we are self-sufficient'.

INPU

- Among the preferred suppliers, two major names in processing services were mentioned:

  - GEIS (twice).

  - ADP (four times).

- These two were chosen because of the high opinions of their consulting support.

3. ATTITUDES TOWARD SOFTWARE DEVELOPMENT

- Since it is the major subsector in professional services, one would expect software development (tailored software) to have the most mentions. This is not the case, and the explanation lies with the fact that:

  - Much of this work is mini-based for end users.

  - Another considerable section is for government agencies and especially the MOD.

- The statistics of mentions in comments are:

  - Three favourable.

  - One adverse.

  - Four neutral.

4. ATTITUDES TOWARD CONTRACT PROGRAMMING AND OTHER SERVICES

- Only two mentions could be ascribed to contract programming, and of these, one was favourable and one was adverse. In view of the fact that contract programmers are judged as much on their personal merits as on those of the

INPUT

agency supplying them, this is not surprising. The two major companies specialising in the contract programming business are:

- VLI Group.

- Knight Computer Services (part of the BOC operation).

● Neither rated a single mention from DP managers.

● The two mentions both concerned software house support on a time and materials basis.

5. ATTITUDES TOWARD EDUCATION AND TRAINING

● Twenty-two (22) comments mentioned this subsector:

- Favourably, in 13 cases.

- Adversely, in five.

- Neutrally, in four.

● Specific suppliers mentioned in comments were:

- ICL.

- IBM.

- CDC.

- Deltak.

● A selection of comments on all subsectors (weighted inevitably towards education because of the frequency of its arising) is given in Exhibit VIII-4.

INPUT

EXHIBIT VIII-4

RESPONDENTS' COMMENTS ON
PROFESSIONAL SERVICES

- 'Software's developed in-house; we go outside if necessary.'
- 'All our development is in-house, but we rely on contract staff for software support and this is a good quality.'
- 'Training appears all right. We can pick our courses.'
- 'Software house service is satisfactory, but there is a query over the maintenance of the software.'
- 'Consultants are charlatans.'
- 'A consultancy requires careful selection.'
- 'Tailored software works well; their training is very good.'
- 'Deltak video and text system works well.'
- 'Courses are too general.'
- 'Not happy with our training consultants at present.'
- 'Lack experience of tailored software; bought-in training is very good.'
- 'Don't use consultancies; get our education and training from ICL.'
- 'Software houses require careful selection to get the most appropriate.'
- 'Consultants had a limited effect on our operation.'
- 'ADP are good for new users; SIA's better for project management and PERT systems.'

INPUT

6.   PREFERRED SUPPLIERS

- Nine suppliers were mentioned three or more times, not always as first choice:

    - IBM - 20 mentions, of which 13 were first choice.

    - ICL - 18 mentions, if Dataskil is included, 14 of them first choice.

    - Hoskyns - 7 mentions.

    - Burroughs - 5 mentions.

    - ADP - 4 mentions.

    - BIS - 4 mentions.

    - DEC - 4 mentions.

    - Deltak - 4 mentions.

    - CDC - 3 mentions.

- Other companies mentioned more than once were:

    - Altergo.

    - GEIS.

    - Honeywell.

    - Keith Landen Associates.

- Thirty-five (35) other suppliers were mentioned once.

INPU

7. DISPERSED COMPUTING

- Education and training is greatly affected by the spread of computing into smaller work units. This fuels the requirement for courses, and with the forecast sales of micro-based products in the next five years, there is every sign of this continuing to be the most buoyant subsector outside the software products field.

- Tailored software development will be more applicable in its traditional areas of minicomputer applications, and data communications and networking, than in the personal computer market area, where programming will be provided in product form.

- However, in leading-edge companies, where office automation systems will be implemented in an experimental mode, the services which only highly respected system houses and consultancies can provide will be in increasing demand as the 1980s progress.

- Contract programming has by this stage reached a degree of maturity and the majority of the 'cowboys' have been weeded out. Though likely to remain the Cinderella of the industry, there will always be a demand for this service because:

  - Mainframe installations are not due for the scrap heap, as many were recently predicting.

  - Central installations will always have a backlog of work to get through.

  - There are some very skilled professionals operating as virtual one-man bands under the banner of a small, self-owned software house, but in reality contracting themselves out via an agency or through a series of limited personal contacts.

INPUT

- Having reached a mature stage in its development, this subsector is now more subject to the ups and downs of the business cycle.

- In this it is becoming evermore similar to consultancy, which now suffers considerably from the peaks and troughs of boom and recession.

D.   VENDOR ISSUES AND THE IMPACTS ON PROFITABILITY

I.   INTRODUCTION

- Eight vendors completed the professional services module of the Vendor Issue Questionnaire:

    - Two were multinational hardware suppliers.

    - Two were major system houses.

    - Four were multi-services vendors, who in all cases had larger turnover in the U.K. in the processing services sector.

2.   NEW TYPES OF BUSINESS

- The growth of the hardware component of the traditional software house business was investigated. Of the six services vendors responding, the average hardware component of revenues is 6%.

- All eight respondents anticipated future markets for computer services in microprocessor-based applications.

- The directions from which the business would come were estimated as follows:

INPL

From new first-time users	27%
From new, experienced users	43
From existing accounts	<u>30</u>
Total	100%

- With 73% of business expected to come from the type of users with which professional services companies are used to dealing, there is very little impetus to change from their familiar direct-selling policy. Direct versus indirect selling is not an issue with professional services except in their software products divisions.

3.   TYPES OF CONTRACT

- The three main types of contract were used to the following extent:

  - Fixed price   75%

  - Time and materials   100%

  - Body hire   38%

- 'Other' types of contract mentioned were:

  - Licensed fee - a form of bundling the professional services required to install software products in with the licence for the product itself.

  - Staged fixed price - uses estimates for phases subsequent to the current one, these estimates being firmed up as each stage is passed.

  - Turnkey systems.

INPUT

4. PRODUCTIVITY, PROFITABILITY AND PRODUCT ORIENTATION

- Exhibit VIII-5 illustrates the different emphases put by the respondents on the selection of productivity techniques. Techniques have been weighted according to the grade of usage in order to arrive at an important rating.

- The highest rating goes to improved languages, followed after 'others' by three of the techniques. No technique does outstandingly in these items.

- 'Other' techniques quoted were:

  - Proprietary project management techniques.

  - Formalised project management.

  - High-quality staff.

- Over the seven companies who answered the question dealing with profitability factors, the average split was:

Software productivity techniques	8.5%
Project management methods	43.0
Calibre of staff	40.0
Other	8.5
Total	100.0%

- This analysis highlights:

  - The key management criteria for running a people-orientated company such as the average professional services organisation.

INPUT

EXHIBIT VIII-5

RESPONDENTS' USAGE OF
PRODUCTIVITY TECHNIQUES

	PERCENT OF RESPONDENTS	OVERALL RATING (OUT OF 24)
STRUCTURED TECHNIQUES	13% / 37% / 50%	9
REUSABILITY OF MODULAR CODE	25% / 12% / 13% / 50%	9
IMPROVED LANGUAGES	50% / 13% / 37%	12
APPLICATION SYSTEM GENERATORS	12% / 25% / 63%	5
PERSONAL MOTIVATION	25% / 13% / 12% / 50%	9
OTHERS	38% / 12% / 50%	10

HIGH USAGE

MEDIUM

LOW

ZERO

INPUT
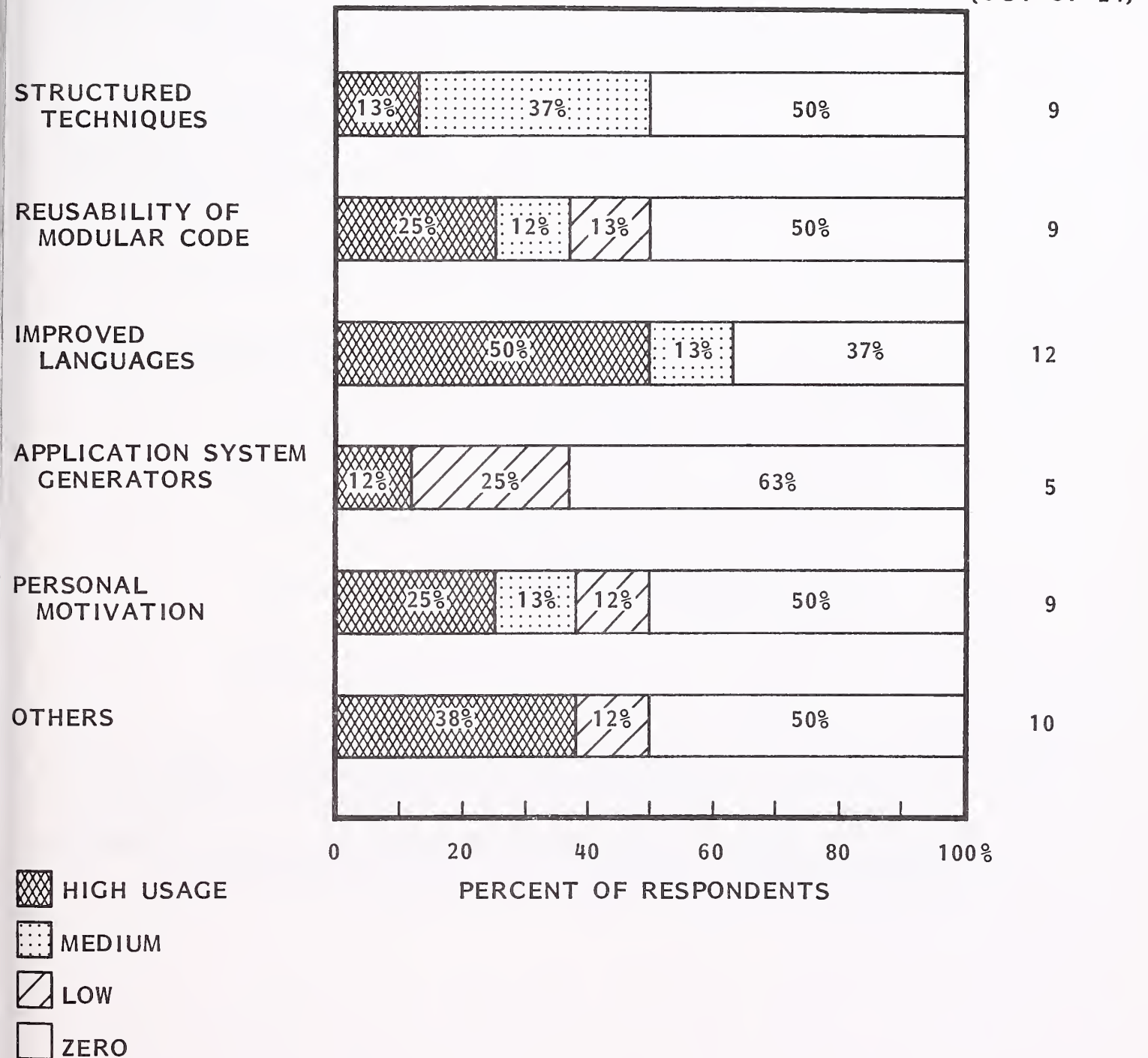
-   How far away the vendors are from applying true production engineering principles to this type of work.

●   The ways in which vendors perceive themselves as becoming either more or less product-orientated vary between the limits of 20% and 100%. Including the one company which saw itself being fully product-orientated in five years' time, the average maximum of productisation was 62%.

●   The conclusion from this set of responses is that U.K. professional services vendors are not gearing up to become software product factories.

●   On the other hand, there are exceptions such as CAP-CPP, planning to diversify into product-orientated fields. Software products are the natural first choice for this strategy.

5.   LANGUAGES

●   The breakdown of software development under the different language categories was analysed as follows:

Assembler	15.0%
Traditional high-level; e.g., COBOL	49.0
Newer high-level; e.g., CORAL, PASCAL	18.5
Non-procedural	17.5
Total	100.0%

●   The percentage use of Assemblers is not predicted to fall below 15%. The traditional languages will lose their following slowly; but it is not yet clear to which of the new contenders the defection will be greater. Professional service houses will quite justifiably not go the same way as end users.

INPI

6. ACCEPTANCE TESTING

- All stages of acceptance testing were supported. The weakest areas were in formal testing:

    - On vendor's site (factory tests).

    - On user's site.

- INPUT concludes that formalising, agreeing and controlling a specification is at a more advanced stage of acceptability than the hard practice of formalising project sign-off.

7. STAFF, SKILLS AND TRAINING

- Skills now being required by respondents are:

    - Data communications (three mentions).

    - Applications knowledge and business awareness (four mentions).

    - Micro experience.

    - Technical support for the automated office.

    - Reliance on good systems design.

- Use of freelance staff was reported to be slight, and was largest (three mentions) in the analyst and programmer category.

- Respondents use the different training methods in the following amounts:

INPUT

Own in-house courses	34%
Manufacturers' courses	9
Courses from independents	15
'On-the-job' training	42%
Total	100%

8. CONSULTANCY TRENDS

- Equipment selection and specialist consultancy assignments tied for first place, with five mentions each. General implementation advice received four mentions and feasibility studies, one. No clear trend is distinguishable; all three types of work are equally in demand, though performance measurement was particularly commented on by one respondent.

9. IMPACTS ON PROFITABILITY

- Professional services for those vendors that specialise in them are still very much the traditional skilled craft they have always been. The only exception is in the education and training subsector, where a great deal of packaging and productisation is going on.

- The effect of this on company profitability relates to the maturity of the sector and not to the newer innovations in hardware and networking technology which have overtaken the industry in the last two years:

    - This sector is now very vulnerable to the swing of the business cycle, and, since the U.K. is plunging lower in terms of recession than any other major industrial nation, the short-term outlook is bleak.

INPUT

- The factors which affect profitability are well covered in the responses to the issue questionnaire:

    - Strict project management.

    - Calibre of staff.

    - Acceptance testing.

- There is no sign of a turnover to a production-line factory approach to the services and software provided, and thus the profit problems of capital-intensive business do not arise.

- The U.K. software industry is strong according to its own standards, and profits of 15% pre-tax are regularly turned in by the leading companies, and especially those with a good proportion of overseas work.

E.   COMPETITIVE ANALYSIS

- Exhibit VIII-6 ranks the leading 20 companies offering professional services by market share in the U.K. in 1979.

- Dataskil is the leading supplier, with almost 12% of the sector revenues.

- Except for Datalogic (part of the Raytheon Corporation) at number five and Hoskyns at number seven, all the other top ten companies are U.K.-owned. Further down the list, only IBM and CDC are foreign-owned.

- Dataskil leads in the tailored software subsector, and CAP-CPP is number three.

INPUT

EXHIBIT VIII-6

TOP SUPPLIER RANKING AND
SECTOR MARKET SHARES, BY SERVICE TYPE,
UNITED KINGDOM - 1979

RANK / TYPE	PROFESSIONAL SERVICES £140 MILLION	
	SUPPLIER	SHARE
1	ICL DATASKIL	11.7%
2	BOC (CSD)	10.5
3	CAP-CPP	6.9
4	LOGICA	5.2
5	DATALOGIC	4.9
6	VLI	4.5
7	HOSKYNS	3.9
8	SYSTIME	2.6
9	SCICON CONSULTANCY INTERNATIONAL	2.6
10	PACTEL	2.4
11	F. INTERNATIONAL	2.4
12	CMG	2.0
13	SPL	1.9
14	MARCOL	1.9
15	BIS APPLIED	1.8
16	ACS	1.7
17	IBM	1.7
18	CDC	1.4
19	ICL BARIC	1.2
20	IAL-GEMINI	0.6

INPUT

- BOC is represented in this list by the aggregate of two of its major subsidiaries:

    - Software Sciences (turnover 1979: £7.8 million).

    - Knights Computing Services (turnover 1979: £3.9 million).

- VLI is the leading contract hire company, turning over more than £6 million in 1979.

- IBM is the largest provider of education and training, followed by ICL (U.K. Division).

- Consultancy is represented by the leading U.K. international firms:

    - Logica.

    - PACTEL.

    - Scicon.

- INPUT expects to see consolidation, in the form of acquisitions and mergers, taking place in the next eighteen months as companies strive to combat the effects of two years of recessionary pressures.

INPUT

IX TURNKEY SYSTEMS

IX   TURNKEY SYSTEMS

A.   MARKET DEVELOPMENT (1979-1984)

I.   INTRODUCTION

- The primary issue evident in the operation of the turnkey market is that of hardware maintenance. This capability, or the lack of it, is the chief obstacle to system houses' ability to provide a credible image in the sector, except in specialist areas where the nature of the project makes it a suitable contractual situation because of the number of diverse subcontractors, or because of the need for strong project management.

- These cases relate to large one-off projects rather than to a repeat project systems market such as the one available for small business systems for first-time users.

2.   GROWTH IN 1979-1980

- The market for turnkey systems provided by the independent suppliers has continued to grow during 1979 and 1980. The growth rate from 1978 to 1979 was 36%, and from 1979 to 1980, 37%.

- Exhibit IX-1 shows the market breakdown for independent system houses in these years, and also reconciles to previously quoted 1978 figures.

INPUT

EXHIBIT IX-1

THE U.K. TURNKEY SYSTEMS MARKET SIZES, 1978 AND 1979,

WITH RECONCILIATION TO PREVIOUS (1978) MARKET DEFINITION

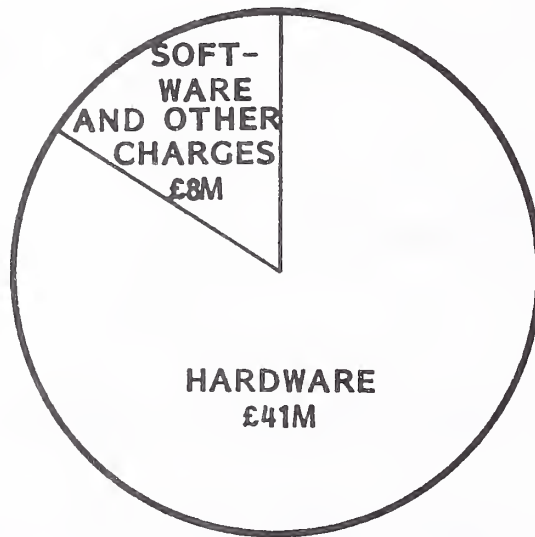| TYPE OF SERVICE	1978 (AS REPORTED)		1978 (REVISED)		REVISED AAGR 1978-1979 PERCENT	1979		1980 (PREDICTED)		AAGR 1979-1980 PERCENT
	£ MILLION	PERCENT	£ MILLION	PERCENT		£ MILLION	PERCENT	£ MILLION	PERCENT	
TURNKEY SYSTEMS			INDEPENDENT SYSTEM HOUSES							
HARDWARE	-	60%	£30	83%	36%	£41	84%	£55	82%	34%
SOFTWARE AND OTHER	-	40	6	17	40	8	16	12	18	50
TOTAL	-	100%	£36	100%	36%	£49	100%	£67	100%	37%

INPUT

- The total revenues earned in 1979 by the independents were £49 million. These were for systems whose total contract price is <u>not</u> less than £5,000. As shown in Exhibit IX-2, this figure is forecast to rise to £175 million in 1984.

- The split between hardware and other charges shows a small movement in favour of hardware during the period:

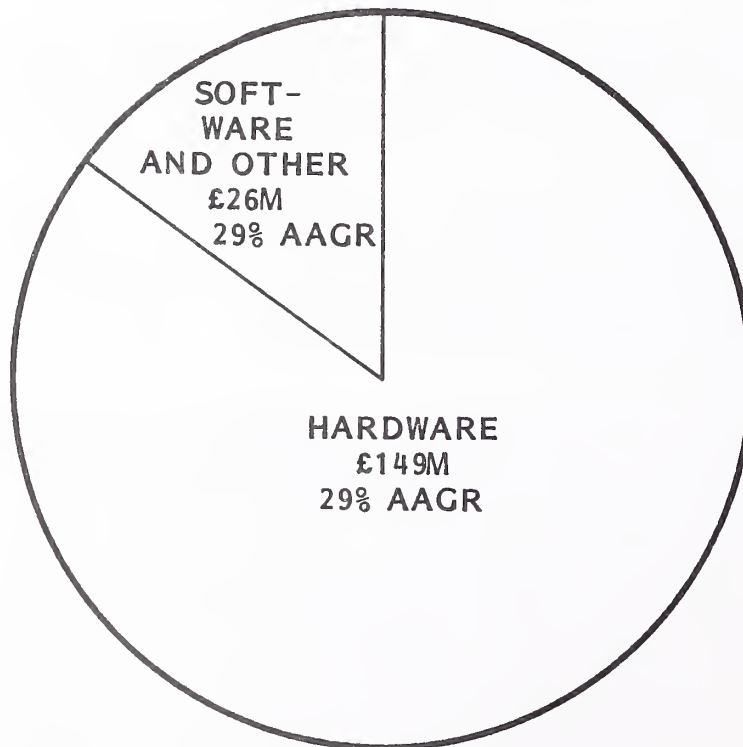|		<u>1979</u>	<u>1984</u>
-	Hardware	84%	85%
-	Software and other charges	16	15
		100%	100%

- The percentage split is so widely in favour of hardware because:

  - Hardware is an item on which it is easier to load a disproportionate amount of the total charge, since:

    - Users perceive it to have a resale value.

    - The market conditions may force vendors to surrender their OEM discounts if these are shown by over-low pricing.

  - Software product revenues earned as part of a turnkey system have been included in the computer services market under software products, and are not included in turnkey systems.

- In addition, as shown in Exhibit IX-3, an additional £30 million was earned by hardware manufacturers and hardware vendors during 1979. Companies which qualify for the supply of this type of turnkey system are those which offer hardware for a specific number of application systems together with software packages suitably tailored or modified to support the user requirements, without an in-house development team or third-party software support. This type of deal is commonest in the small business systems market.

INPUT

EXHIBIT IX-2

## TURNKEY SYSTEMS MARKETS:
FOR INDEPENDENT SUPPLIERS

SOFT-
WARE
AND OTHER
CHARGES
£8M

HARDWARE
£41M

1979

SOFT-
WARE
AND OTHER
£26M
29% AAGR

HARDWARE
£149M
29% AAGR

1984

SOURCE: INPUT FORECAST

INPUT

EXHIBIT IX-3

TURNKEY SYSTEMS MARKETS:
INDEPENDENTS AND HARDWARE MANUFACTURERS

HARDWARE
MANUFACTURERS
(APPLICATION
MACHINES)
£30M

INDEPENDENTS
£49M

1979

INDEPENDENTS
£175M
29% AAGR

HARDWARE
MANUFACTURERS
£220M
50% AAGR
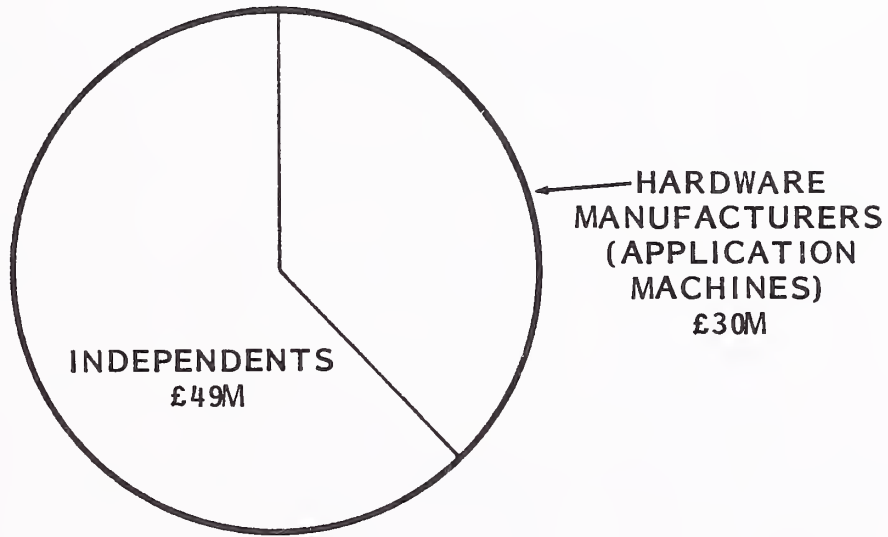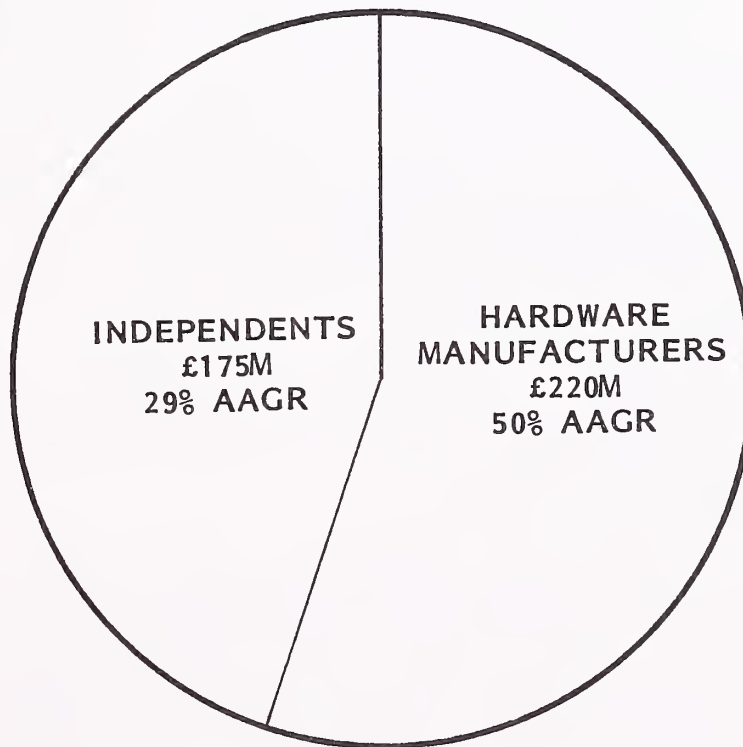
SOURCE: INPUT FORECAST   1984

INPUT

- These systems are sometimes called application machines.

- Companies which have revenues of this type are:

  - IBM (GSD).

  - ICL (UKD).

  - Burroughs.

  - Honeywell.

  - Philips.

  - And certain minicomputer vendors.

3. FORECASTS FOR 1980 TO 1984

- By 1984, the market for all turnkey systems from both the independents and the hardware vendors, will have grown to almost £400 million, of which the independent suppliers and system houses will account for £175 million. This gives them a healthy growth rate of 29% per annum for the five-year period. However, the hardware vendors will be growing at a much faster pace, almost 50% per annum. This rate reflects the much larger number of small business installations which will be commissioned, with the software and support all being provided by the manufacturer.

- Exhibit IX-4 illustrates the comparative growths in this sector of the industry from the two types of supplier.

- Exhibit IX-5 shows the forecast breakdown between hardware, and software and other charges for the independent system houses. This breakdown is unlike the breakdowns given for other sectors in earlier chapters, in that it does not represent two subsectors in which independent markets exist. It is not, for

INPUT

EXHIBIT IX-4

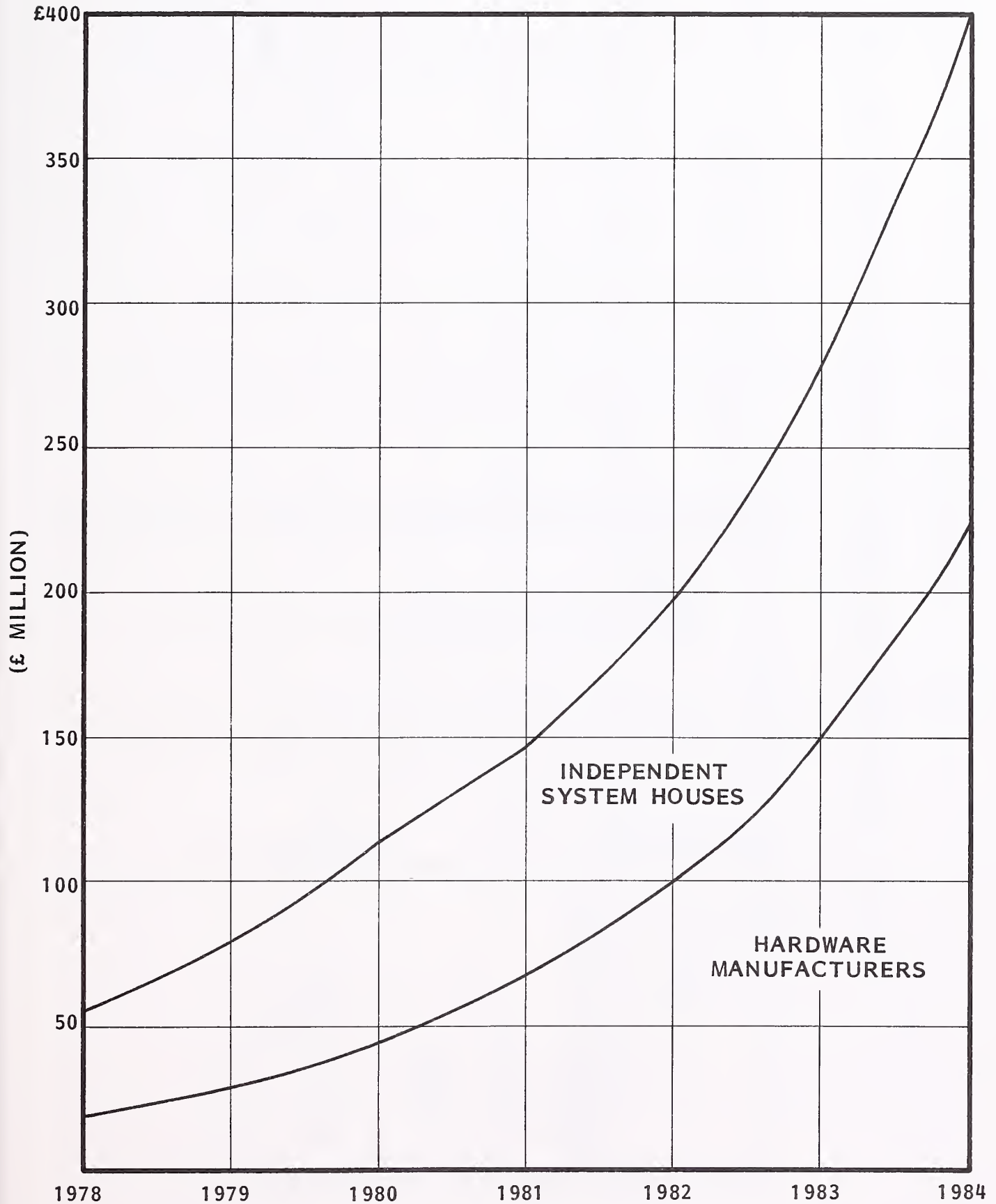## SALES OF TURNKEY SYSTEMS IN THE U.K., 1978-1984

INPUT

EXHIBIT IX-5

THE U.K. TURNKEY SYSTEMS MARKET FORECASTS, BY SECTOR, 1980-1984

MARKET FORECASTS IN £ MILLIONS

SERVICE SECTOR	1978	1979	GROWTH 1978-1979 (PERCENT)	1980	1981	1982	1983	1984	AAGR (PERCENT)
INDEPENDENT SYSTEM HOUSES									
HARDWARE	£30	£41	36%	£55	£66	£79	£111	£149	29%
SOFTWARE AND OTHER	6	8	40	12	15	18	21	26	27
SECTOR TOTAL	£36	£49	36%	£67	£81	£97	£132	£175	29%

INPUT

example, like the software products market, which breaks down into system products and application packages.

• Being essentially a bundled offering of hardware and software with implementation services, turnkey systems can only be split between the different items which appear on a contract quotation; i.e.:

- Hardware.

- Software products.

- Software services and implementation charges.

• The second of these is transferred into the software products market. This follows the practice of the DOI Business Monitor SDQ9.

B. USER ATTITUDES AND THE DISPERSAL OF INTELLIGENCE

1. GENERAL ATTITUDE TOWARD TURNKEY SYSTEMS

• Users surveyed generally had a negative attitude toward turnkey system suppliers. On the 1-3 rating scale, the overall satisfaction rating was 0.8. The sample contained users of systems from the following vendors:

MANUFACTURERS	INDEPENDENT
Burroughs	Berkeley Computers
CDC	BIS Systems
Data General	Compuserve
Data Saab	Datalogic
IBM	Dataskil
ICL	GMS

- 217 -

INPUT

Kienzle	Hoskyns
Mohawk	Jensen
Nixdorf	Security Computer Services
Univac	Systime

- Only Univac and Systime were mentioned favourably more than once.

- The chief reason for dissatisfaction is the difficulty on the part of the supplier to match performance to expectation. There are just so many places along the path of smooth installation and commissioning where something can go wrong, and once a slip has been made, from then on the vendor cannot do anything right. This accounts for the reluctance on the part of hardware and services vendors to get involved in the kind of total responsibility which 'turnkey' implies. In today's competitive market there is no sign of this situation changing.

2.   THE ISSUE OF DISPERSAL

- The number of small businesses which will get or use their first computer in the next five years is expected to run to hundreds of thousands. There would appear to be a market driving force pushing towards a bundled, well-defined turnkey offering pitched at an acceptable price to capture this market.

- The hardware suppliers, especially those in the small business machine market, are well prepared to meet the challenge of this need. However, there are difficulties which they face:

  - First-time systems need software, and the range of the software is a major selling tool.

  - First-time users need support and training.

  - The number of systems required to be sold just cannot be installed using the traditional selling/installation cycle of three-plus months; a new method involving more effort from the user and less from the vendor is needed.

- 218 -

INPUT

- Put together, these three facts mean that the suppliers leading the market, particularly IBM, have to move with caution in introducing a new 'slim-line' sales cycle. Too much speed of change would expose them to the charge from their competitors (themselves) that they were letting the users down by not providing software and support.

- The independents, on the other hand, face two problems which are not shared with their hardware rivals:

  - Working capital, in amounts not usually granted to or found in system houses, is needed to fund the sales volume envisaged to make any impact against the hardware vendors.

  - The tradition of service and support, which is engrained in their approach to business, makes it difficult for them to strike the right balance between:

    . Productisation of the offering.

    . Overcommitment to the user.

- If too much offering is bundled into the product, particularly in the more environment-dependent areas like user training, file creation or warranty, the supplier will not be able to deliver on time or within budget.

- On the other hand if too little is included, he will be vulnerable to competition aimed at his credibility, competence or price, depending on the tactics of his competitors.

- These are the dangers lurking for those system houses that venture into the murky waters of the commercial turnkey market in the U.K. Small wonder then that so few companies have been brave enough or foolhardy enough (whichever way your opinion lies) to commit themselves wholeheartedly to this marketplace. Turnkey systems, as 'a division of our company', as something

INPUT

'we can do if we're asked', is a very different prospect from single-minded commitment to build, market, prospect, sell and install multiple turnkey systems as a mainstream activity.

- A few vendors have taken the plunge and some have also survived in this field for several years. One company, Systime, stands out as having succeeded in it as far as it has gone so far. Systime has turned itself from being a North of England software company five years ago into the major independent turnkey systems house with, at total revenues of £15.6 million in 1979, a U.K. market share in turnkey systems which is exceeded only by IBM and ICL.

- The reasons for Systime's success include:

    - Understanding the need for a venture capital injection at the correct time in its growth, and the ability to secure the money.

    - Using its professional software and systems knowledge to establish, and be able to support, a viable product line, in the sense of having achieved the balance described a few paragraphs ago.

- It is too early to predict a long and prosperous life for Systime. The stage the company has reached is the dangerous middle-ground in which it cannot rest. By 1984, INPUT believes, Systime must have reached at least £50 million in annual turnover to be able to compete successfully against the hardware giants.

- Other companies wishing to compete seriously in this sector will be well advised to understand:

    - The cost of getting in at this juncture.

    - The even greater cost of staying in once success has been achieved.

INPUT

C.   VENDOR ISSUES AND THE IMPACTS ON PROFITABILITY

1.   INTRODUCTION

- Only four companies answered the hardware service module of the Vendor Issue Questionnaire. They were:

    - A hardware manufacturer's professional services group.

    - An international systems house.

    - Two large, mixed-services vendors, best known for their processing services activities.

- All four are engaged in large-scale turnkey projects but are also looking with interest at the large-volume, small system value end of the commercial turnkey market.

2.   ENGINEERING FACILITIES AND MANUFACTURING POLICY

- Three of the four respondents used their own manufacturing facility, the exception being the systems house. The two mixed-services vendors have factory premises, both in the Midlands.

- All four respondents used engineering facilities for integration commissioning and maintenance, except for the hardware supplier, whose professional services group subcontracted this across to field service.

- There was no one with a policy of vertical integration, though one mixed-services vendor came nearest to it with a percentage of cost 'made in-house' of 70%.

- The average split across the sample was:

INPUT

Made in-house	36%
Bought-in	64%

- The highest percentage of 'bought-in' was 90%.

3. INVESTMENT

- Two companies differentiated between working and investment capital, while two did not. The hardware manufacturer's people negotiated turnkey systems payments for 100% at the start of the contract, wherever possible.

- All four respondents put up investment money for spares stock.

- All except the systems house put up investment money for stocking up with complete hardware kits prior to sales being made.

- Neither the systems house nor the manufacturer were in the habit of investing in software products (of either kind) before making sales:

  - In the case of the systems house, this was because situations are all treated separately as one-off projects, each potentially different from the last.

  - In the case of the manufacturer, this was because the company's products were available off the shelf anyway, from another product line. (Their answer is therefore somewhat distorted by the departmental outlook of INPUT's respondents; nevertheless, this reinforces the point about the advantages which hardware vendors have over the independents when faced with setting up for the turnkey systems market.)

- One of the mixed-services vendors does a two-year investment plan for all these items, and this is updated each year on a rolling-forward basis.

INPUT

- The mixed-services vendors appeared more at ease with the investment planning process.

4. ACCEPTANCE AND WARRANTY

- All types of acceptance test were claimed to be enforced by all four respondents. As noted in Chapter VIII, this commendable situation sounds a little too good to be true. The question being set as a leading one, perhaps, did nothing to put the burden of proof on the respondent.

- All vendors offered a hardware warranty but, in the case of the systems house, it was merely the passing on of the manufacturer's for whatever period that applied.

- All except the hardware manufacturer offered a software warranty - in two cases, of no less than 12 months! The manufacturer offered instead a standard customer support plan at additional cost, though this could be overridden by specific country marketing policies offering a warranty.

5. PROFITABILITY

- Whether profitability or cash-flow is going to be the major corporate objective depends on which type of approach is taken to the turnkey systems field:

    - The traditional one-off project approach, displayed quite largely by the present sample of four respondents, puts the accent on profitability.

    - The volume sales approach of Systime makes cash-flow the first priority.

- In either case, the importance of clean acceptance and relatively trouble-free warranty periods is paramount:

INPUT

- For the one-off project, hold-up on any stage payment in a large contract can prove embarassing to the annual results of even a leading supplier.

- For the volume repeat sales approach to the commercial market, being able to collect cash at the appropriate time is a matter of survival; this was the problem for the ill-fated BCL in the early seventies.

● The reputation of the hardware vendor, which allows it to forego warranty on software in a standard turnkey contract, is another advantage that the large has over the small. On the other hand, the systems house is the professional who knows his software intimately. He will certainly be asked to provide warranty on a large defence, telecommunications or industrial control system.

● In practice, therefore, there are two distinct marketplaces for the turnkey approach. Success hitherto in the one has not constituted a guarantee of success in the very different volume sales field, in which the hardware vendor is much better adapted to survive.

● Other aspects of project management, as was seen in the discussion on professional services, apply to the turnkey sector, too. Moreover, project management for turnkey needs to encompass:

- Financial management of cash flow.

- Management of subcontractors.

● This last problem of subcontactors is, for the independent taking the volume sales approach, so critical that he must take the path of vertical integration in order to protect his delivery schedules and hence his cashflow. This is what Systime has done.

INPUT

- One concludes from the evidence of this sample that leading software vendors are too severely anchored to the traditional one-off market to see clearly the opportunities and pitfalls associated with the other.

D. COMPETITIVE ANALYSIS

- Exhibit IX-6 shows the leading independent vendors of turnkey systems, ranked according to their U.K. market share in 1979. Only 15 vendors were studied with portions of revenue attributable to turnkey.

- These 15 suppliers account for 50% of the market; i.e., £24 million in 1979. Any software products revenue attributable to these contracts has been extracted and transferred to that sector.

- Systime is the leading company, with £5.4 million in 1979 attributable to systems. Another £2.7 million of Systime's revenues are excluded from this and from the other sectors of computer services, because they were gained through OEM hardware sales to other system houses and so do not appear as end user expenditures with Systime.

- ABS, Allied Business Systems, a subsidiary of the Trafalgar House group, is in second place. ABS markets its MULTIBUS systems in the U.K. and South Africa. It has not had the advantage of being able to draw credibility from the name of the hardware vendor (GRI) on which it bases its systems. GRI is an unknown name to the average DP manager in the U.K.

- Like Systime, ABS is in the commercial small systems market.

- BOC is in third place through its Software Sciences subsidiary, which is installing systems of considerable value, and last year commissioned a number of such in double figures.

INPUT

EXHIBIT IX-6

TOP SUPPLIER RANKING AND SECTOR MARKET
SHARES, BY SERVICE TYPE,
UNITED KINGDOM - 1979

RANK \ TYPE	TURNKEY SYSTEMS (INDEPENDENTS)	SHARE
1	SYSTIME	11.0
2	ABS	10.6
3	BOC (CSD)	7.9
4	HOSKYNS	5.9
5	F. INTERNATIONAL	2.3
6	ACS	2.2
7	DATALOGIC	2.0
8	SDL	1.6
9	SPL	1.6
10	LOGICA	1.5
11	SCICON CONS. INTERNATIONAL	1.3
12	MARCOL	1.0
13	MCS	0.9
14	ARBAT	0.5
15	PRC	0.4
16	IAL-GEMINI	0.3

INPUT

- Hoskyns has a sizeable portion of its revenues in DEC-based turnkey systems. These are mainly for the commercial market but are often for experienced users in household name companies.

- The rest of the suppliers ranked have much smaller market shares. Some operate in the traditional one-off turnkey market for leading edge companies:

    - Datalogic.

    - SDL.

    - SPL.

    - Logica.

    - Scicon.

- Others again are familiar with the smaller-size system, principally for simple business applications:

    - F International.

    - ACS.

    - Marcol.

    - Arbat.

- Manufacturers have not been included in these rankings. Companies known to sell systems which would qualify under INPUT's definition of turnkey are:

    - IBM (GSD).

    - ICL (UKD).

INPUT

- Burroughs.

- Digital.

- Hewlett-Packard.

- Nixdorf.

- Philips.

- CTL.

- Honeywell.

● These hardware vendors will be leading contenders for the expanding small business turnkey sector through to 1984.

INPUT

APPENDIX A: DEFINITIONS

APPENDIX A: DEFINITIONS

- **Small Business Computer,** for the purpose of this study, is a system that is built around a Central Processing Unit (CPU), and that has the ability to utilise at least 20M bytes of disk capacity, provides multiple CRT work-stations, and offers business-orientated systems software support.

- **A Systems House** integrates hardware and software into a total turnkey system to satisfy the data processing requirements of the end user. It may also develop systems software products for license to end users.

- **A Turnkey System** is composed of hardware and software integrated into a total system designed to fulfill completely the processing requirements of one or more applications.

- **An End User** may buy a system from the hardware supplier(s) and do his own programming, interfacing and installation. Alternately, he may buy a turnkey system from a manufacturer, systems house or hardware integrator.

- **A Hardware Integrator** develops system interface electronics and controllers for the CPU, sensors, peripherals and other ancillary hardware components. He may also develop control systems software in addition to installing the entire system at the end user's site.

- **A Small Business Computer Manufacturer** builds its system around a pro-prietary CPU and provides systems software. It may make or buy peripheral

INPUT

equipment and semiconductor devices. Distribution to the end user may be through its company field sales offices, a network of distributors, or both.

- **A Distributor** purchases the small business computer on an OEM basis from the manufacturer and markets it to the end user. He may or may not provide a turnkey system.

- **Peripherals** include all input, output and storage devices (other than main memory) which are locally connected to the main processor and are not generally included in other categories, such as terminals.

- **A Minicomputer** is usually a 12-, 16- or 18-bit computer which is provided with limited applications software and support and may represent a portion of a complete larger system or network.

    - The larger minicomputers (often with 24- or 32-bit architecture) are sometimes called Midicomputers or megaminis; they have the power of a small mainframe and are often used standalone for specialist applications.

- **Distributed Data Processing (DDP)** 'Distributed processing is the deployment of programmable intelligence in order to perform data processing functions where they can be accomplished most effectively, through the electronic interconnection of computers and terminals, arranged in a telecommunications network adapted to the user's characteristics.'

- **Computer Services** are services provided by vendors which perform data processing using vendor computers, or assist users to perform such functions on their own computers.

- **Processing Modes** are of three types: facilities management, remote computing services and batch services.

INPU

- <u>Facilities Management (FM)</u> is the management of all or part of a user's data processing functions under a long-term (not less than one year) contract. To qualify, the contractor must directly <u>plan</u> and <u>control</u> as well as operate the data processing facility provided to the user on-site through communications lines, free-standing or in mixed mode. Simply providing resources, even though under a long-term contract and/or for all of a user's processing needs, does not qualify as FM.

- <u>Remote Computing Services (RCS)</u> are 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. The three sub-modes of RCS are:

    - INTERACTIVE (Timesharing), characterized by 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, where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements.

    - DATABASE, characterized by the retrieval of information from a vendor-maintained database, which may be owned by the vendor or a third party.

- <u>Batch Services</u> include data processing performed at vendors' sites on user data which have been physically transported (as opposed to electronically by communications lines) to those sites. Data entry and data output services, such as OCR and COM processing, are also included.

INPUT

- **Processing Services** encompass FM, RCS and batch services. They are categorised by type of service (as distinguished from mode of delivery) bought by users, as follows:

  - <u>General Business</u> services are processing services for applications that are common to users across industry categories. Software is provided by the vendor; this can be a complete package, such as a payroll package, or an application 'tool', such as a budgeting model, where a user provides much of the customising of the finished product it uses. General business processing is often repetitive and transaction-orientated.

  - <u>Scientific and Engineering</u> services are the processing of scientific and engineering problems for users across industries. The problems usually involve the solution of mathematical equations. Processing is generally problem solving and is non-repetitive, except in the sense that the same packages or 'tools' are used to address different, but similar, problems.

  - <u>Specialty Applications</u> services provide processing for particular functions or problems unique to an industry or industry group. The software is provided by the vendor either as a complete package or an application 'tool' that the user employs to produce its unique solution. Specialty applications can be either business or scientific in orientation; database services, where the vendor supplies the data base and controls access to it (although it may be owned by a third party), are also included under this category. Examples of specialty applications are: seismic data processing, numerically controlled machine tool software development and demand deposit accounting.

  - <u>Utility</u> services are those where the vendor provides access to a computer and/or communications network with basic software that enables any user to develop its own problem solution or processing system. These basic tools include terminal-handling software, sorts, language compilers, database management systems, information

- 232 -

INPUT

retrieval software, scientific library routines and other systems software.

- **User Site Hardware Services (USHS) Or On-Site Computing** (or Combination Processing) is a relatively new type of service which consists of offering a mixed solution to a user's requirements, comprising:

    - <u>Remote Computing</u> on a vendor's mainframe for applications best suited to mainframe power.

    - <u>Installation of On-Site Hardware</u> - usually comprising a minicomputer or small mainframe at the user's site for local processing of applications best performed on a local machine.

    User Site Hardware may be supplied on a turnkey or OEM basis; it acts as the terminal or terminal cluster controller for the remote computing part of the service.

- **Professional Services** include management consulting related to EDP, systems consulting, systems design and programming, and other professional services; e.g., education and training. Services can be provided on a basis of 'time and materials', whereby the user pays for the time used of an individual on a daily or other fixed rate, or 'fixed price', where the user pays a fixed fee for a specific task or series of tasks.

- **Software Products** are systems and applications packages that are sold to computer users by equipment manufacturers, independent vendors and others. They include fees for work performed by the vendor to implement a package at the user's site.

- **Captive Revenue** is taken as revenue from services sold to parent companies (in a private sector organisation) or to parent bodies/organisations (in the public sector). It is excluded from available market revenues. Revenue from associate companies in a group, or from subsidiaries on the same or lower level

INPUT

in a group, is not classed as captive revenue, because it is usually gained in competition with other vendors.

- **Export Revenue** is revenue earned in one country (the 'destination') by a vendor based in another (the 'source'). Export revenues form part of the available market in the destination country, but are excluded from that of the source.

- **Available Market** is the sum of all revenues except captive and export.

INPUT

APPENDIX B: CAMP UPDATE QUESTIONNAIRE

INPUT / CAMP (UPDATE 1980)
Company Analysis And Monitoring Programme

Interviewer
Tele-phone ☐ Post ☐ Interview ☐
Date | ⋮ | ⋮ | ⋮ |
Respondant _____
Title _____

1.   COMPANY BACKGROUND DATA

COMPANY NAME/MAIN LOCATION

Co. Name _____

Address _____

_____

_____

Tel. No. _____ Telex: _____

BRANCHES/OTHER LOCATIONS

KEY EXECUTIVES

Chief Exec: Name .... Title ....

Other Execs: Name .... Title ....

Name .... Title ....

Name .... Title ....

Name .... Title ....

OWNERSHIP AND SUBSIDIARIES

Date trading started ..../19.... Company Type: Private ☐ Public ☐ Subsidiary ☐

Major Shareholders: Subsidiaries/Shareholdings:

Co/Name .... ☐ %   Company .... ☐ %

Co/Name .... ☐ %   Company .... ☐ %

Co/Name .... ☐ %   Company .... ☐ %

Co/Name .... ☐ %   Company .... ☐ %

STAFF NUMBERS

Total This Country .... ☐   of which: Marketing/Sales .... ☐

Analysts/Programmers .... ☐   Operating .... ☐

Engineering/Support .... ☐   Total group .... ☐
                                                  (approx./if known)

INPUT

2.(a) FINANCIAL DATA (LOCAL CURRENCY PLEASE)

TOTAL REVENUE, FINANCIAL YEAR ENDING ..../................../........							GROWTH %	
European/ This Country	Year Before Last 1978		Last Year 1979		Current Year (Predicted) 1980		Last Year/ Previous Year	Current Year/ Last Year (Anticipated)
	Rev.	% Captive	Rev.	% Captive	Rev.	% Captive		
EXPORT EUROPE								
OUTSIDE EUROPE								
TOTAL GROUP								

2.(b) BREAKDOWN OF REVENUE

EUROPEAN / DOMESTIC REVENUE BREAKDOWN (LOCAL CURRENCY or PERCENT)			
TYPE OF SERVICE	Local Currency	% Last Year	% In 2 Years Time
RCS: Interactive ---------------------			
Remote Batch ------------------			
BATCH SERVICES (including Data Preparation) ------------------			
FACILITIES MANAGEMENT (FM) -------------------------------------			
U.S.H.S. (On-Site Computing) (including Terminal Rental) -------			
SOFTWARE PRODUCTS: Application			
Industry Specialised -------			
Cross Industry -------------			
System ---------------------			
PROFESSIONAL SERVICES: Consulting ---------------------			
Tailored s/w development -----			
Education/Training ------------			
TURNKEY SYSTEMS: Industry specialised ------------			
Cross industry -----------------			
HARDWARE MAINTENANCE -------------------------------------			
OTHER (please specify)			

INPUT

COMPUTER HARDWARE INSTALLED Please specify the hardware that you have installed by supplying the name, model, quantity and mode of use (prime function).

MODELS MAINFRAMES (usually for vendor's bureaux)	QTY. now installed	Mode of Use (✓)		
		PROD.	DEV.	COMMS.
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
TERMINALS		☐	☐	☐
		☐	☐	☐
Number of Terminal Sites				
MINIS/MICROS (usually on customer sites)	Qty installed during 1979	Average h/w price per system		

LANGUAGES Please list those languages which you use and in which your staff have substantial competence.

....

....

KEY PRODUCTS AND SERVICES ACTIVELY PROMOTED Please describe the name and function of products and/or services which form the most important part of current business.

INPUT

6. **INDUSTRY EXPERTISE** Please indicate the percentage of your 1979 revenue obtained, and the marketing of industry-specific products if any (✓) in the following industry sectors:

INDUSTRIES	Rev. %	Prod. (✓)		Rev. %	Prod. (✓)
Agriculture/Fishing/Mining	☐	☐	Wholesale/Distribution	☐	☐
Food/Drinks/Tobacco Mfrs.	☐	☐	Retail Trade/Restaurants/Hotels	☐	☐
Textile/Clothing/Footwear	☐	☐	Transport and Storage	☐	☐
Wood Products/Furniture Mfg.	☐	☐	Communication/PTTs/Broadcasting	☐	☐
Paper Mfg./Printing/Publishing	☐	☐	Financial Institutions/Banks	☐	☐
Oil/Chem./Coal/Plastic Products	☐	☐	Insurance	☐	☐
Non Metallic Mineral Products	☐	☐	Real Estate/Business Services	☐	☐
Basic Metal Industries	☐	☐	National Govt./Defence	☐	☐
Fabricated Metal Products	☐	☐	Local Government/Community	☐	☐
Other Manufacturing	☐	☐	Education/Research Medical	☐	☐
Electricity/Gas/Water	☐	☐	International Bodies	☐	☐
Construction	☐	☐	Other e.g. Leisure	☐	☐

7. **APPLICATION AREAS** Please indicate the percentage of your 1979 revenue obtained, and the marketing of cross-industry software/system products (✓) in the following application areas.

APPLICATION AREA	Rev. %	Prod. (✓)		Rev. %	Prod. (✓)
Industrial/Milit. Control Systems	☐	☐	Accounting/Costing/Audit	☐	☐
Engineering/Tech./Design/R. & D.	☐	☐	Financial Analysis/Planning	☐	☐
Order Proc./Purchasing/Point of Sale	☐	☐	Portfolio/Asset/Cash Management	☐	☐
Production/Inventory Control/Manuf.	☐	☐	Office Autom./Admin./Comm.	☐	☐
Distribution/Transport	☐	☐	Database Services	☐	☐
Marketing/Sales	☐	☐	Data Communications	☐	☐
Payroll/Personnel	☐	☐	Other utility e.g. system devel.	☐	☐

Would you be interested in learning more about INPUT? Yes ☐ No ☐

May we be on your mailing list for brochures, announcements, annual reports? Yes ☐ No ☐

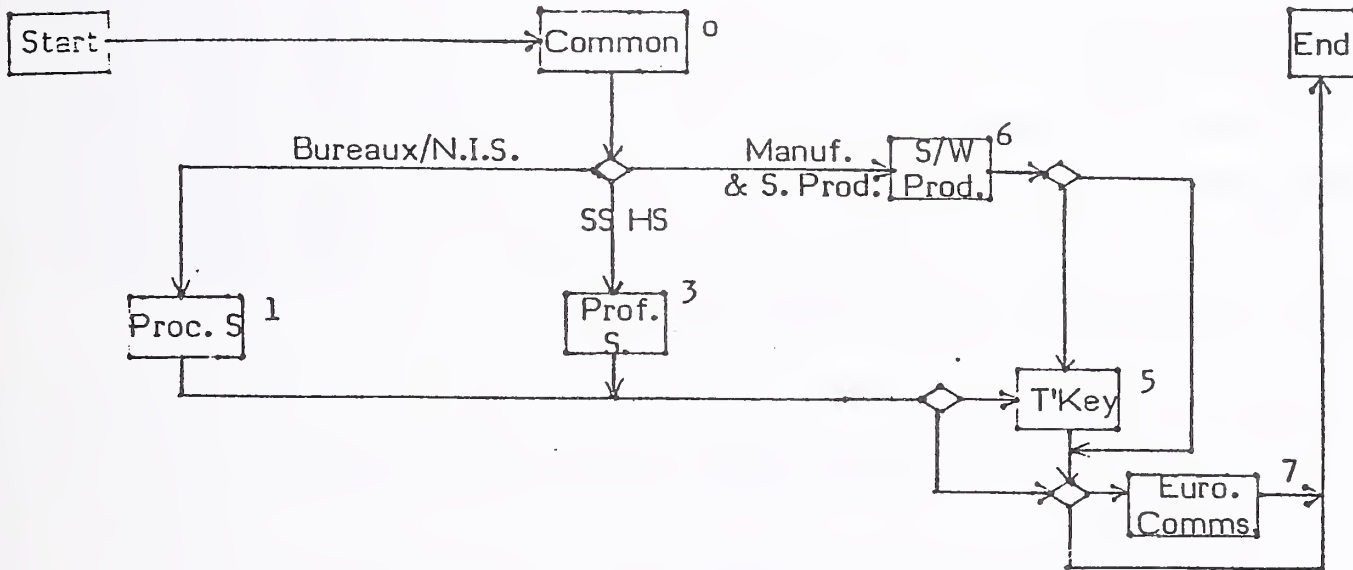Thank you for completing this CAMP Update questionnaire.

INPUT

APPENDIX C: VENDOR ATTITUDES QUESTIONNAIRE

MAS/EUROPE 1980 VENDOR QUESTIONNAIRE

QUESTIONNAIRE MODULE FLOW BY VENDOR TYPE

Q. 0. Please indicate (√ box) modules applicable to your business:

M 0. COMMON ISSUES

Q. 1. Are you placing emphasis in product development
(applications) more into cross-industry (X) products or
industry speciality (IS) products or is it about equal? $\boxed{\text{X}}$ $\boxed{\text{IS}}$ $\boxed{=}$

What will %age split be in 2 yrs. $\boxed{}$ $\boxed{}$

What will %age split be in 5 yrs. $\boxed{}$ $\boxed{}$

Comments

Q. 2. Is your average revenue per customer declining (so leading
to increased unit sales cost)? $\boxed{\text{YES}}$ $\boxed{\text{NO}}$

Q. 3. Do your strategic plans take into account the possibilities of:

- continuing inflation (if so please specify how) $\boxed{\text{YES}}$ $\boxed{\text{NO}}$

- continued recession (if so, specify impact) $\boxed{\text{YES}}$ $\boxed{\text{NO}}$

INPUT

Q. 4. Is staff shortage a real or perceived obstacle to your growth? [Real] [Perc.] [No]

If so, in which grades (please rate impact High, Medium, Low)

- Sales   [H] [M] [L]

- Sales support   [H] [M] [L]

- Software professionals   [H] [M] [L]

- Operations staff   [H] [M] [L]

- Tech. Support/Engineers   [H] [M] [L]

- Managerial   [H] [M] [L]

- Other ....   [H] [M] [L]

Q. 5. Which are your three most serious competitors?

a. ---------------------------- b. ---------------------------- c. ----------------------------

INPUT

M 1. <u>PROCESSING SERVICES</u> (Bureaux, Data Prep, COM & OCR Services)

Q.10. Defining "real new business" as revenue from new accounts nett of price increases and lost accounts rev., is the rate of growth of your "real new business" slowing down?   YES NO Est. ☐ %

- will it be doing so in 2 years time?   YES NO Est. ☐ %

Comments

Q.11. Is in-house DDP impacting your large coy. user-base?   YES NO No. of Lost A/cs. ☐ %

If so, is it mostly migration to:

- Stand-alone mini equipment   ☐ %

- Connection to in-house networks   ☐ %

- Batch processing on central in-house mainframes   ☐ %

Comments

Q.12. Are you finding that new types of user e.g. small businessmen, professionals, dept. heads prefer a mini/micro-based solution   YES NO

If so, in what %age of new account prospects do you estimate you lose to:

- another processing bureau   Est. ☐ %

- in-house equipment - mini/micro   Est. ☐ %

- in-house equipment - mainframe   Est. ☐ %

Comments

Q.13. U.S.H.S. (User Site Hardware Services) - is it the answer to the processing bureau's growth? - (please rate its capabilities <u>H</u>igh, <u>M</u>edium or <u>L</u>ow)   H,M,L

- now (i.e. is it happening)   ☐

- in 2 years time   ☐

- in 5 years time   ☐

Comments
(Check H/W. module)

Q.14. F.M. (Facilities Management) - is/will there be a need for bureaux to offer complete packaged contracts including, hardware, operators, education, software etc.

- now   YES NO

- in 2 years time   YES NO

- in 5 years time   YES NO

Comments

INPUT

Q.15. Is your business more costly to obtain than in the past?   ☐YES ☐NO

If so, please, give an approximate annual %age increase per unit sale   ☐ %

Q.16. Are you considering retailing your services through 3rd-parties?
(please also give %age annual rev. thus retailed)

- already do   ☐YES ☐NO Est.☐ %
- will in 2 years time   ☐YES ☐NO Est.☐ %

Comments

Q.17. What pricing elements do you use?

- Computer Resource Unit (CRU)   ☐YES ☐NO
- Filespace Unit   ☐YES ☐NO
- Connect time   ☐YES ☐NO
- Printer Usage   ☐YES ☐NO
- Other (please specify) ....   ☐YES ☐NO

Comments

Q.18. Do you use Fixed Capacity Pricing Techniques   ☐YES ☐NO

	AIM	ACTUAL

If so, what %ages of C.P.U. do you aim to/actually load
in this way   ☐ %   ☐ %

Q.19. Which pricing method do you use?

- Historical Cost-plus   ☐YES ☐NO
- Market value   ☐YES ☐NO
- Other (please specify) ....   ☐YES ☐NO

Comments

Q.20. Over how many accounts/sales do you normally expect to
recover software procurement/development costs

- applications packages   ☐
- utilities   ☐

Q.21. What %ages of your software do you obtain from the sources below:

	Use Manuf'er's	Buy	Build
- system software	☐	☐	☐
- applications	☐	☐	☐
- utilities	☐	☐	☐

Comments

INPUT

Q. 22. To what extent have your recent profits been bolstered by external or temporary factors e.g. by:

- already depreciated equipment |High| |Med| |Low| effect
- falling hardware costs |H| |M| |L|
- price increases matching inflation |H| |M| |L|
- Other (please specify) .... |H| |M| |L|

Comments

Q. 23. As a team, do you feel you spend too much time on day-to-day profit management to the detriment of:

- medium term planning (next 2 years) |YES| |NO|
- longer-term planning (next 5 years) |YES| |NO|

Comments

Q. 24. May we have a copy of your current services tariff structure/price list. If YES, please send to INPUT's Piccadilly office. |YES| |NO|

INPUT

M 3. PROFESSIONAL SERVICES

Q. 30. To what extent has hardware revenue contributed to your recent growth? ☐ %

Comment

Q. 31. Will the computer services sector get its fair share of new business/applications opened up by the microprocessor? YES NO

If so, will it be mainly from: (please also give estim. % of new business likely to be gained.

- new accounts (first-time users) YES NO Est. ☐ %

- new accounts (established users) YES NO Est. ☐ %

- existing accounts YES NO Est. ☐ %

Comments

Q. 32. What types of contract do you offer:

- Fixed price YES NO

- Time and materials YES NO

- Body hire YES NO

- Other (please specify) .... YES NO

Comments

Q. 33. What productivity aids/methods do you employ: (Rate usage High, Medium, Low)

- Structured techniques e.g. M. Jackson H M L

- Reusability of modular code H M L

- Improved languages H M L

- Application system generators e.g. H M L

- Personal motivation H M L

- Other (please specify) .... H M L

Comments

Q. 34. What factors contribute to your profitability Cont. %

- Software productivity techniques ☐

- Project management methods ☐

- Calibre of your staff ☐

- Other (specify) .... ☐

100%

Comment

INPUT

Q. 35. Do you see your company becoming fully product-orientated?

in ☐2yrs ☐5yrs ☐Never

(Please also give estim. max. rev. % achievable from products   Max. ☐ %

If so, would you trade-off end-user orientation for productisation? ☐YES ☐NO

Comment

Q.36. What approximate %ages of your software is developed using the following languages:
- Assembler ☐ %
- Traditional high-level - COBOL, FORTRAN, BASIC, ALGOL 60, RPG ☐ %
- Newer high-level e.g. - PL1, CORAL 66, RTL2, PASCAL, APL, ☐ %
- Non-Procedural e.g. Query languages, non-host DBMS ☐ %
- Other (please specify) .... ☐ %

100%

Q.37. What types of system acceptance testing do you enforce?
- Agree spec. in writing with user ☐YES ☐NO
- Design acceptance tests jointly with user ☐YES ☐NO
- Get user to agree to a formal set of acceptance tests ☐YES ☐NO
- Undertake formal 'factory' tests on your site ☐YES ☐NO
- Undertake formal tests on user's site ☐YES ☐NO
- Enforce formal spec. modification procedure ☐YES ☐NO

Q.38. What changes in skill requirements are you noticing - particularly for the new decen- tralised applications - DBMS, DDP (Data Comms), Office Automation?

Q.39. Do you employ freelance staff (or subcontract work out) in any of the following grades?

	Sometimes	Often	Never
- Specialist consultants	☐	☐	☐
- Analysts & programmers	☐	☐	☐
- Operators	☐	☐	☐
- Other	☐	☐	☐

INPUT

Q. 40. How do you train your staff – (please also give approx. %age usage of training method)

- Your own courses — YES NO ☐ %

- Manufacturers' courses — YES NO ☐ %

- Courses from Independent training companies — YES NO ☐ %

- 'On the job' training — YES NO ☐ %

Q. 41. What trends in consultancy assignments are you noticing? – towards:

- general implementation advice — YES NO

- equipment selection — YES NO

- specialist e.g. performance measurement — YES NO

- Other .... — YES NO

Comments

INPUT

M 5. HARDWARE SERVICES (Turnkey, Integrators, Distributors, TPM - Third Party Maintenance)

Q.50. Do you provide your own hardware/engineering facilities? [YES] [NO]
If so, are they used for:

- Manufacture [YES] [NO]

- Integration [YES] [NO]

- Commissioning [YES] [NO]

- Maintenance [YES] [NO]

- Other .... [YES] [NO]

Q.51. Do you have a policy of vertical integration of systems? [YES] [NO]
(i.e. make as much as poss. yourself of a product line)

	In-house	Bought-in

What is %age breakdown of systems cost between 'made in-house' [ ] [ ] %
and 'bought in'?

Q.52. Do you differentiate between working and investment capital? [YES] [NO]

Comments

Q.53. Do you provide up-front investment for system cost components?

- Software products - system [YES] [NO]

- Software products - application [YES] [NO]

- Hardware systems, pre-sale stock of [YES] [NO]

- Spares stock [YES] [NO]

- Other .... [YES] [NO]

OMIT Q. 54 IF ANSWERED MODULE (PROF. SERVICES)

Q.54. What types of system acceptance testing do you enforce?

- Agree spec. in writing with user [YES] [NO]

- Design acceptance tests jointly with user [YES] [NO]

- Get user to agree to a formal set of acceptance tests [YES] [NO]

- Undertake formal 'factory' tests on your site [YES] [NO]

- Undertake formal tests on user's site [YES] [NO]

- Enforce formal spec. modification procedure [YES] [NO]

Q.55. Do you offer warranty? and for what period on:

			Mths	Days
- hardware	[YES]	[NO]	[ ]	[ ]
- software	[YES]	[NO]	[ ]	[ ]

INPUT

M 6.   <u>SOFTWARE PRODUCTS</u>

Q.60.   Which are your three most heavily used products?

<div align="right">Approx. No
of installations</div>

1 .... ☐

2 .... ☐

3 .... ☐

Q.61.   Do you expect to experience the same high annual growth rates for your products as at present (20 - 30%):

- in 2 years time?   YES   NO   Est. ☐ %

- in 5 years time?   YES   NO   Est. ☐ %

Q.62.   Is profitability impacted by this fast expansion?   YES   NO

Q.63.   Over how many systems/sales do you normally expect to recover software development costs?

- systems software   ☐

- applications packages   ☐

- utilities   ☐

Q.64.   Is your new business more costly to obtain than in the past?   YES   NO

If so, please, give an approximate annual %age increase per unit sale   ☐ %

Q. 65.&66.   <u>INDEPENDENTS ONLY</u>

Q.65.   Manufacturers software appears less expensive than independents.

Do you use their pricing as a guide to your own?   YES   NO

If so, what factor of difference between the two do you consider the market will tolerate?   + ☐ %

Comments

Q.66.   Do you anticipate increased competition from IBM's and other manufacturers' products?

- Short-term i.e. next 2 years   YES   NO

- Long-term i.e. next 5 years   YES   NO

If so, how will you counter it. _____

Q.67.   May we have a copy of your current price list?
If YES, please send to INPUT's Piccadilly office.   YES   NO

Q.68.   Support/servicing activities are crucial to productivity? Do you use or are you planning to use:

- phone-in support centres   Use   Plan   No

- remote diagnosis/fixing on-line   Use   Plan   No

If neither, how else do you expect to contain escalating personnel costs

INPUT

M 7. EUROPEAN COMMUNICATIONS ENVIRONMENT

Q.70. Do you see your growth prospects adversely affected by PTT monopoly positions?

- short-term i.e. over next 2 years — ☐YES☐ ☐NO☐

- long-term i.e. over next 5 years — ☐YES☐ ☐NO☐

Q.71. Which aspects impact your business most:
(please rate severity of impact High, Medium, Low, Negative (i.e. good for you)

H,M,L,N

- Tariff increases ☐

- Provision of leased lines degraded (i.e. nos., quality, servicing etc. poorer) ☐

- Trans-border data flow obstructed by legislation or restrictive practices ☐

- Network connections more rigorously/legalistically vetted ☐

- Increased competition from Public Data Networks (Transpac etc.) ☐

- Increased competition from PTT as services suppliers (e.g. N.D.P.S.) ☐

- Viewdata and videotext applications ☐

- Other (please specify) .... ☐

Comments

Q.72. If your answer to Q. 70 was YES in either part, what are your strategic plans to offset the loss of business?

- to diversify into other areas ☐YES☐ ☐NO☐

- try to improve your own competitive edge ☐YES☐ ☐NO☐

- Other (please specify) .... ☐YES☐ ☐NO☐

Comments

Q.73. Do you expect to enhance your product range within the next 2 or 5 years by adding one or more of the following services to your repertoire:

Already

Yes within	2yrs	5yrs	No	Do
- addition of a network to your bureau centres	☐	☐	☐	☐
- use of Public Data Networks (PDNs) to offer added-value services	☐	☐	☐	☐
- offering Viewdata type services	☐	☐	☐	☐
- use of Euronet for supply of Database services	☐	☐	☐	☐
- offering Database services by some other means	☐	☐	☐	☐

Comments

INPUT

Q.74. Do you see opportunities for computer services in connection with 'Office of the Future' business communications?

If so, in connection with:

- User-site word-processing centres/networks — [YES] [NO]

- Electronic mail — [YES] [NO]

- Facsimile/telecopier — [YES] [NO]

- Image processing systems/CRT graphics — [YES] [NO]

- Multi-function equipment e.g. intelligent PABX — [YES] [NO]

Comments

INPUT

APPENDIX D: USER PANEL QUESTIONNAIRE

INPUT CONFIDENTIAL

EDP USER PANEL MANAGEMENT QUESTIONNAIRE 1980

| E | M | 8 | 0 | | | |

LEVEL (tick one)

| 1 | 2a | 2b | 3a | 3b |

Q. 1. What is your primary business?

Most important ISIC
Codes (up to 4)

_____

_____

Q. 2. In which Continents do you manufacture (or operate - for a bank, etc.)

CONTINENT	Manufacture (Operate)	Head Office (tick one only)
North America		
West Europe		
Japan/Asia/Mid. East		
S. or Cent. America		
Africa		
Australasia		

Q. 3. And in which is your Head Office ⟶

IF NO TICK IN EITHER West Europe BOX, GO TO Q. 6

Q. 4. OTHERWISE, in which W. European countries do you manufacture (operate):

COUNTRY	MANUF.	SALES OUTLETS OFFICE	SALES OUTLETS AGENCY		MANUF.	SALES OUTLETS OFFICE	SALES OUTLETS AGENCY
Belgium/Lux.				U.K./Eire			
Denmark				Scandinavia			
France				Spain/Portugal			
Germany (F.G.R.)				Switzerland			
Italy				Other			
Netherlands							

Q. 5. And in which do you have sales offices or only agents ⟶

Q. 6. Are you at: the group HQ ☐   European HQ ☐   Division/Subsidiary ☐

Q. 7. Who has board responsibility for:

Computers (EDP)	Communications
Financial Director	Financial Director
Management Services Dir.	Management Services Dir.

Other (please specify).......

Q. 8. We wish to direct a survey questionnaire related to the technical/operating aspects of Computers/Communications to the appropriate senior person in your group:
Whom should we contact?

Name: Title:

Address:

INPUT

Q. 9. May we use your name: YES NO

Q. 10. We also wish to interview the subsidiaries of selected companies with a view to assessing how the trend towards decentralisation of data processing is affecting the marketplace. Whom would you recommend we talked to in your group?

Name: Title:

Company:

Address:

Q. 11. May we continue by addressing further questions relating to the decentralisation of computers to you: YES   NO
If NO, Thank-you. GO TO END (NEXT PAGE)

Q. 12. How would you describe your company's policy on purchasing of computers and related services?

- Allow complete autonomy to operating divisions/subsidiaries   ☐

- Allow autonomy under certain restricted conditions   ☐

- Stipulate use of a central DP department   ☐

- Other (specify) _____   ☐

Comment (on choice)

Q. 13. In practice who are the <u>major</u> decision makers in the choice of equipment and services?

Purchaser (tick one per column)	HARDWARE		SOFTWARE		BUREAU SERVICES	
	H.O. Site	Remote Sites	H.O.	Remote	H.O.	Remote
DP Director/Manager						
Divisional Managers						
Accountants/Administrators						
End-users e.g. Engineers						
Other (specify)						

Comment

INPUT

Q. 14. Which of the following best describes your group's attitude to the use of Computing Services companies as suppliers for services which you <u>may</u> have got used to having provided by the well-known Manufacturers (IBM etc.)

PRODUCT/SERVICE	HARDWARE		SOFTWARE		BUREAU SERVICES	
COMMENT (tick 1 per col.) SITE	Central	Remote	Central	Remote	Central	Remote
The natural choice every time						
We do (and will continue to) use them						
Completely neutral, "best man wins"						
(:asionally used, but increasingly						
An unlikely choice						
Definitely second-best						

· Comments

Q. 15. In which direction is your group heading with regard to certain current trends in the computer industry:

Control becomes:	More Central/Integrated	More Local/Autonomous
Use of outside Computing Services		
Office Automation		
Multi-Function Telecommunications		
Use of Personal Computers		

Comments

Q. 16. Do you envisage any major change in your group's application usage of data processing in the next 2 years.   YES   NO
If YES, what is it?

Q. 17. Do you have any major reservation about the way the computer industry appears to be heading i.e., towards dispersed intelligence? If YES, what is it   YES   NO

►END   We've reached the end of the interview. Thank you for your cooperation; we will be sending out a summary analysis of the questionnaires to all who took part in the survey, hopefully between 500 and 1,000 companies in 6 European countries. This will be available in the autumn.

Would you be interested in learning more about INPUT's services   YES   NO

May we be on your mailing list for annual reports, brochures   YES   NO

Name of Publicity Contact:

Address:

SPACE FOR GROUP STRUCTURE DIAGRAM ON OTHER SIDE

INPUT

EDP USER QUESTIONNAIRE

A. GENERAL INFORMATION

1. Primary business _____

2. Industry code(s) - ISIC (If known)_____ (2)

3. Total number of employees_____ (3)

4. Number of EDP employees_____(4) Company size (£ million): _____(5)

5. Annual sales (£ million)_____ (6) or 6. Assets (£ million):_____(7)

7. If size is measured by some other scale, please indicate_____ (8)

   Are the above statistics for: 8. ☐ Division/subsidiary? or 9. ☐ Total corporation? (9)

10. If division/subsidiary, what is corporate size? (£ million): _____ (10)

B. EDP PLANS

11. What are your primary objectives and priorities for the next three years? (Rank the top five in order of importance: 1 through 5, 1 being most important, 2 second, etc., for each of the three years.)

CATEGORY (11-37)	PRIORITY RANKING 1980	1981	1982	CATEGORY (CONT.) (38-61)	PRIORITY RANKING 1980	1981	1982
Convert applications	(11)	(12)	(13)	Centralize EDP control	(38)	(39)	(40)
Develop new batch applications	(14)	(15)	(16)	Decentralize EDP control	(41)	(42)	(43)
Install on-line applications	(17)	(18)	(19)	Develop long range EDP plan	(44)	(45)	(46)
Design/install DBMS	(20)	(21)	(22)	Meet development/conversion schedules	(47)	(48)	(49)
Design/install DDP Network	(23)	(24)	(25)	Improve EDP personnel productivity	(50)	(51)	(52)
Install new mainframe	(26)	(27)	(28)	Integrate office automation with EDP	(53)	(54)	(55)
Install minicomputers	(29)	(30)	(31)	Other (Please specify and indicate priority)	(56)	(57)	(58)
Install new peripherals	(32)	(33)	(34)		(59)	(60)	(61)
Change operating systems	(35)	(36)	(37)				

12. Has your budget been affected by the possibilities of recession?   (1) Yes_____(2) No_____(62)

13. If yes, by what percent _____%(63) and in what areas?_____(64)

C. EDP PROBLEMS

14. What are the most significant EDP problems you face in 1980. (Rank the top five in order of priority: 1 through 5, 1 being most urgent, 2 second, etc.)

CATEGORY (65-78)	Priority Ranking 1980	CATEGORY (CONT.)	Priority Ranking 1980
Personnel recruiting	(65)	Excessive applications development time	(66)
Personnel training	(67)	Inadequate EDP funding (budgets)	(68)
Lack of general management under-standing	(69)	Need to improve data communications facilities	(70)
Lack of user involvement in system/ application development	(71)	Unsatisfactory hardware maintenance	(72)
Inadequate systems software	(73)	Other (please specify and indicate priority)	(74)
Need for improvement in operations	(75)		(76)
Need for better planning and control	(77)		(78)

INPUT

D. EDP APPLICATIONS

15. What new applications will you be developing (or purchasing) during 1980? What is their mode of operation and relative importance in your total development effort? (Rank new applications in order of importance: 1 being most important, 2 second, etc. Please also indicate (tick) application areas already implemented under 'Existing'.)

APPLICATIONS AREAS (91-122)	New Development Priority Ranking	Primary Mode of Operation (tick one)		Source (tick one)		Existing (tick)
		Central Site (1)	Remote Site (2)	In-house (1) Development	Outside Purchase (2)	
Industrial/manufacturing control systems	_____ (79)	_____	_____ (80)	_____	_____ (81)	_____ (82)
Engineering/design/R&D	_____ (83)	_____	_____ (84)	_____	_____ (85)	_____ (86)
Order entry/billing/purchasing/point of sale	_____ (87)	_____	_____ (88)	_____	_____ (89)	_____ (90)
Production/inventory control	_____ (91)	_____	_____ (92)	_____	_____ (93)	_____ (94)
Distribution/transport	_____ (95)	_____	_____ (96)	_____	_____ (97)	_____ (98)
Marketing/sales	_____ (99)	_____	_____ (100)	_____	_____ (101)	_____ (102)
Personnel/payroll	_____ (103)	_____	_____ (104)	_____	_____ (105)	_____ (106)
Accounting/finance	_____ (107)	_____	_____ (108)	_____	_____ (109)	_____ (110)
Other (please specify)	_____ (111)	_____	_____ (112)	_____	_____ (113)	_____ (114)
_____	_____ (115)	_____	_____ (116)	_____	_____ (117)	_____ (118)
_____	_____ (119)	_____	_____ (120)	_____	_____ (121)	_____ (122)

16. What research or information would be most helpful to your development efforts? Your answer here aids INPUT's own product development.

_____

_____ (123)

E. EDP BUDGET

17. What is your total EDP budget for 1980? (£000)_____ (124) 18. Does your budget include data communications, software products, training, supplies, etc? (1) Yes_____(2) No_____(125) 19. If no, what item(s) are not included in your budget? _____ (126)

20. Has your budget been affected by the continuation of inflation? (1) Yes_____(2) No_____(127)

21. If yes, by what percent_____% (128) and in what areas?_____ (129)

22. Please categorize how your 1980 EDP budget will be spent and how this breaks down between central and remote sites. Also indicate how much you expect specific categories to increase or decrease in 1981.

BUDGET CATEGORIES (130-169)	1980 Total Budget			Anticipated Percent of Change in 1981	
	(£000)	Percent Central	Percent Remote	Increase (1)	Decrease (2)
Personnel (including recruitment, training, etc.)	£_____ (130)	_____%(131)	_____%(132)	_____%	_____%(133)
Mainframe processors	£_____ (134)	_____%(135)	_____%(136)	_____%	_____%(137)
Peripherals	£_____ (138)	_____%(139)	_____%(140)	_____%	_____%(141)
Minicomputers	£_____ (142)	_____%(143)	_____%(144)	_____%	_____%(145)
Terminals	£_____ (146)	_____%(147)	_____%(148)	_____%	_____%(149)
Communications hardware and software	£_____ (150)	_____%(151)	_____%(152)	_____%	_____%(153)
Software (purchase or lease)	£_____ (154)	_____%(155)	_____%(156)	_____%	_____%(157)
Vendor maintenance services (hardware and software)	£_____ (158)	_____%(159)	_____%(160)	_____%	_____%(161)
Processing services (outside)	£_____ (162)	_____%(163)	_____%(164)	_____%	_____%(165)
Supplies and other _____	£_____ (166)	_____%(167)	_____%(168)	_____%	_____%(169)

23. Are any of the expenditures in your budget for turnkey systems which combine hardware and applications software on a "ready-to-use" basis? (1) Yes____(2)No____ (170)If yes, how much will be used for such systems? £_____ (171)

INPUT

F. EDP HARDWARE

CATALOG NO. | E | U | 8 | 0 | | | |

24. Please indicate the number of general-purpose systems installed and on order for central site and remote sites.

				NO. LOCATED:	
VENDOR	SERIES/MODEL	NO. INSTALLED	NO. ON ORDER	AT HQ.	AT REMOTE SITES
IBM	303X; 370/158-168	_____ (172)	_____ (173)	_____ (174)	_____ (175)
	4300	_____ (176)	_____ (177)	_____ (178)	_____ (179)
	8100, 3790	_____ (180)	_____ (181)	_____ (182)	_____ (183)
	Other 370 and 360	_____ (184)	_____ (185)	_____ (186)	_____ (187)
	System 3, 32, 34, 38	_____ (188)	_____ (189)	_____ (190)	_____ (191)
	Other, e.g., Series 1	_____ (192)	_____ (193)	_____ (194)	_____ (195)

If other than IBM, please indicate:

				NO. LOCATED:	
OTHER VENDOR NAME	MODEL	NO. INSTALLED	NO. ON ORDER	AT HQ.	AT REMOTE SITES
_____ (196)	(197)	_____ (198)	_____ (199)	_____ (200)	_____ (201)
_____ (202)	(203)	_____ (204)	_____ (205)	_____ (206)	_____ (207)
_____ (208)	(209)	_____ (210)	_____ (211)	_____ (212)	_____ (213)

25. Please indicate the number of devices installed or planned.

HAVE YOU INSTALLED:	NO PLANS	NONE, BUT PLANNED	NUMBER INSTALLED	PROJECTED GROWTH 1980-1981
A) Minicomputers or small business computers	_____ (214)	_____ (215)	_____ (216)	_____ % (217)
B) Microcomputers or personal computers	_____ (218)	_____ (219)	_____ (220)	_____ % (221)
C) Intelligent terminals	_____ (222)	_____ (223)	_____ (224)	_____ % (225)
D) Non-intelligent terminals	_____ (226)	_____ (227)	_____ (228)	_____ % (229)

How does the EDP group plan/control the acquisition and use of equipment in categories:

25. A _____ (230)

25. B _____ (231)

G. OUTSIDE COMPUTER SERVICES AND SOFTWARE EXPENDITURES

26. Does your company purchase outside computer services that are not under the control of the EDP organization?

(1) Yes_____ (2) No_____ (232)

27. If yes, what were the approximate annual expenditures for these services in 1979? £_____(233)

28. What percent increase or decrease do you expect between 1979-1980?_____%(234) 1980-1981_____% (235)

29. Who purchases these outside services?

Finance	_____% (236)	Operations/manufacturing	_____% (240)
Corporate	_____% (237)	Marketing/sales	_____% (241)
Personnel	_____% (238)	Other (please specify)	
R&D/engineering	_____% (239)	_____	_____% (242)

H. SATISFACTION WITH SERVICES AND SOFTWARE SUPPLIERS; AND FUTURE USE

30. Please indicate your level of satisfaction (High, Medium, Low) with different types of service/software, and also give the likely increase/decrease in usage over the next two years.

SERVICE/SYSTEM	SATISFACTION (tick one)				PROJECTED CHANGE 1980-1982	
	DON'T USE (1)	HIGH (2)	MEDIUM (3)	LOW (4)	GROWTH (PERCENT)	DECLINE (PERCENT)
Bureau—						
RCS - Interactive	_____ (243)	_____ (244)	_____ (245)	_____ (246)	_____ % (247)	_____ % (248)
RCS - Remote batch	_____ (249)	_____ (250)	_____ (251)	_____ (252)	_____ % (253)	_____ % (254)
Batch (incl. COM, OCR)	_____ (255)	_____ (256)	_____ (257)	_____ (258)	_____ % (259)	_____ % (260)
Facilities management	_____ (261)	_____ (262)	_____ (263)	_____ (264)	_____ % (265)	_____ % (266)
Turnkey systems	_____ (267)	_____ (268)	_____ (269)	_____ (270)	_____ % (271)	_____ % (272)
Hardware maintenance	_____ (273)	_____ (274)	_____ (275)	_____ (276)	_____ % (277)	_____ % (278)

- 256 -

© 1980 by INPUT, LTD. London. Reproduction Prohibited.

INPUT