U.S. PROFESSIONAL SERVICES MARKETS

1985 - 1990

INPUT

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.

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

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 planning services firm. Clients include over 100 of the world's largest and most technically advanced companies.

Offices

NORTH AMERICA

Headquarters
1943 Landings Drive
Mountain View, CA 94043
(415) 960-3990
Telex 171407

New York
Parsippany Place Corp. Center
Suite 201
959 Route 46 East
Parsippany, NJ 07054
(201) 299-6999
Telex 134630

Washington, D.C.
11820 Parklawn Drive
Suite 201
Rockville, MD 20852
(301) 231-7350

EUROPE

United Kingdom
INPUT
41 Dover Street
London W1X 3RB
England
01-493-9335
Telex 27113

Italy
Nomos Sistema SRL
20127 Milano
Via Soperga 36
Italy
Milan 284-2850
Telex 321137

Sweden
Athena Konsult AB
Box 22232
S-104 22 Stockholm
Sweden
08-542025
Telex 17041

ASIA

Japan
ODS Corporation
Dai-ni Kuyo Bldg.
5-10-2, Minami-Aoyama
Minato-ku,
Tokyo 107
Japan
(03) 400-7090
Telex 26487

INPUT®
Planning Services For Management

U.S. PROFESSIONAL SERVICES MARKETS
1985-1990

U.S. PROFESSIONAL SERVICES MARKET
1985-1990

ABSTRACT

This annual survey provides analysis and five-year forecasts of U.S. professional services markets for the period 1985 to 1990.

The forecast data base in this report includes market size and growth rates for professional services software development, consulting, education and training, and facilities management.

The five-year forecasts, which include 1984 as the base year, cover 14 different industry markets for professional services. Market forecasts for two professional services segments (commercial and federal government) are also included.

This report identifies the factors behind the demand for these services. In addition, the fastest growing and largest markets are highlighted and analyzed, as are key issues, trends, and developments. Business and market strategy recommendations are provided.

This report contains 100 pages, including 44 exhibits.

M-SA5-2-297

U.S. PROFESSIONAL SERVICES MARKETS
1985-1990

CONTENTS

U.S. PROFESSIONAL SERVICES MARKETS
1985-1990

EXHIBITS

1 INTRODUCTION

I INTRODUCTION

- This report is produced as one of a series of reports in INPUT's Market Analysis and Planning Service (MAPS) for the Information Services Industry.

A. PURPOSE OF THIS REPORT

- This report reviews and analyzes four important modes of the professional services market. These modes are software development, consulting, education/training, and professional services facilities management.

- This report is designed to assist vendors in:

  - Identifying new markets and product opportunities.

  - Assessing product and marketing risk exposure.

  - Allocating R&D and operations resources.

  - Obtaining insights into market-related developments that impact profitability.

- Market analysis and forecasts of other information systems modes may be found in the following companion reports:

- Software products are examined in the INPUT volume entitled U.S. Software Product Markets, 1985-1990.

- Processing services and turnkey systems are analyzed in two other volumes entitled U.S. Processing Services Markets, 1985-1990 and U.S. Turnkey Systems Markets, 1985-1990.

B. SCOPE AND ORGANIZATION

- This report focuses on U.S. markets and analyzes user expenditures that are noncaptive (i.e., dollars spent on services and products provided by organizations outside of the buyer's own corporate structure).

- This report is organized as follows:

  - Chapter II is an Executive Summary provided in presentation format, complete with script.

  - Chapter III forecasts and analyzes professional services' commercial and federal government segments in terms of opportunities and challenges, issues, and events. Market sizes and growth rates for the 1985-1990 timeframe for 14 different major industry market segments are provided.

  - Chapter IV highlights major driving forces, issues, and trends in the professional services market.

  - Appendix A contains a set of definitions relevant to this report.

- Appendix B contains a complete data base of the market sizes and growth rates discussed in this report.

- Appendix C lists other INPUT reports that are related to the software markets discussed in this report.

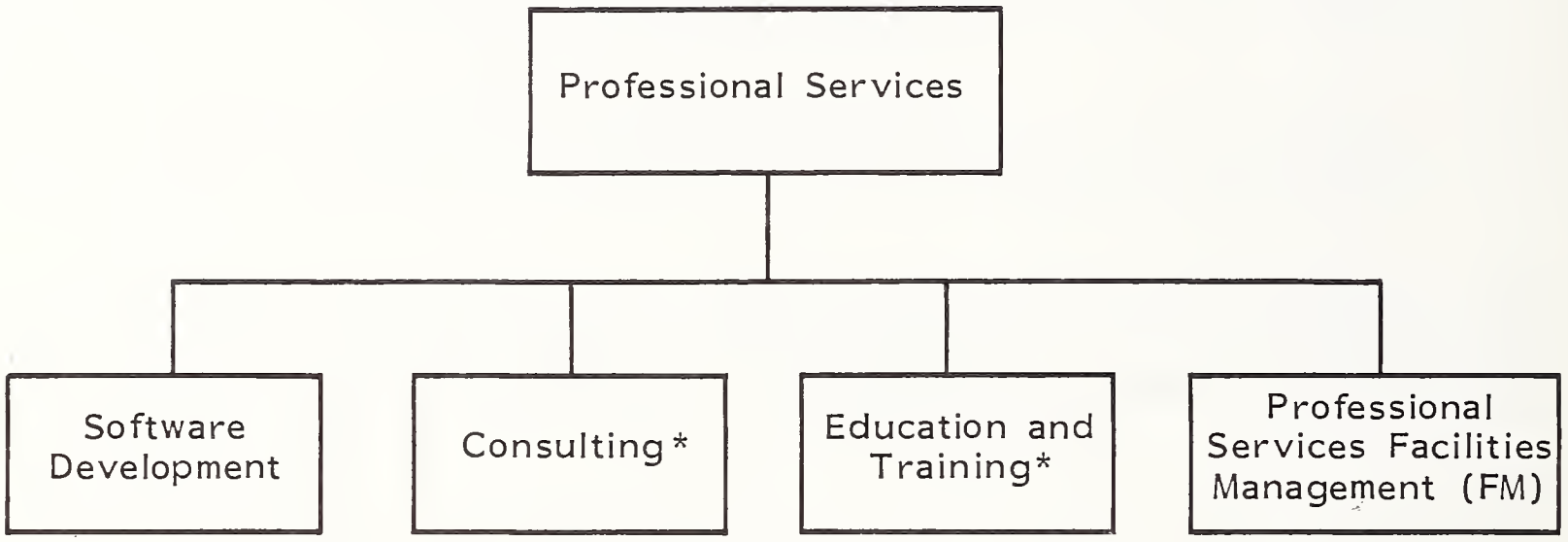
- Exhibit I-1 on the following page profiles the classification scheme used by INPUT to structure the professional services marketplace.

- The term AAGR used in the text of this report is an abbreviation for Average Annual Growth Rate.

- INPUT welcomes comments and suggestions from its clients concerning the content and format of this report.

EXHIBIT I-1

PROFESSIONAL SERVICES MARKET STRUCTURE



- User Requirements Definition
- Systems Design
- Data Base Design
- Programming
- Testing
- System Modification
- Documentation
- Other

- Software Installation Planning
- Information Systems Audit
- Security Audit
- Personnel Planning
- Policies and Procedures Development (Other than related to Software Development)
- Other

- Computer Operations Training
- Management Training
- Analyst/Programmer Training
- Systems Usage Training
- Video Instruction (Related to Computer Topics)
- Other

- FM Using Customer-Owned Hardware

* All related to computer systems, topics or issues

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

- This chapter summarizes key forecasts, issues, and trends that are discussed in more detail in the remainder of the report.

- This Executive Summary is prepared in a presentation format; i.e., the exhibits are set in larger type for ease of use with an overhead projector and the text is in script form. The script for each exhibit is contained on the left-hand page opposite the exhibit.

A. PROFESSIONAL SERVICES TO NEARLY TRIPLE

- The professional services market will grow from a 1985 base of $10.5 billion to $26.3 billion in 1990, with an AAGR of 20%. Reasons for the favorable outlook include:

  - The shortage of skilled information systems (IS) personnel that makes professional services, especially software development and consulting, a cost-effective alternative to automation activities that previously were solely done internally. Occurring within corporations is user interest in more powerful and complex systems which tax internal IS resources and expertise. This, coupled with the increased complexity of managing an information systems department and linking IS plans to the overall corporate plans, especially stimulates the consulting professional services mode.

  - Increased credibility of professional services vendors, some of whom have been in the industry for over a decade and have satisfactorily developed highly complex applications for Blue Chip clients.

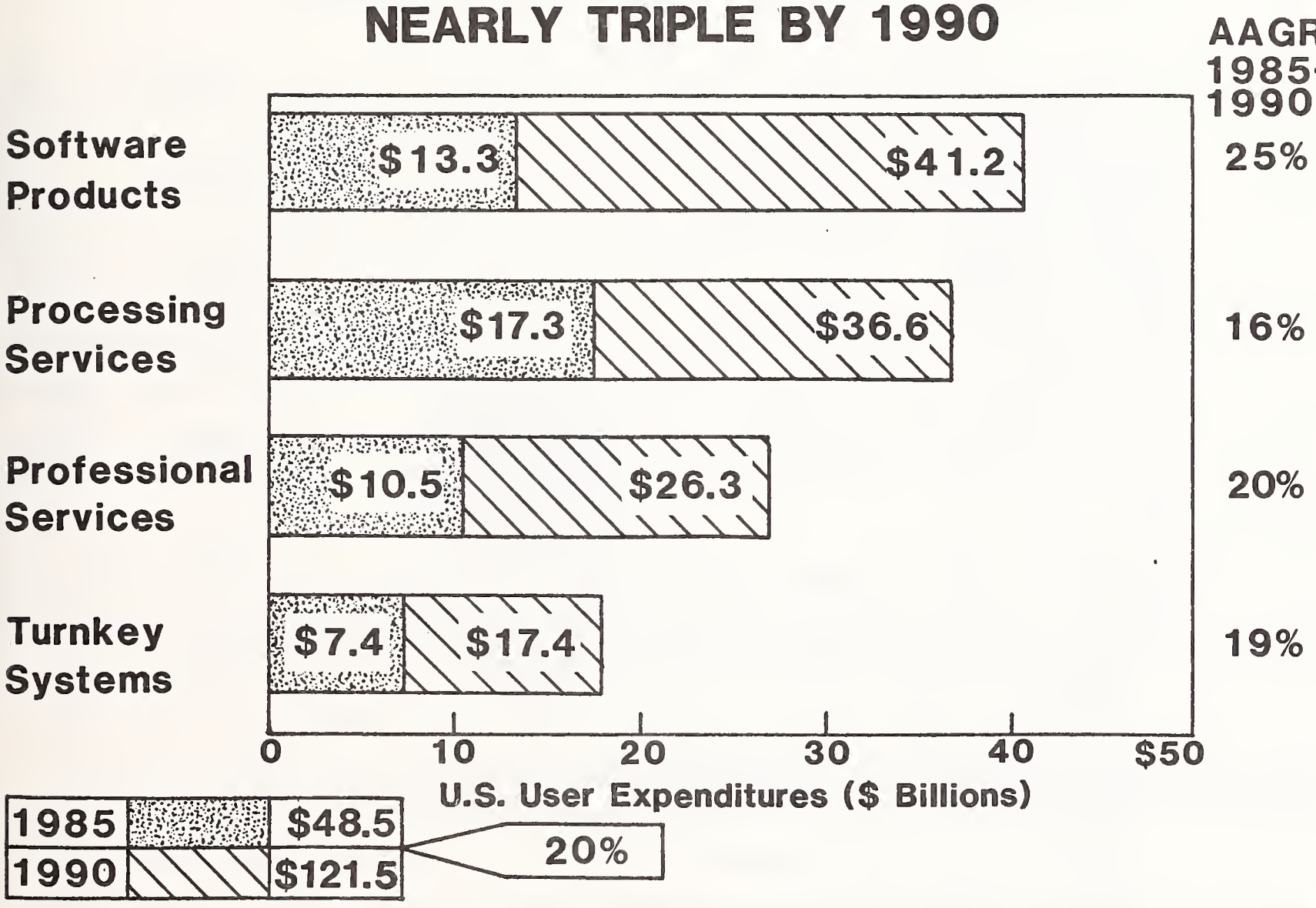
  - The growing number of corporate microcomputer users which increases the need for improved education and training of all types. Some of this training will come from professional services vendors and some from more sophisticated technological training procedures such as computer-based training on CD-ROM or videodisks.

  - The client pressure on accounting firms to provide consulting for integrated total business solutions of software, hardware, and communications.

  - Strong federal government pressure to maintain existing software with the help of professional services firms rather than acquire new systems.

INPUT®

PROFESSIONAL SERVICES TO NEARLY TRIPLE BY 1990



B. FEDERAL GOVERNMENT IS ALMOST ONE-HALF COMMERCIAL MARKET IN 1985

- The professional services market is segmented by INPUT into commercial and federal government categories since in each market there are major differences in buying characteristics, terms and conditions, and implementation demands.

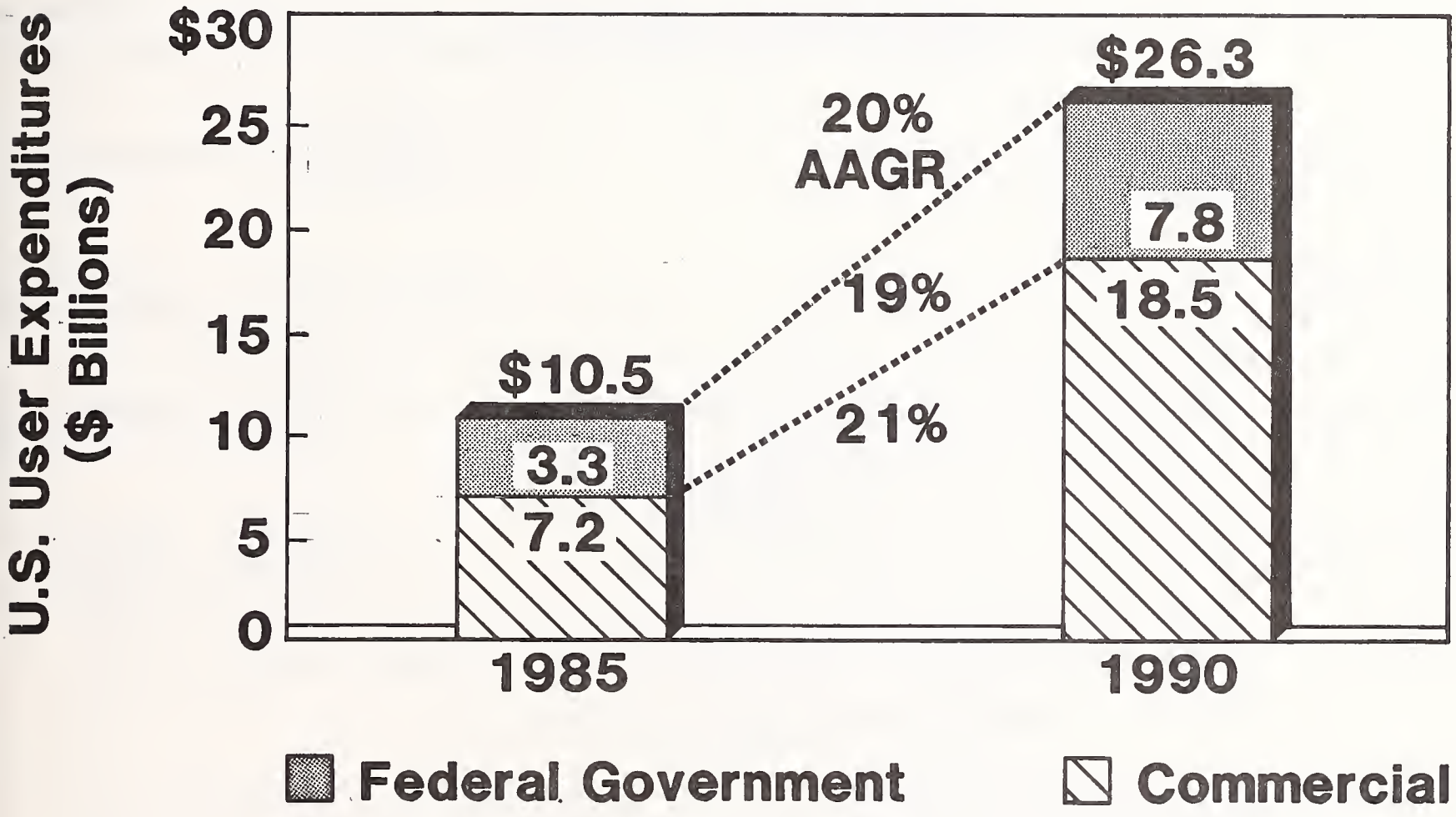
- The commercial professional services market will continue to provide the most revenue dollars to the professional services market--$7.2 billion in 1985 and $18.5 billion in 1990 with a 21% AAGR. In 1990, the commercial market will be almost double the entire professional services market in 1985. Factors impacting the commercial professional services segment include: the trend toward fixed price contracts as opposed to cost plus contracts as well as increased competition such as favoritism being shown to "Big Eight" accounting firms by their clients for total automated solutions that incorporate the accounting function.

- In 1990, the federal government segment will double in size ($3.3 billion in 1985 and $7.8 billion in 1990). It is now and will continue to be the largest industry-specific segment of the professional services marketplace. Stimulating this federal market are: (1) the trend in the federal government toward adopting management techniques and philosophies of major corporations. Coupled with this is the overall pressure to reduce the federal budget deficit, which in turn puts a premium on cost-effective methods of accomplishing tasks; and (2) as the political process continues to be automated, there is an increasing need for education and training of new computer users as well as for consultants to help with integrated solutions.

- In spite of dollar differences, both segments will continue to grow in parallel with similar growth rates (commercial AAGR 21%, federal AAGR 19%).

INPUT®

FEDERAL GOVERNMENT IS ALMOST ONE-HALF COMMERCIAL MARKET IN 1985



C. SOFTWARE DEVELOPMENT TO REMAIN STRONG

- Software development will be the largest professional services mode both in 1985 and 1990 with about 58% of total user expenditures. In 1990, the user expenditures will more than double what they are in 1985. Contributing to the growth in this mode is the growth of the mainframe/mini hardware installed base--more hardware means increased capacity for software. By 1990, INPUT expects there to be 3.2 million systems installed, up from 1.5 million in 1985. In addition, growth will be stimulated by new capabilities incorporated in software development tools. These tools will increase the productivity of professional services programmers, thus enhancing the attractiveness of professional services offerings.

- The consulting mode will account for 16% of the total professional services market in both 1985 and 1990. The primary driving forces in this market are technological changes that stimulate the desire for distributed systems and overall system connectivity and compatibility.

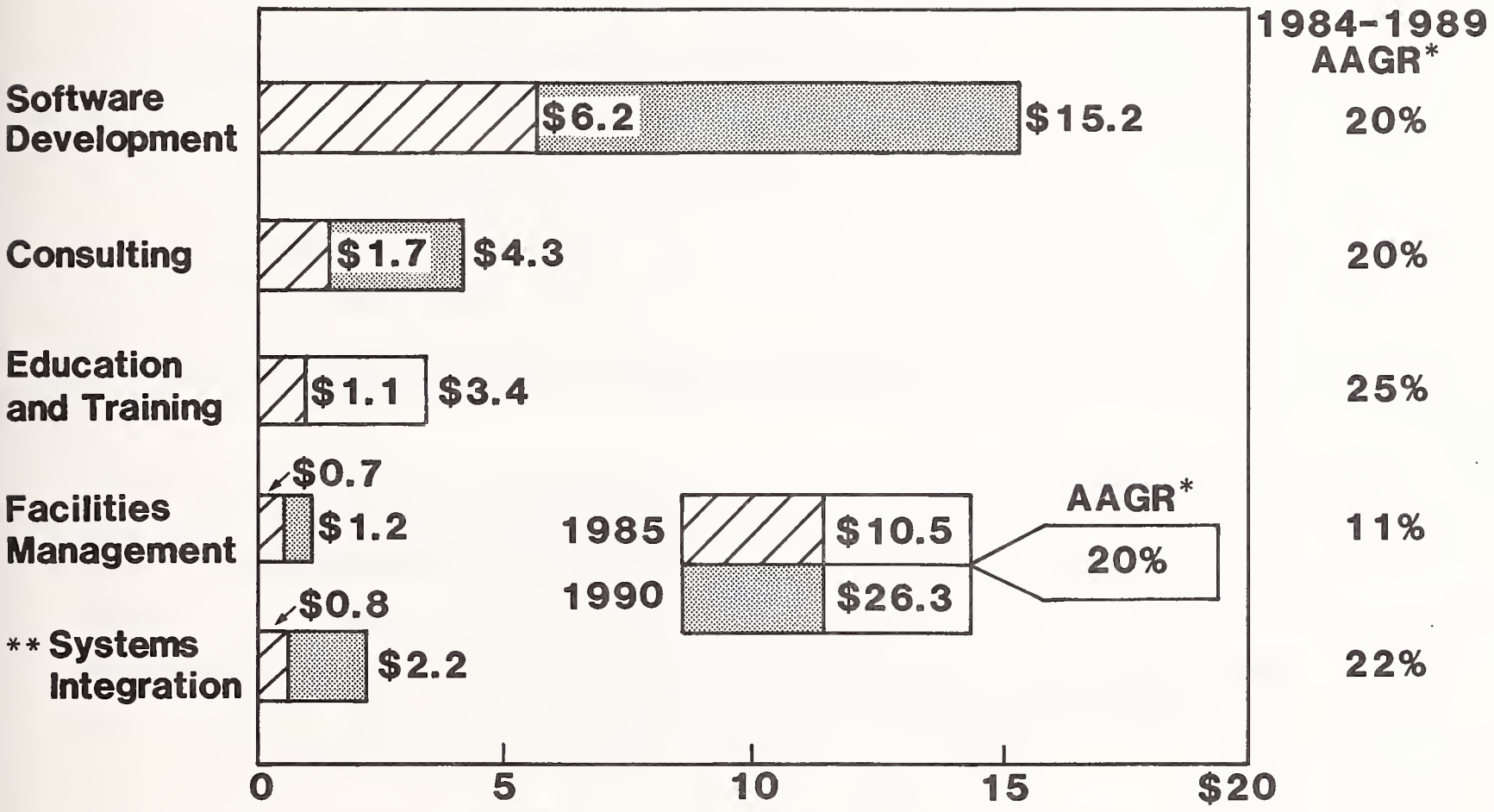
- Education and training will have the highest five-year AAGR (25%). Besides the opportunities of training end users as to microcomputer usage, a strong need exists for training analysts and programmers on newly evolving, complex software development tools, hardware, and communications.

- The facilities management mode is now and will continue to be the smallest professional services market. Negatively impacting this market's growth will be the fact that as vendors become more skilled at financing their own hardware, clients will tend to favor the vendor-owned hardware FM approach, which INPUT defines as processing services FM.

- The systems integration market in the federal government segment, with a 22% AAGR, will be two-thirds the size in 1990 of the overall federal government segment in 1985. Stimulating this market is rapid technological change which leads to more complex systems.

INPUT®

SOFTWARE DEVELOPMENT TO REMAIN STRONG



*Average Annual Growth Rate **Federal Government Sector Only

D. CONCLUSIONS AND RECOMMENDATIONS

- The trend toward becoming "national" among professional services vendors continues. Vendors such as Computer Task Group, one of the first to go national, are being rewarded by an increasing number of larger contracts.

- Vendors that specialize in selected vertical markets are continuing to succeed. An example of this is Auxco, which specializes in providing professional services to the telecommunications market.

- Systems integration is an increasing market opportunity. Strategic partnering of professional services vendors with vendors who have other areas of computer expertise can help create a powerful broadbased offering to federal government as well as commercial units.

- Software product vendors need to have some type of professional services solution whereby they will increase the potential revenue from software product sales as well as increase the likelihood of future sales. They should either offer services themselves or else seek alliances with established professional services vendors.

- Vendors from all three delivery modes other than professional services (processing, turnkey, and software products) should increase their product offerings to include exported education and training of their products as add-on services.

INPUT®

CONCLUSIONS AND RECOMMENDATIONS

- **Benefits in "Going National"**
- **Vertical Specialization a Continuing Opportunity**
- **Consider Strategic Partnering**
- **Software Vendors - Develop a Professional Services Solution**
- **All Non-Professional Services Vendors Provide Education and Training**

III MARKET ANALYSIS AND COMPETITIVE STRUCTURE OF THE INDUSTRY

III MARKET ANALYSIS AND COMPETITIVE STRUCTURE OF THE INDUSTRY

A. PROFESSIONAL SERVICES MARKET OVERVIEW

- The professional services market will grow from a 1985 base of $10.5 billion to $26.3 billion in 1990 with an AAGR of 20% (see Exhibit III-1).

- Reasons for the favorable outlook in professional services overall are discussed in detail in Chapter IV and include:

  - The shortage of skilled information systems (IS) personnel, making professional services a cost-effective alternative to in-house development.

  - The pressure on large as well as local accounting firms to be able to provide their accounting clients with consulting for integrated total business solutions.

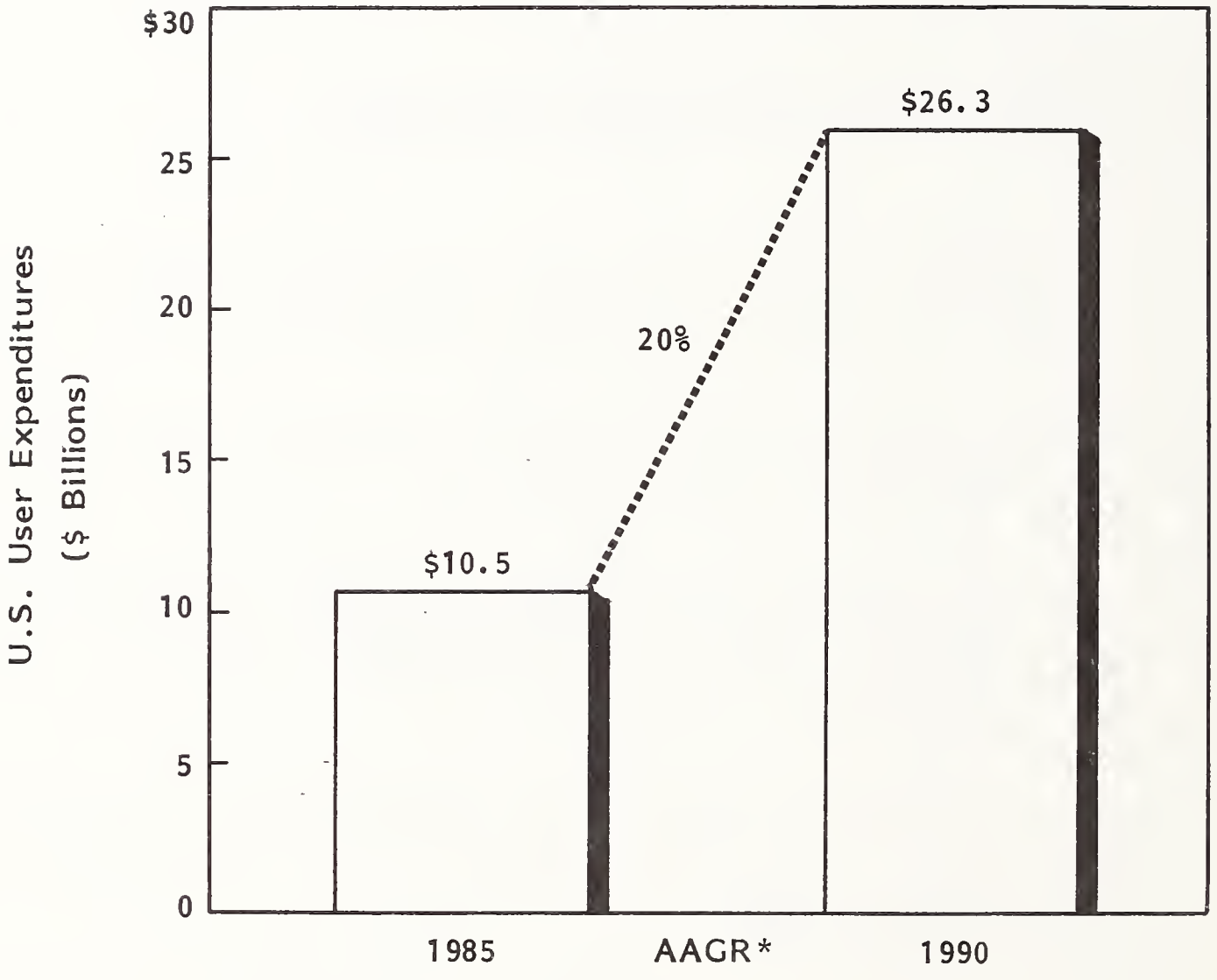
  - Strong federal government pressure to maintain existing software.

  - Increased vendor credibility.

  - User interest in more powerful systems.

EXHIBIT III-1

PROFESSIONAL SERVICES MARKET, 1985-1990



*Average Annual Growth Rate

- Increased complexity of managing an information systems (IS) department and linking IS plans to the overall corporate plans.

- The increasing number of corporate users who are now or will be using a microcomputer; thus, the need for increased education and training.

- Exhibits III-2, III-3, and III-4 highlight the net earnings and revenue of the public professional services companies. Of all the public information services companies (software products, professional services, turnkey, and processing), the professional services segment is the one that has maintained the steadiest revenue trend in the past several years (generally a 14-16% average increase over the prior 12-month period). This consistency is primarily due to the nature of the professional services business whereby project revenue often flows in over the life of the project, thus helping to stabilize overall revenue on a period-to-period basis.

- One aspect of the competitive environment structure is illustrated by Exhibit III-5, which lists the top 10 professional services vendors by 1984 revenue. The top 10 vendors account for only 20% of the overall professional services market, as opposed to the top 10 software product vendors who account for 37% of vendor revenue. One reason for this is that economies of scale, although desired by professional services vendors, are not as essential to the viability of the business. Consequently, smaller professional services companies can participate and make an adequate return on investment.

- The professional services market is segmented by INPUT into federal and commercial categories. These segments are separately discussed in depth throughout this report since they differ in:

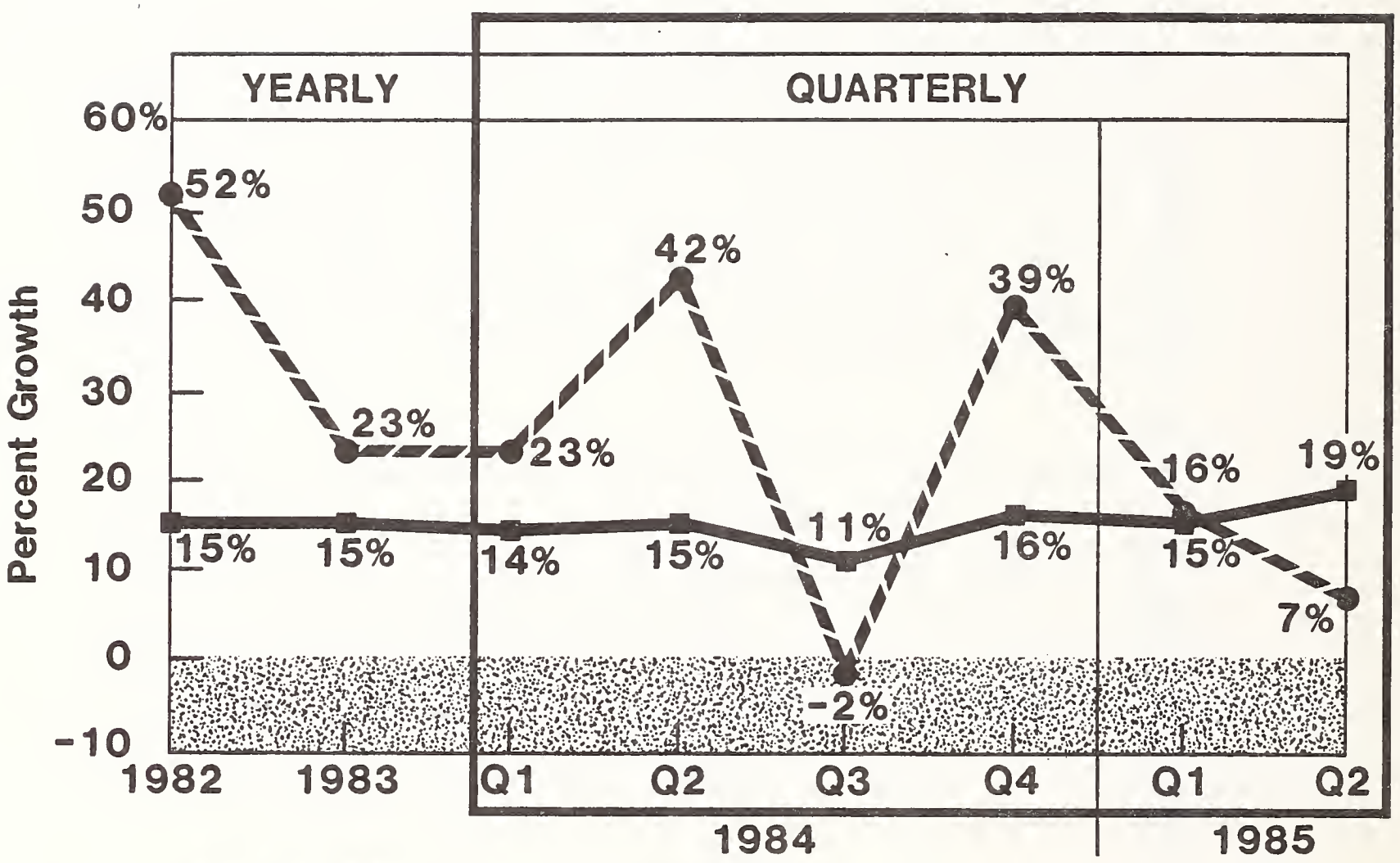
  - Major buying characteristics.

  - Terms and conditions.

  - Implementation demands.

EXHIBIT III-2

PUBLIC PROFESSIONAL SERVICES VENDORS



Last Update: 10-01-85

EXHIBIT III-3

NET INCOME OF PUBLIC PROFESSIONAL SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	NET AFTER TAX INCOME ($ Thousands) 1983 Q4	1983 TOTAL	1984 Q1	1984 Q2	1984 Q3	1984 Q4	1984 TOTAL	1985 Q1	1985 Q2	1985 Q3	GROWTH (Percent) 1984/1983 %(+/-)	LAST 3 ROLLING QUARTERS	LAST 2 ROLLING QUARTRS
202 DATA SYS	10-31	195	452	76	20	14	2	112	5	3	52	-75	-45	62
ACT	12-31	50	396	-94	179	23	59	167	83	135	191	-58	279	61
ADV.SYSTEMS	10-31	1084	4809	989	802	335	1064	3190	1166	1204	2489	-34	129	225
AGS COMPUTER	12-31	2196	5785	1559	1307	1778	1195	5839	1925	1734	1854	1	19	16
AM. MGT. SYS	12-31	718	2012	449	643	812	937	2841	1269	1658	1031	41	108	85
ANLYSTS INT.	06-30	-213	-797	-310	-302	-149	78	-683	454	546	102	14	245	244
AUXTON COMP	12-31	425	1732	470	360	490	241	1561	340	461	620	-10	8	27
BDM INTERN'L	12-31	1964	6346	1747	1921	2051	2354	8073	2130	2512	2600	27	27	29
BBN	06-30	1303	4260	1656	1879	1837	1978	7350	2190	2446	2349	73	30	29
C.A.C.I.	06-30	1287	1942	-777	1461	564	658	1906	770	553	297	-2	30	-58
COMP DATA	06-30	771	2590	860	509	824	817	3010	723	582	638	16	-11	-8
COMP HORIZ	02-28	626	1895	720	513	324	539	2096	643	666	500	11	16	39
CSC	04-01	4225	15826	7081	4637	3446	12403	27567	7232	5199	4928	74	14	25
COMP TASK GR	12-31	379	1454	337	511	538	714	2100	773	893	1096	44	99	90
DATA ARCHTS	11-30	-1282	-1177	-319	322	230	367	600	306	364	291	151	312	19
DYNAMICS RES	12-25	792	1007	-16	64	483	809	1340	437	252	-1049	33	-168	-246
INTERMETRICS	02-28	106	319	192	119	147	166	624	155	183	-2615	96	-597	-1014
KEANE	12-31	10	232	91	145	169	214	619	233	191	141	167	40	6
LOGICON	03-31	1564	5363	1680	1843	2071	2123	7717	2210	2378	2511	44	27	25
PRC	06-30	2885	11263	2304	2661	650	1625	7240	1398	2333	2136	-36	4	35
RAND INFO.	02-28	2	-21	48	-47	-81	-892	-972	-236	-307	-270 *	-4529	-579	-140
SYSCON CORP	11-30	1102	3495	895	1058	924	1188	4065	986	1103	1149	16	13	14
SYST.& COMP.	09-30	1133	7498	1800	1589	-81	814	4122	627	97	-1082	-45	-111	-165
TECHNALYSIS	12-31	272	928	224	250	271	276	1021	257	289	311	10	15	15
TOTALS		21594	77609	21662	22444	17670	29729	91505	26076	25475	20540	593098	17	15

* INPUT ESTIMATE

24 COMPANIES

LAST UPDATED: 12-15-85

REVENUES OF PUBLIC PROFESSIONAL SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE ($ Thousands) 1983 Q4	1983 TOTAL	1984 Q1	1984 Q2	1984 Q3	1984 Q4	1984 TOTAL	1985 Q1	1985 Q2	1985 Q3	GROWTH (Percent) 1984/1983 %(+/-)	LAST 3 ROLLING QUARTRS	LAST 2 ROLLING QUARTRS
202 DATA SYS	10-31	1669	3648	627	491	553	503	2174	489	562	487	-40	-8	7
ACT	12-31	2659	11185	2679	3235	2741	3227	11882	3036	3526	4050	6	23	4
ADV.SYSTEMS	10-31	10003	39942	9274	9486	11967	10557	41284	11529	11254	18175	3	33	6
AGS COMPUTER	12-31	46584	145911	53029	52944	56147	61960	224080	65742	70327	67617	54	26	14
AM. MGT. SYS	12-31	20747	79196	20998	23023	25374	27611	97006	26647	27260	26750	22	16	9
ANLYSTS INT.	06-30	7304	25600	8152	8754	9420	10368	36694	11954	12549	11792	43	38	18
AUXTON COMP	12-31	5659	19515	5873	5635	6251	6146	23905	6453	7182	7100	22	17	12
BDM INTERN'L	12-31	41681	151145	41607	45730	48838	55225	191400	50764	62021	63727	27	30	15
BBN	06-30	25150	94470	27459	30031	29437	31875	118802	35294	41614	39211	26	34	17
C.A.C.I.	06-30	30249	115344	26070	26736	24383	24622	101811	24961	23990	22818	-12	-7	-6
COMP DATA	06-30	13039	48200	14086	14966	15028	14080	58160	12666	13097	13828	21	-10	-6
COMP HORIZ	02-28	9140	30679	10164	10435	10588	11636	42823	11973	12507	12605	40	19	9
CSC	04-01	168525	718880	185028	173895	172027	178684	709634	198887	187565	209286	-1	12	4
COMP TASK GR	12-31	16136	53885	17377	18629	21876	24741	82623	26035	28166	29565	53	45	20
DATA ARCHTS	11-30	5420	23545	3527	4586	4398	3026	15537	4264	5347	5415	-34	20	8
DYNAMICS RES	12-25	15442	43663	11241	11944	12125	17760	53070	14633	14242	14448	22	23	9
INTERMETRICS	02-28	9063	32821	10216	10537	11016	10869	42638	10587	11324	12273	30	8	3
KEANE	12-31	6871	21659	7317	8430	8915	9166	33828	9951	10341	9462	56	21	11
LOGICON	03-31	32692	120674	36691	39380	45541	39646	161258	43689	44100	50277	34	14	5
PRC	06-30	76467	318906	79480	84919	78177	81770	324346	93931	118485	104778	2	31	18
RAND INFO.	02-28	3735	12392	2842	2546	2753	2920	11061	2924	2611	2760 ‡	-11	2	1
SYSCON CORP	11-30	26101	87015	24006	27253	26084	26687	104030	26174	28462	29867	20	9	2
SYST.& COMP.	09-30	10816	45029	11787	12062	11746	12190	47785	12512	11874	10792	6	-1	-1
TECHNALYSIS	12-31	2007	7941	2417	2317	2276	2938	9948	3128	3142	3176	25	35	15
TOTALS		587159	2251245	611947	627964	637661	668207	2545779	708223	751548	770259	13	19	9

‡ INPUT ESTIMATE

24 COMPANIES

LAST UPDATED: 12-15-85

EXHIBIT III-5

PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Computer Science Corp.	$340	4%
2	Arthur Andersen	300	3
3	Burroughs	223	3
4	Martin Marietta	208	2
5	IBM	200	2
6	EDS	145	2
7	Logicon	121	1
8	Planning Research	120	1
9	McGraw-Hill	107	1
10	MITRE	106	1

Total Professional Services Market = $8,855 Million

Top 10 = 20% of Market

- In 1985, the commercial segment of the professional services market is 69% of the total market (see Exhibit III-6). In 1990, the percentage share of the commercial segment will be similar to 1985. In 1990, the commercial segment's expenditures will almost triple what they are in 1985--$7.2 billion in 1985 and $18.5 billion in 1990 (see Exhibit III-7). Viewed from another perspective, the commercial market in 1990 will be almost double the entire professional services market in 1985.

- The federal government segment is the largest single industry-specific segment of the professional services marketplace. In 1990, the federal government segment will be double its 1985 user expenditure--$3.3 billion in 1985 and $7.8 billion in 1990, as shown in Exhibit III-8. The government segment will continue to be a major professional services segment during the next five years since the government is increasingly being run as a professionally managed corporation with its attendant need for automated support systems.

- In spite of dollar differences, both commercial and federal government segments will have similar growth rates and therefore continue to grow in parallel (commercial AAGR 21%, federal government AAGR 19%).

- Each of these two major markets is discussed in more detail in the following section.

B. MAJOR PROFESSIONAL SERVICES MARKETS

1. COMMERCIAL

- As mentioned above, the commercial professiona services market will continue to provide the most revenue dollars to the professional services market--$7.2 billion in 1985 and $18.5 billion in 1990 with a 21% AAGR. The

EXHIBIT III-6

PROFESSIONAL SERVICES MARKET, 1985-1990

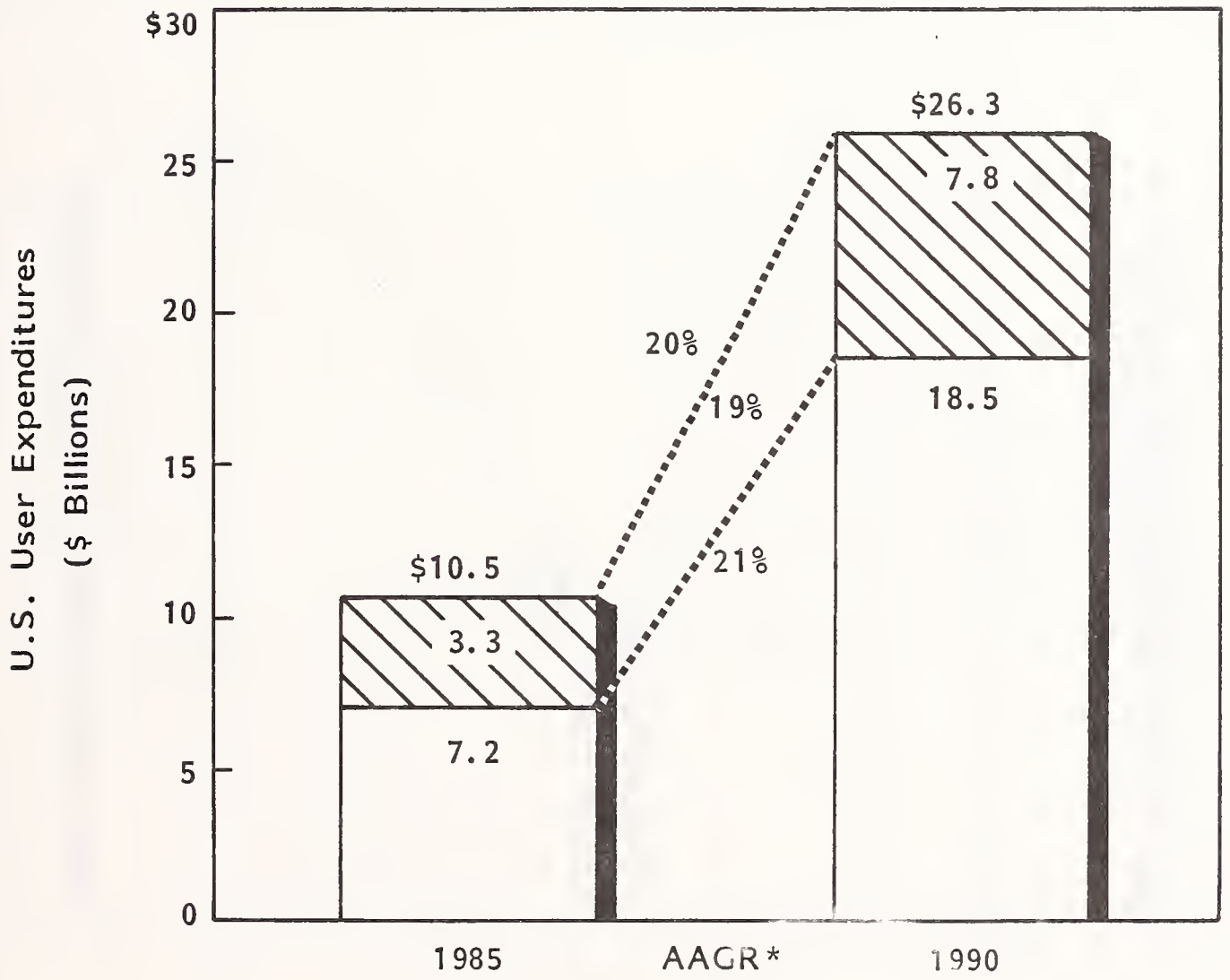
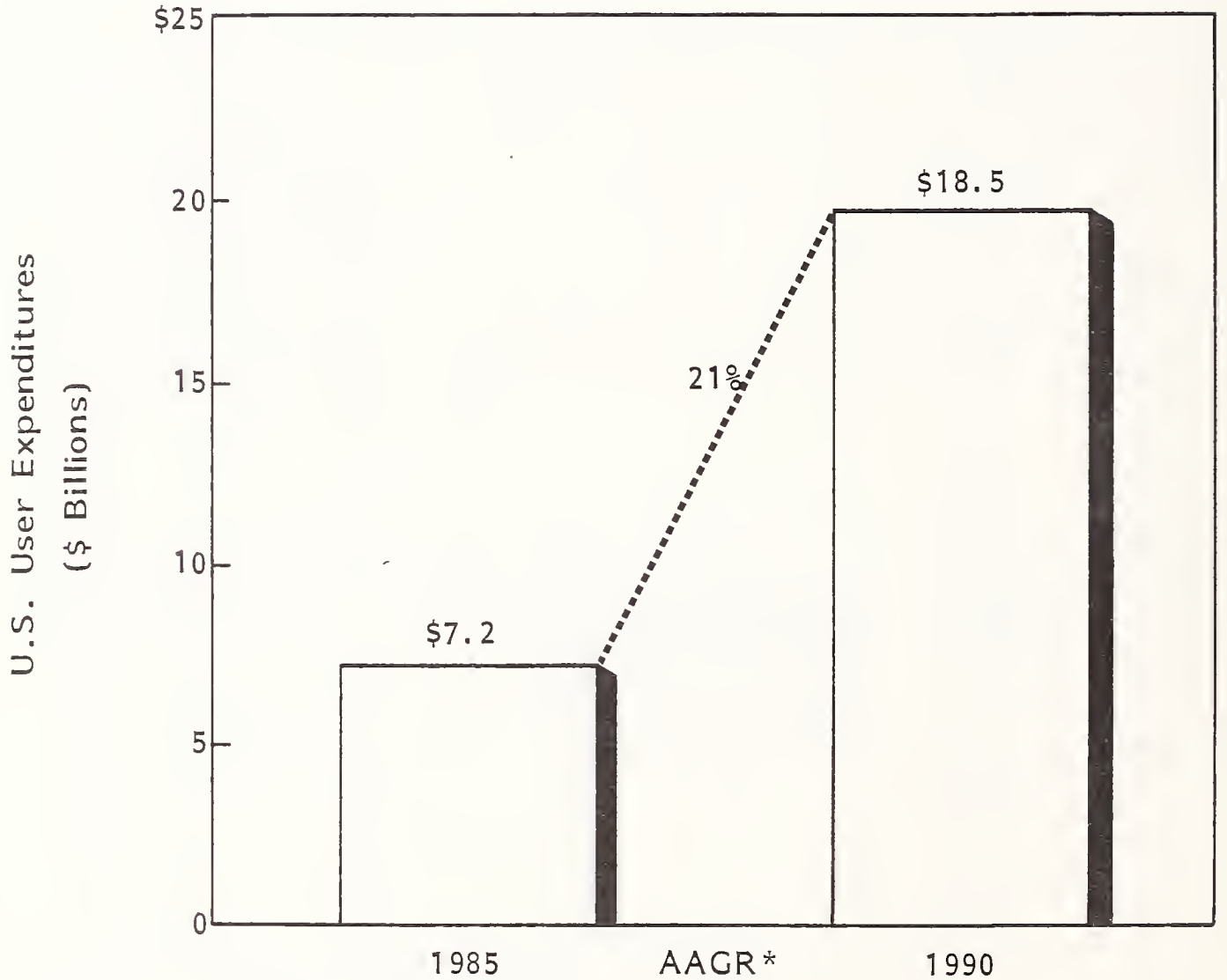


EXHIBIT III-7

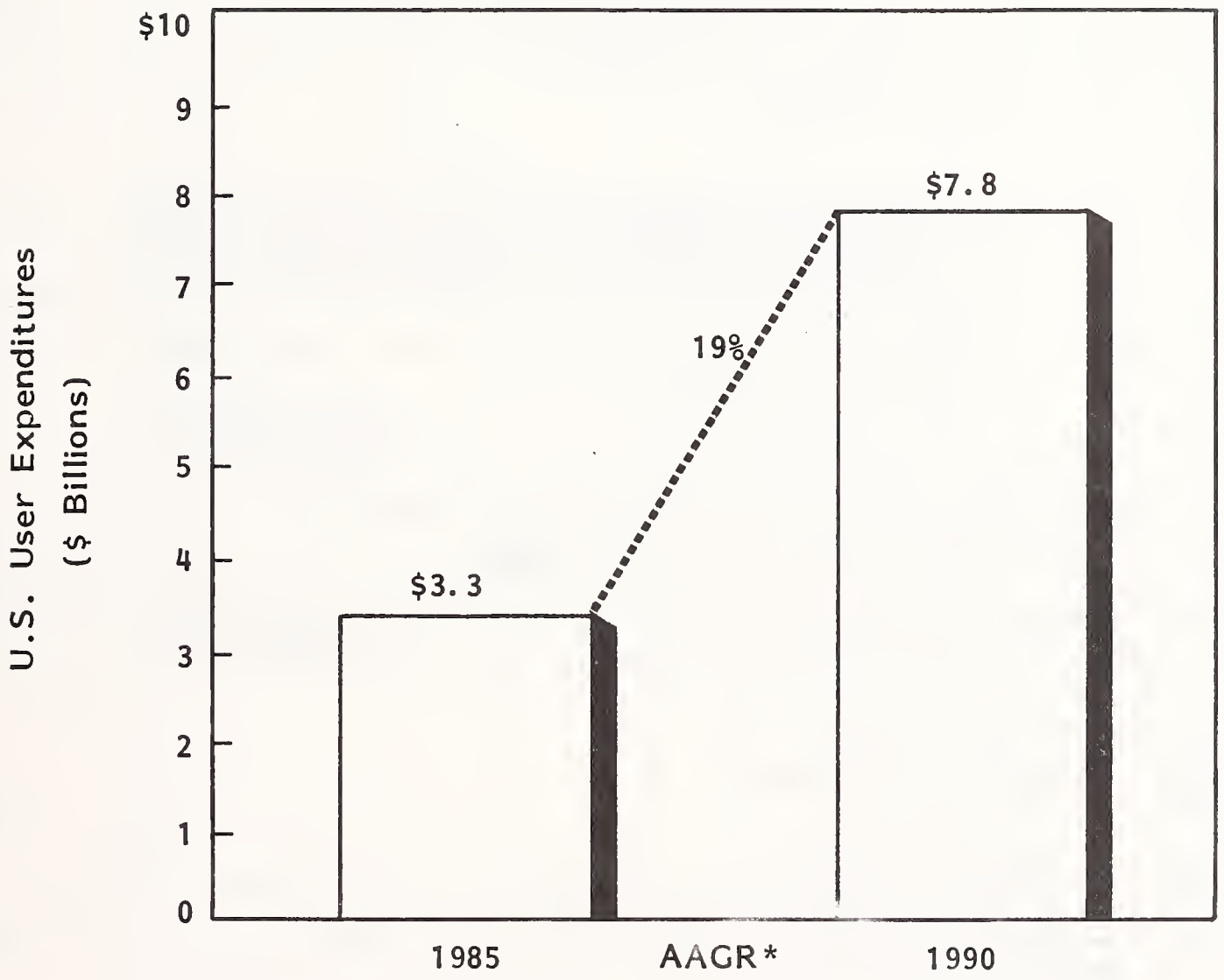
COMMERCIAL PROFESSIONAL SERVICES MARKET, 1985-1990



*Average Annual Growth Rate

EXHIBIT III-8

FEDERAL GOVERNMENT PROFESSIONAL SERVICES MARKET, 1985-1990



*Average Annual Growth Rate

principal mode from which most revenue will be garnered will continue to be software development, but the consulting and education and training modes will both continue to increase steadily (see Exhibit III-9).

- In the area of commercial service, important professional services trends include:

  - Contracts are becoming increasingly fixed price-based, as opposed to cost plus. Fixed price contracts have been in effect in the federal government segment for many years and provide for more vendor accountability.

  - An increasing favoritism is being shown by large commercial firms toward consulting by the "Big Eight" accounting firms. Consequently, competition is increasing in this sector, and the barriers to entry are increasing significantly.

- In assessing the leading commercial professional services vendors in 1984, the top 10 vendors accounted for only 16% of the entire commercial professional services market (see Exhibit III-10). This highlights the fact that many smaller regional and local vendors accounted for the majority of sales.

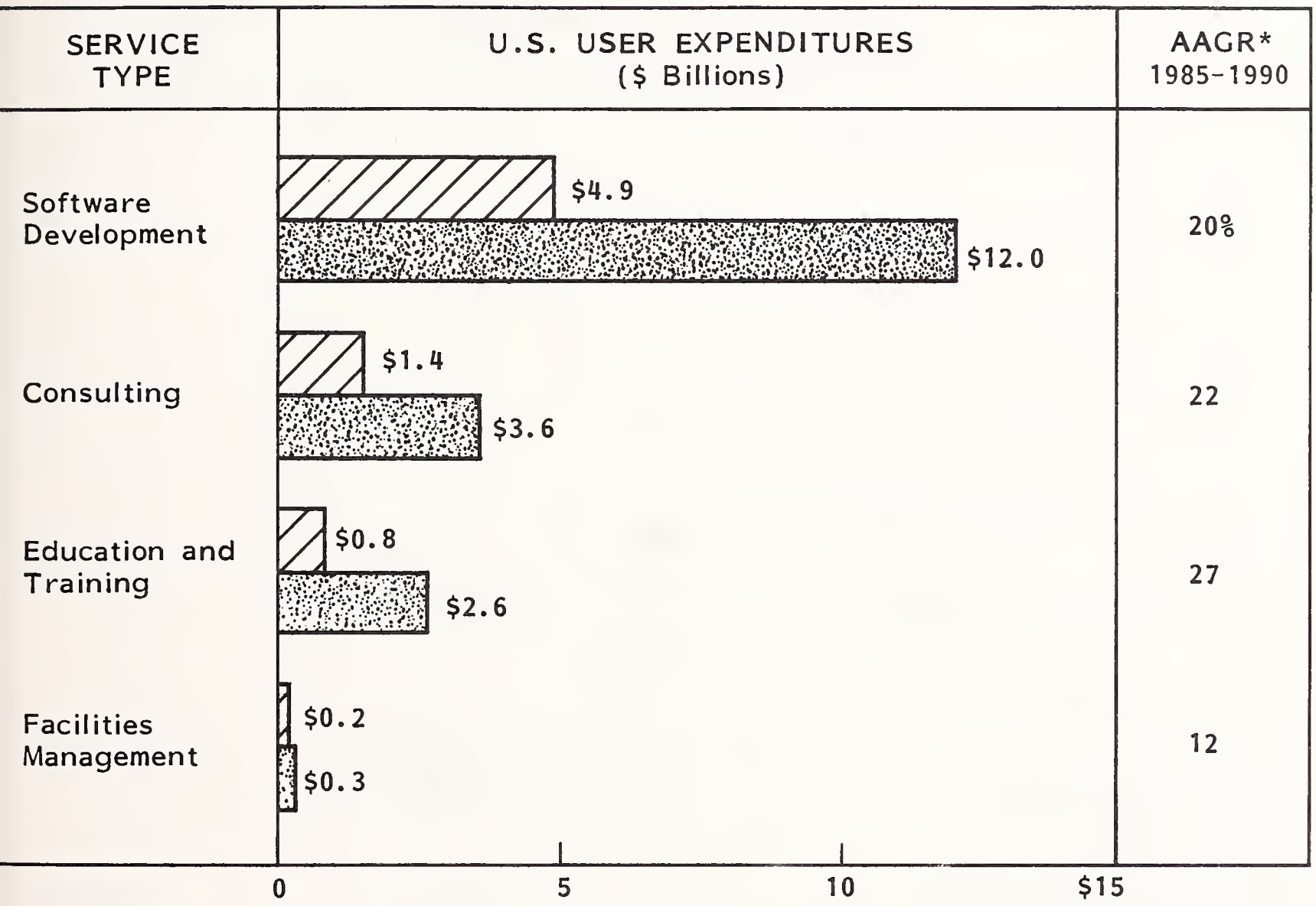
2. FEDERAL GOVERNMENT

- The federal government professional service market 1985-1990 will be strong--$3.3 billion in 1985, growing at an AAGR of 19% to $7.8 billion in 1990 (see Exhibit III-11). Stimulating this market's growth are:

  - Lack of internal development staff. The federal government segment is inadequately staffed internally in the data processing area. This need is accentuated by the heavy government commitment to maintaining existing software systems.

EXHIBIT III-9

COMMERCIAL PROFESSIONAL SERVICES MARKET BY SERVICE TYPE, 1985-1990



*Average Annual Growth Rate

EXHIBIT III-10

COMMERCIAL PROFESSIONAL SERVICES LEADERS, 1984

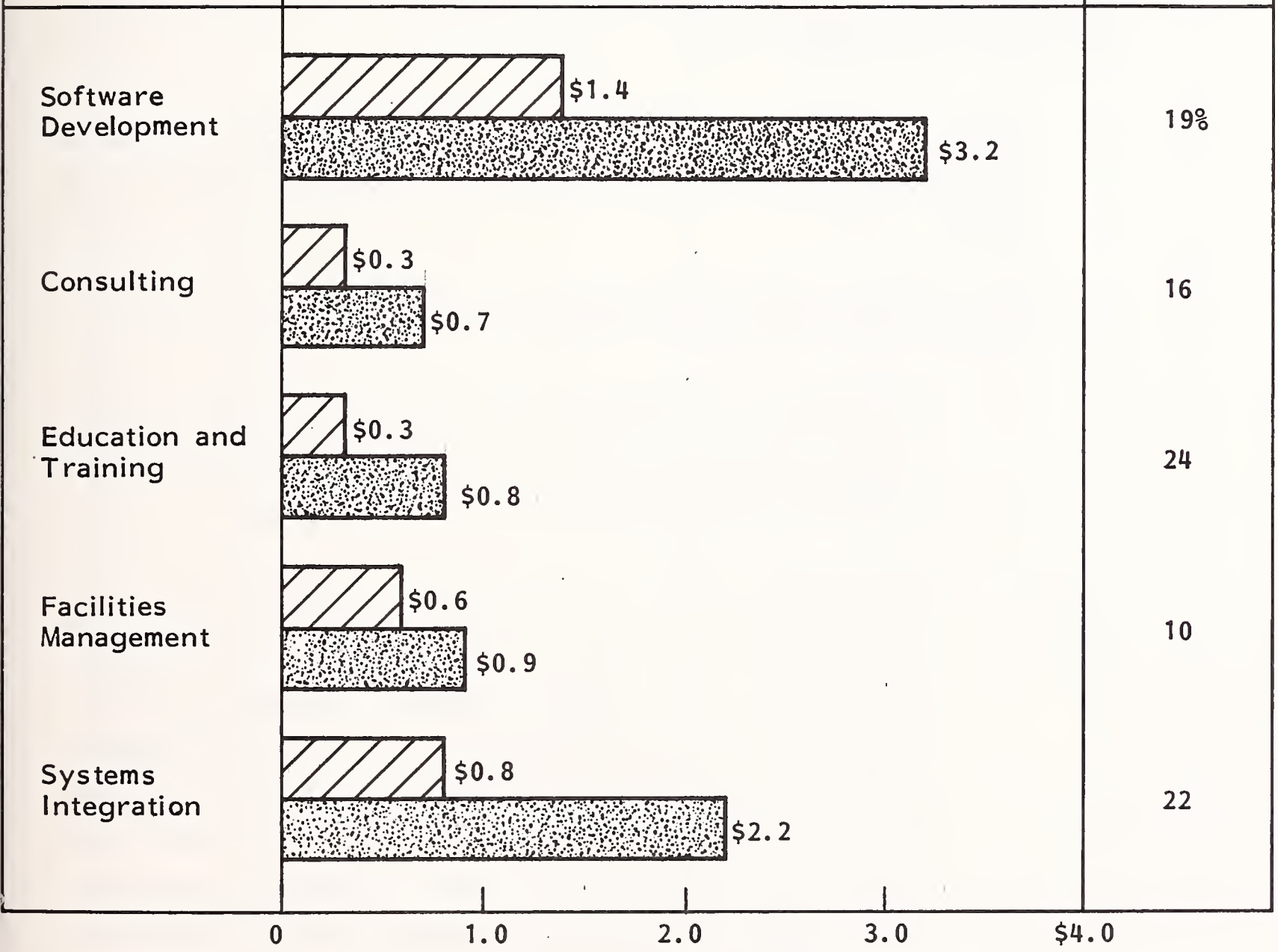
RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Arthur Andersen	$250	4%
2	Computer Science Corp.	139	2
3	McGraw-Hill	107	2
4	IBM	100	2
5	Computer Task Group	77	1
6	Martin Marietta	73	1
7	DEC	72	1
8	GEISCO	71	1
9	Burroughs	67	1
10	Peat, Marwick	62	1

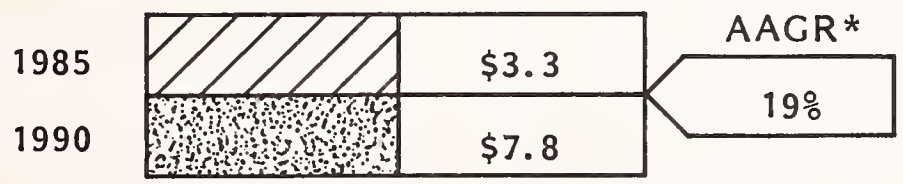
Total Commercial Professional Services Market = $6,100 Million

Top 10 = 16% of Market

EXHIBIT III-11

FEDERAL GOVERNMENT PROFESSIONAL SERVICES MARKET
BY SERVICE TYPE, 1985-1990





*Average Annual Growth Rate

- The overall pressures to reduce the federal budget deficit. This places a premium on cost-effective, automated methods of accomplishing administrative tasks.

- The automation of the political process such as election results and voting procedures in state as well as the federal government is producing non-computer experienced end users who need education and training.

- Vendor leaders for 1984 in the federal government professional services segment follow in Exhibit III-12.

  - These top 10 leaders accounted for 42% of the market as opposed to the commercial market in which the top 10 vendors accounted for only 16%.

  - Reasons for this large market share by only a few vendors include:

    . The government market is more established (i.e., older) than the commercial segment, thus the vendors are larger and fewer, with better name recognition.

    . The bidding process in the government segment for large contracts can be expensive--anywhere from $1-2 million and up. Also, in many contracts there is a "favorite customer clause" in which a professional services vendor's price bid to the government is expected to be 10% less than that of the vendor's best price bid in the previous six months. Consequently, this makes it more difficult for companies of medium to small size to participate in the federal government segment, since they have less financial room for bidding errors.

EXHIBIT III-12

GOVERNMENT PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Computer Science Corp.	$201	7%
2	Burroughs	156	6
3	Martin Marietta	135	5
4	MITRE	106	4
5	EDS	102	4
6	IBM	100	4
7	Logicon	97	3
8	Batelle Institute	85	3
9	Planning Research	84	3
10	CACI	77	3

Total Government Professional Services Market = $2,800 Million

Top 10 = 42% of Market

- A major advantage to those vendors with government contracts is that the agreements generally last for a number of years with the option to renew built in. This renewal opportunity provides the vendor with a certain amount of long-term security. This is contrary to commercial contracts which in general are not renewable without re-evaluation.

C. MAJOR PROFESSIONAL SERVICES MODES

- The five major professional services modes are highlighted in Exhibit III-13 and are discussed below.

1. SOFTWARE DEVELOPMENT

- The software development mode of the professional services market develops software on a custom basis. It generally includes user requirements, system design, and/or programming.

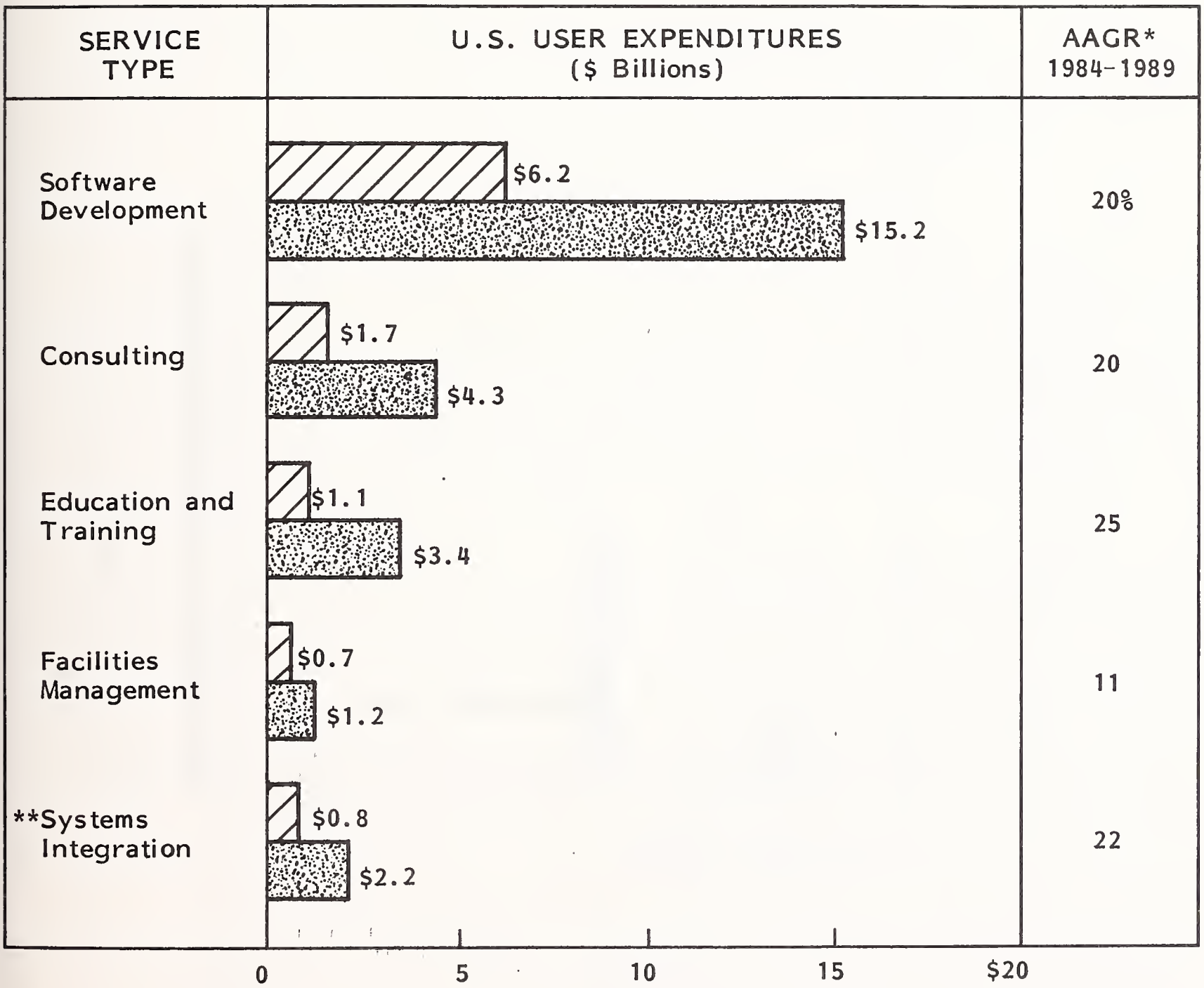
- Software development will be the largest segment in both 1985 and 1990, with about 58% of the total user expenditures. In 1990, the user expenditures from this mode will more than double what they are in 1985 (see Exhibit III-14). In 1985, the commercial segment will account for 79% of the market and will again stay relatively constant.

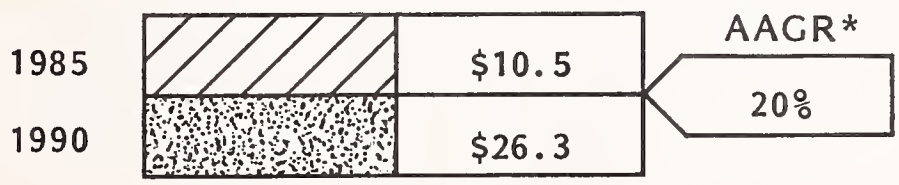
- Sixty-eight percent of the commercial market in 1985 was for software development. In 1990, this percentage is expected to decrease to 65%.

- In the federal government segment in 1985, 40% of revenue was for software development, increasing to 41% of government professional services revenue in 1990. These percentages for software development will stay relatively constant since both the consulting and education and training modes of the market will continue as healthy modes on their own with AAGRs equal to or greater than software development.

EXHIBIT III-13

PROFESSIONAL SERVICES MARKET BY SERVICE TYPE, 1985-1990



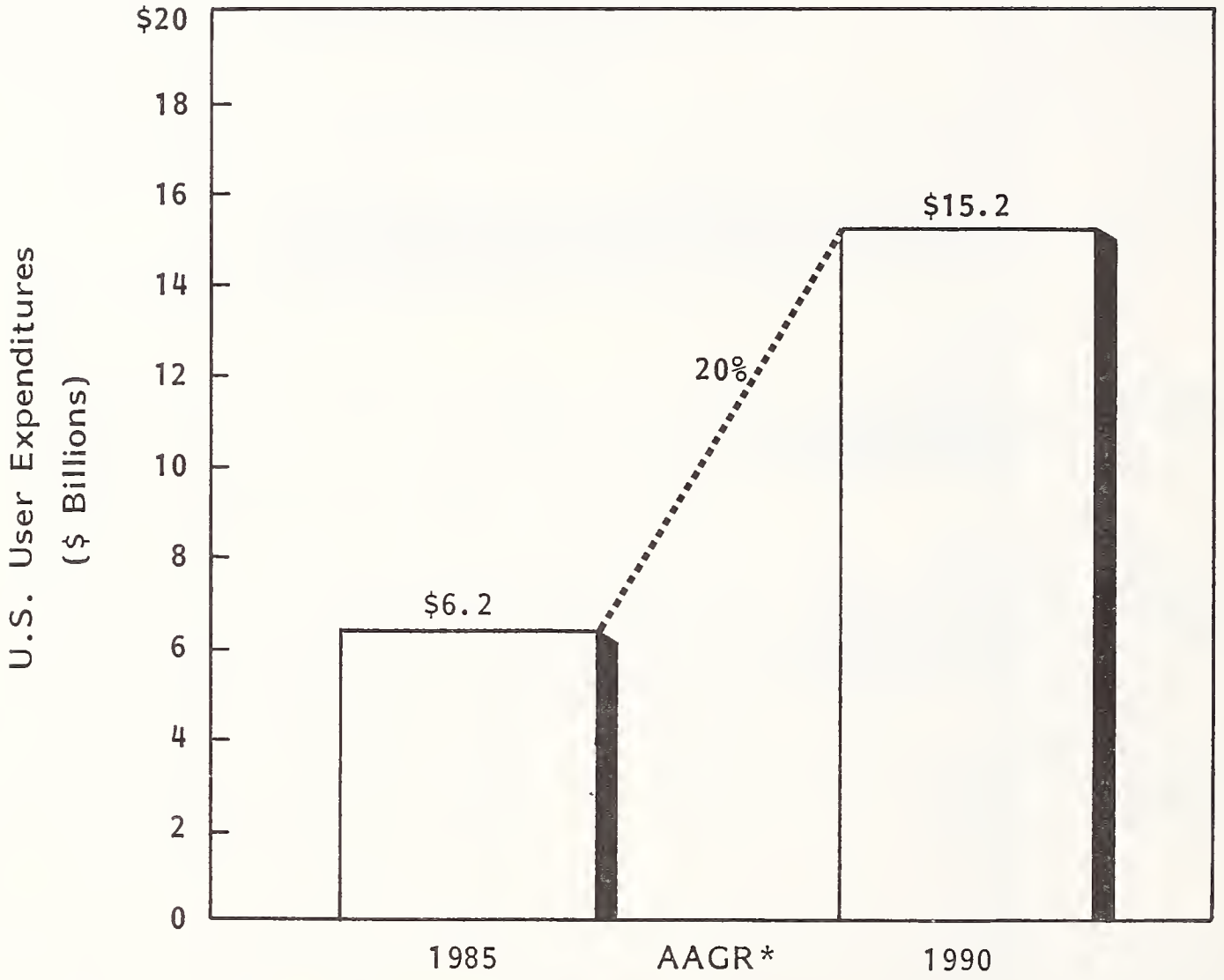


*Average Annual Growth Rate

**Federal Government Sector Only

EXHIBIT III-14

SOFTWARE DEVELOPMENT MARKET, 1985-1990



*Average Annual Growth Rate

- Factors impacting this market include:

  - As end users become more sophisticated in terms of computing, they will increasingly be able to conceive of and define more complex systems to be developed, thus further expanding professional services opportunities.

  - With the trend toward integrated applications, data base design will become increasingly more important, but also more complex. Many companies will lack the internal skills for this activity and will therefore look to professional services vendors for help.

- Many mainframe/mini software product vendors are porting versions of their large software products to micro versions; i.e., Information Builders' PC--Focus. These products in most cases will be used by non-programmers and will therefore require easier documentation. Opportunites exist for more sophisticated professional services documentors to write better manuals for these less sophisticated users.

- In 1984, of the total software development professional services market, the top 10 vendors accounted for 15% of the market (see Exhibit III-15). This is less than the 20% market share that the top 10 vendors accounted for in the entire professional services 1984 market. This mode is composed of many more vendors with a smaller number of employees than most other professional services segments, thus helping to decrease market share percentages. Exhibit III-16 lists the top five vendors in the commercial software development professiona services market in 1984, totalling 9% of the market. This is in contrast to Exhibit III-17, in which the top five software development federal government vendors totaled 20% of the market, again highlighting the fact that larger companies participate in government professional services markets since additional resources are needed just to cope with the numerous administrative procedures necessary to become a government professional services supplier.

EXHIBIT III-15

SOFTWARE DEVELOPMENT PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Arthur Andersen	$180	3%
2	Burroughs	134	2
3	Computer Science Corp.	102	2
4	IBM	100	2
5	Martin Marietta	83	1
6	Peat, Marwick	78	1
7	DEC	72	1
8	Price Waterhouse	71	1
9	MITRE	69	1
10	Science Applic. (SAIC)	68	1

Total Software Development Professional Services Market = $5,800 Million*

Top 10 = 15% of Market

*Includes Software Development Component for Systems Integration

EXHIBIT III-16

COMMERCIAL SOFTWARE DEVELOPMENT
PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Arthur Andersen	$150	4%
2	Computer Task Group	62	1
3	DEC	58	1
4	Cap Gemini	55	1
5	GEISCO	50	1
5	IBM	50	1

Total Commercial Software Development Professional Services Market = $4,200 Million

Top 5 = 9% of Market

EXHIBIT III-17

GOVERNMENT SOFTWARE DEVELOPMENT
PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Burroughs	$94	6%
2	Computer Science Corp.	71	4
3	MITRE	69	4
4	Science Applic. (SAIC)	55	3
5	CACI	54	3
5	Martin Marietta	54	3

Total Government Software Development Professional Services Market = $1,600 Million*

Top 5 = 20% of Market

*Includes Software Development Component for Systems Integration

2. CONSULTING

- The consulting mode involves professional staff who advise clients on computer-related issues that are usually management oriented. Feasibility studies and computer audits are examples of services provided.

- In 1985, $1.7 billion was spent on consulting services (see Exhibit III-18). With a five-year AAGR of 20%, this market's expenditure is expected to increase to $4.3 billion by 1990.

- The consulting mode of the professional services market will account for 16% of total market revenue in both 1985 and 1990. It is the second largest professional services mode and will more than double its 1985 expenditures by 1990.

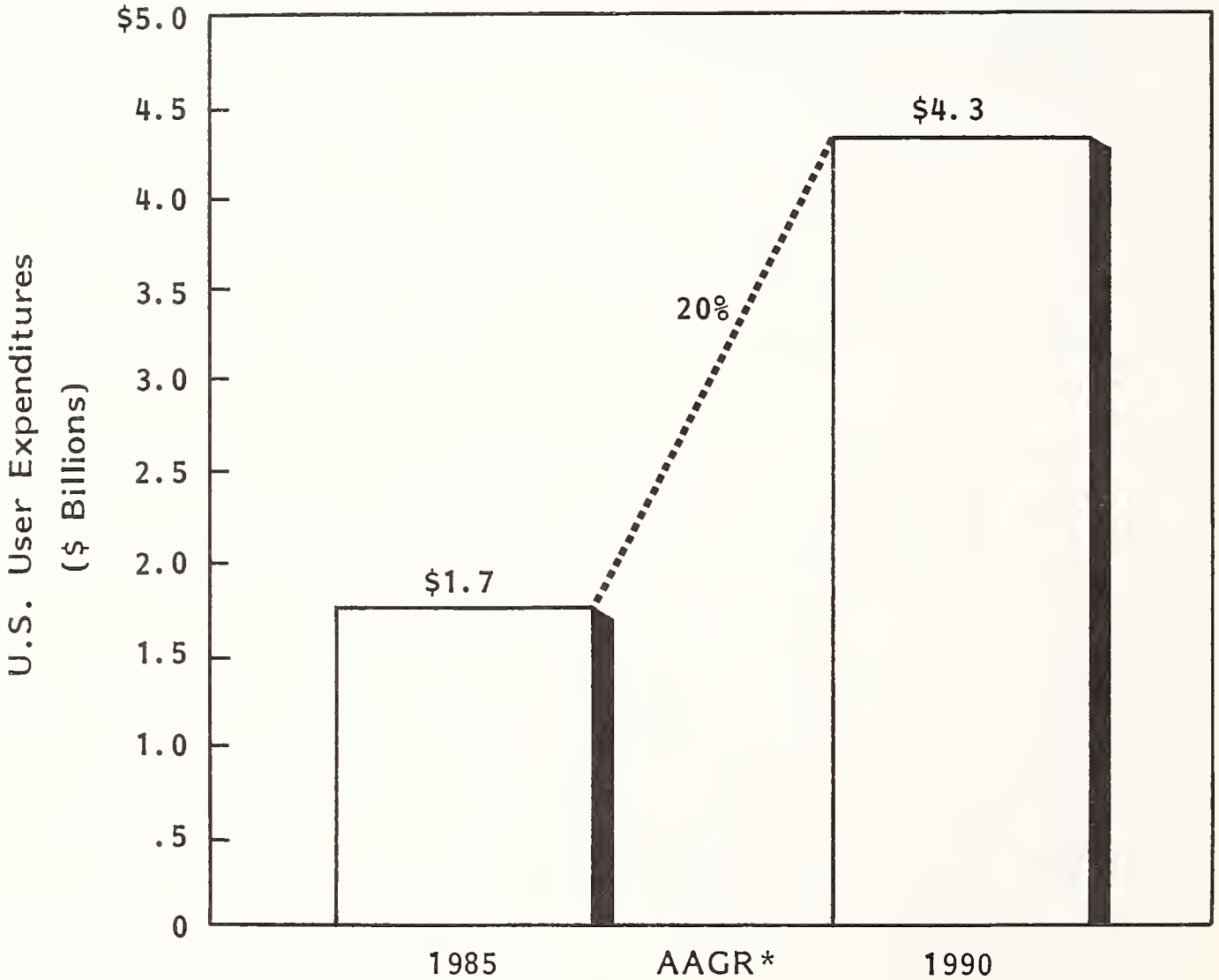
- In 1985, the commercial portion of the consulting market was 82%, while the federal government portion was 18%. In 1990, these percentages are expected to change to 84% commercial and 16% government.

- Another way to look at the consulting market is that 19% of the commercial market in both 1985 and 1990 will be from professional services consulting revenues. This is opposed to the federal government segment in which the consulting portion will be 9% in both years. This market share difference can be explained by the fact that top management in the commercial segment has historically taken a more sophisticated approach to data processing than has the government segment. Commercial's more professional outlook favors the use of outside consultants with their advanced tools and skills.

- About five years ago, the federal government also began to become more sophisticated from an IS management point of view. As a result, they too are now more accepting of professional services consultants. The large head start in consultant acceptance by the commercial segment accounts for the commercial versus federal government market share differences.

EXHIBIT III-18

CONSULTING MARKET, 1985-1990



*Average Annual Growth Rate

- Factors impacting the consulting this market are:

  - The trend of software product vendors to solicit and "Big Eight" firms to respond to consulting and installing software products at users' sites. A major example of this is Computer Associates International, Inc.'s (CAI) Micro Products Division's recent "qualifed installer" program under which "Big Eight" and smaller accounting firms recommend, install, and train clients on the company's accounting packages. Through this program, the accounting firms receive referrals from retailers and then contact uers directly but do not sell the software themselves. This procedure provides additional professional services consulting opportunities for accounting firms as well as aids CAI by providing an easy means of supporting their dealers plus giving their software a quality endorsement.

  - The increasing desire of management to automate "the heart" of the business leads to the need for more complex hardware, software, and communication solutions. The need for professional services consulting at all system development stages from conception to implementation is becoming a cost-effective necessity rather than an afterthought.

- In 1984, of the total consulting professional services market, the top 10 vendors accounted for 38% of the market (see Exhibit III-19). Exhibits III-20 and III-21 list the top five 1984 vendors for the commercial and federal government consulting segments. To be noted is that the top five commercial vendors accounted for 19% of the commercial consulting market while the top five government vendors accounted for 59% of 1984 revenue to that segment. This difference in market share again reflects the earlier orientation of the commercial market toward the use of consultants, as discussed above.

EXHIBIT III-19

CONSULTING PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Arthur Andersen	$75	5%
2	Martin Marietta	73	5
3	IBM	70	5
4	Computer Science Corp.	68	5
5	Burroughs	67	4
6	McGraw-Hill	59	4
7	Arthur D. Little	41	3
8	Batelle Institute	38	3
9	MITRE	37	2
10	EDS	36	2

Total Consulting Professional Services Market = $1,500 Million*

Top 10 = 38% of Market

*Includes Consulting Component for Systems Integration

EXHIBIT III-20

COMMERCIAL CONSULTING PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Arthur Andersen	$65	6%
2	McGraw-Hill	59	5
3	IBM	35	3
4	Arthur D. Little	35	3
5	Martin Marietta	25	2

Total Commercial Consulting Professional Services Market = $1,100 Million

Top 5 = 19% of Market

EXHIBIT III-21

GOVERNMENT CONSULTING PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Computer Science Corp.	$48	13%
2	Martin Marietta	47	13
3	Burroughs	47	13
4	Batelle Institute	38	10
5	MITRE	37	10

Total Government Consulting Professional Services Market = $370 Million*

Top 5 = 59% of Market

*Includes Consulting Component for Systems Integration

3. EDUCATION AND TRAINING

- Education and training services help people acquire new skills, techniques, or knowledge related to computers. This mode of the professional services market does not include services to educational institutions.

- The education and training mode is 10% of the professional services market in 1985 and will grow to 13% in 1990. It is the market segment that is expected to have the highest AAGR 1985-1990 (25%), starting from $1.1 billion in 1985 and growing to $3.4 billion in 1990 (see Exhibit III-22).

- Stimulating the education and training markets specifically are:

  - The rapid changes in hardware, software, and communication technology that again quickly render knowledge of the best ways to develop, install, and use automated systems obsolete.

  - The growing complexity of software development tools which increase the need for training for programmers and analysts.

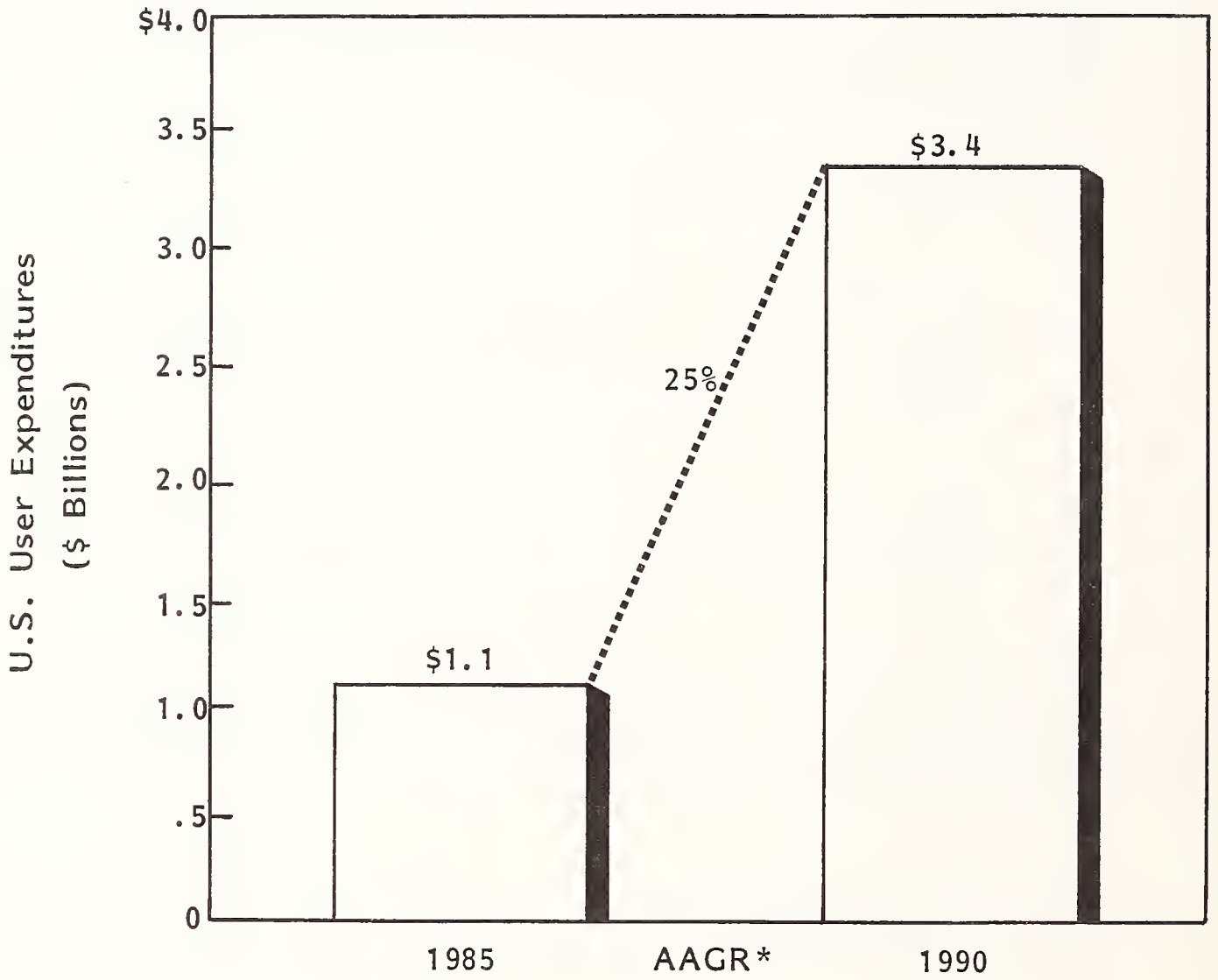
- One major factor that is preventing this market from having an even higher growth rate is the increasing role of automation in the training process (i.e., CD ROM combined with software).

- From a market size perspective, this mode is only one-sixth the size of the software development segment, but will grow to become about one-fourth its size in 1990.

- Eleven percent of the commercial market in 1985 was for education and training. In 1990, this percentage is expected to increase to 14% of the market. In the federal government segment in 1985, the education and training percentage is 9% of the total, increasing slightly to 10% in 1990. As with the professional services market overall, the education and training

EXHIBIT III-22

EDUCATION AND TRAINING MARKET, 1985-1990



*Average Annual Growth Rate

portion of commercial and federal government segment will have the highest five-year AAGR.

- Seventy-three percent of the education and training user expenditures in 1985 were from the commercial marketplace, 27% from the federal government. In 1990, both market shares are expected to remain relatively similar to 1985.

- The major factors stimulating the growth of this marketplace include:

  - The increasing number of microcomputers that are being placed on workers' desks; most of these workers have little or no computer experience.

  - Rapid technological changes that obsolete old systems and software, stimulating the need to retrain personnel on new products.

- In 1984, the top 10 education and training professional services vendors totaled 35% of the market (see Exhibit III-23). In Exhibits III-24 and III-25, the top five vendors are listed for the commercial and federal government components of this market.

4. FACILITIES MANAGEMENT

- Facilities management (FM) professional services is a counterpart to the processing facilities management market, except that in this case the computers are owned by the client, not the vendor. The vendor provides human resources to operate and manage the client facility.

- The facilities management segment of professional services is now and will continue to be the smallest professional services segment. In 1985, it accounted for $700 million in revenue; it will account for $1.2 billion in 1990 (see Exhibit III-26). In 1985, it was 7% of the total professional services market, and it will decrease to 5% in 1990. As vendors become more skilled

EXHIBIT III-23

EDUCATION AND TRAINING PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	EDS	$51	6%
2	McGraw-Hill	48	6
3	Arthur Andersen	45	5
4	Logicon	30	3
5	IBM	30	3
6	Deltak	26	3
7	Burroughs	22	3
8	Computer Science Corp.	17	2
9	Price Waterhouse	14	2
10	CACI	14	2

Total Education and Training Professional Services Market = $860 Million*

Top 10 = 35% of Market

*Includes Education and Training Component for Systems Integration.

EXHIBIT III-24

COMMERCIAL EDUCATION AND TRAINING PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	McGraw-Hill	$48	8%
2	Arthur Andersen	35	6
3	Deltak	21	4
4	IBM	15	3
5	EDS	15	3

Total Commercial Education and Training Professional Services Market = $600 Million

Top 5 = 24% of Market

EXHIBIT III-25

GOVERNMENT EDUCATION AND TRAINING PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	EDS	$36	14%
2	Logicon	26	10
3	Burroughs	16	6
4	IBM	15	6
5	Batelle Institute	13	5

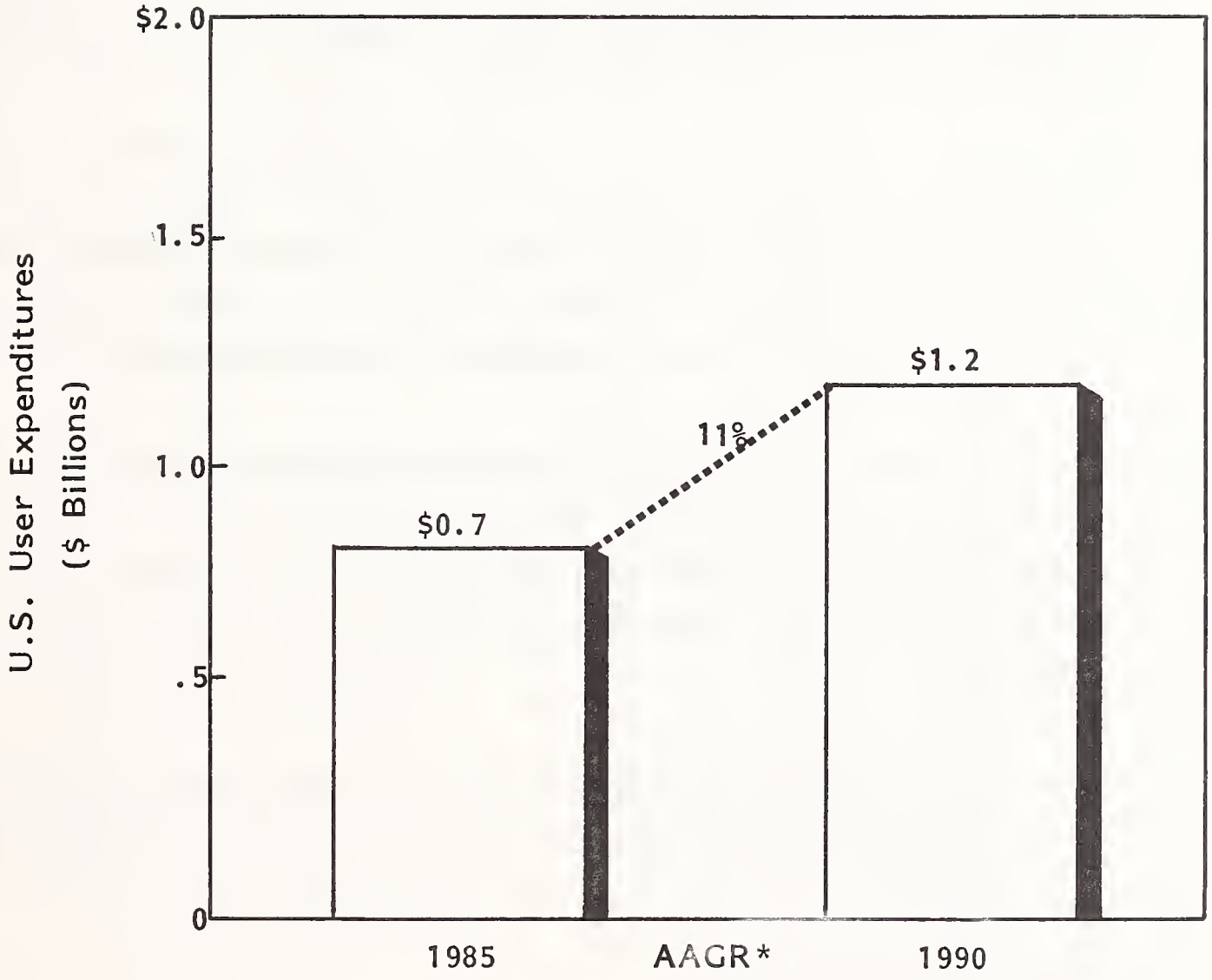
Total Government Education and Training Professional Services Market = $260 Million*

Top 5 = 41% of Market

*Includes Education and Training Component for Systems Integration

EXHIBIT III-26

FACILITIES MANAGEMENT MARKET, 1985-1990



*Average Annual Growth Rate

at financing hardware acquisitons, clients will tend to favor the vendor-owned hardware FM approach, which is classified by INPUT as processing services FM.

- Two percent of the commercial professional services market in both 1985 and 1990 will be for FM sales. The federal government segment has a much different segment breakdown--18% from FM sales in 1985 and an expected 12% in sales from professional services FM in 1990. This is due to the fact that historically the government has had "deeper" pockets and could more easily finance their computer acquisitions.

- Of total FM professional services sales in 1985, 14% were from the commercial segment while 86% were from the government. In 1990, there is expected to be a major change in FM markets; 25% of FM revenue is expected to be from the commercial segment and 75% from the federal government.

- The FM market in 1984 had the highest percentage of market share (68%) accounted for by the top 10 vendors (see Exhibit III-27). Again, in the government segment, vendor trust is especially important. Size of the professional services vendor, familiarity, and longevity are all contributing factors to this trust.

  - Both commercial and federal government segments had large concentrations of market share in the top 10 vendors (see Exhibits III-28 and III-29).

5. SYSTEMS INTEGRATION

- Systems integration is a process in which a vendor or partnership assumes total responsibility for providing the information products/services which result in a comprehensive solution to an information systems problem. In this process, the customer-intergrator arrangement is such that the customer is made to feel that one vendor is providing all aspects of the solution. The

EXHIBIT III-27

FACILITIES MANAGEMENT PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Computer Science Corp.	$153	23%
2	Martin Marietta	48	7
3	Systems & Computer Technology	44	7
4	LEMSCO (Lockheed)	38	6
5	Bendix	37	6
6	Planning Research	36	5
7	Dynalectron	26	4
8	Dynamics Research	25	4
9	Kentron International	20	3
10	Tech. Devel. CA	18	3

Total Facilities Management Professional Services Market = $660 Million

Top 10 = 68% of Market

EXHIBIT III-28

COMMERCIAL FACILITIES MANAGEMENT
PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Computer Science Corp.	$46	31%
2	Martin Marietta	17	11
3	Keane	16	11
4	Computer Task Group	15	10
5	Butler	15	10

Total Commercial Facilities Management Professional Services Market = $150 Million

Top 5 = 73% of Market

EXHIBIT III-29

GOVERNMENT FACILITIES MANAGEMENT
PROFESSIONAL SERVICES LEADERS, 1984

RANK	COMPANY	USER EXPENDITURES ($ Millions)	MARKET SHARE (Percent)
1	Computer Science Corp.	$107	21%
2	LEMSCO (Lockheed)	38	7
3	Systems & Computer Technology	37	7
4	Bendix	37	7
5	Martin Marietta	31	6

Total Government Facilities Management Professional Services Market = $510 Million

Top 5 = 48% of Market

customer interacts with the systems integrator and, to the extent possible, other vendors who may be subcontractors to the integrator for portions of the solution that are transparent to the customer.

- In 1985, the systems integration market for the federal government ($800 million) was about as large as the overall facilities management market. By 1990, with a 22% AAGR, systems integration will be about the size of the overall federal government professional services market in 1985--systems integration will be $2.2 billion in 1990; federal government professional services was $3.3 billion in 1985 (see Exhibit III-30). In 1985, the systems integration market is composed of about 80% software development revenue, 15% consulting, and 5% education and training.

- Factors stimulating the systems integrations marketplace include:

  - Scarcity of skills by one vendor for developing a total complex automated solution.

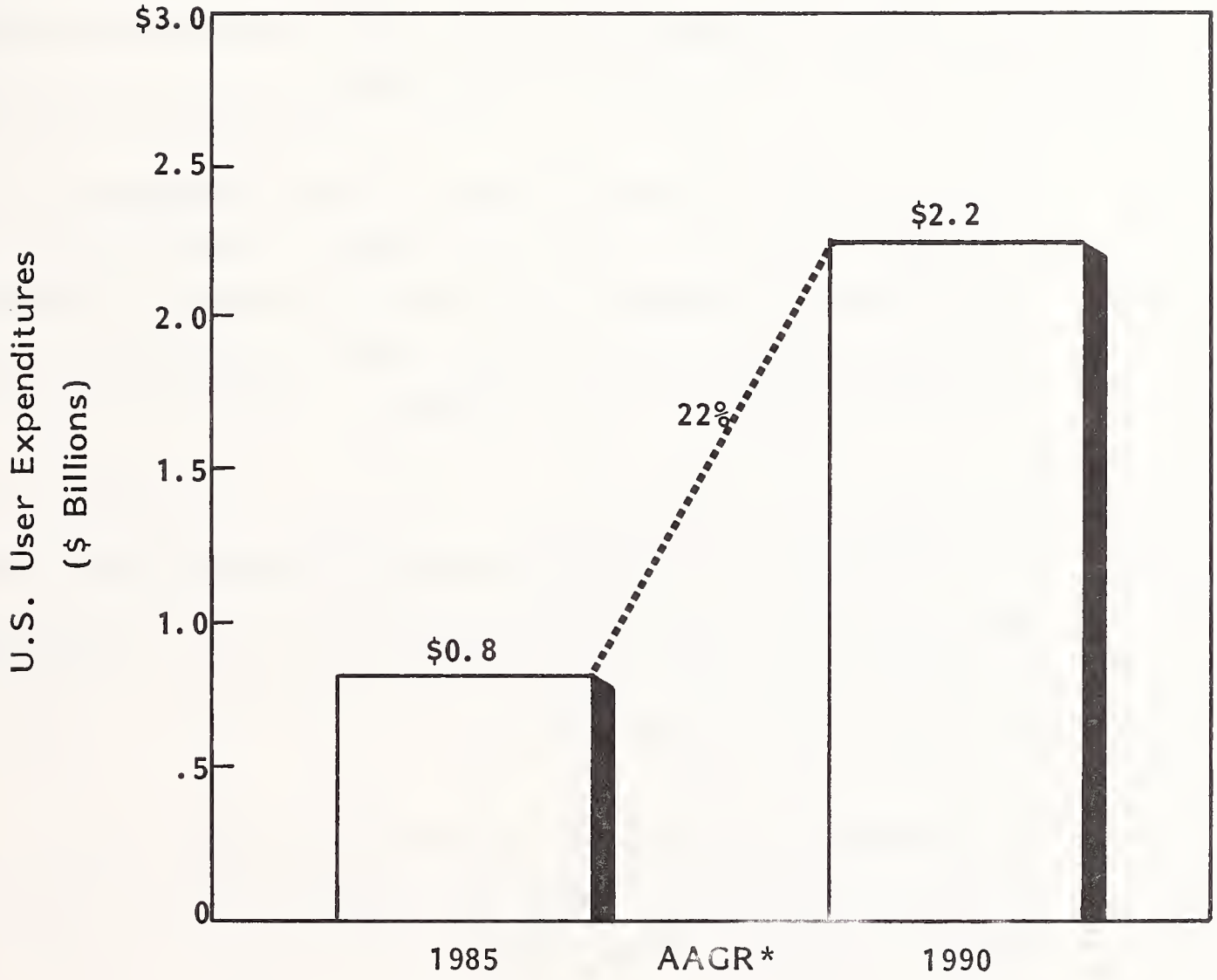
  - Proliferation of technological options which produce buyer confusion and system compatibility challenges. A single systems integration vendor to coordinate procurement and connectivity with compatibility becomes increasingly necessary.

- Commercial systems integration (SI) is in an embryonic stage. The factors that are stimulating the SI federal government segment hold true for this segment as well.

- Although not broken out specifically in the market analysis contained in this study, the commercial SI market is forecast by INPUT to grow from $64 million in 1985 to $119 million in 1990 (21% AAGR). For a comprehensive analysis of this market, see INPUT's 1985 study titled, Systems Integration: Opportunities and Challenges.

EXHIBIT III-30

SYSTEMS INTEGRATION MARKET, 1985-1990
(Federal Government)



*Average Annual Growth Rate

D. INDUSTRY MARKETS

- The market size and growth rates for 14 industry markets are shown in Exhibit III-31. These user expenditures are for both industry-specific as well as cross-industry applications that are purchased by a given industry market (e.g., banking and finance).

- The three highest industries in terms of AAGR are telecommunications, banking and finance, and discrete manufacturing.

  - In the case of the telecom market, the large growth rate is for the most part due to the low base from which the market begins in 1985. Also impacting this market are competitive pressures on newly deregulated companies which force them to automate quickly since they have new market forces with which to contend.

  - The banking and finance segment is also being stimulated by deregulation. Deregulation has increased competition among vendors within the segment as well as by outside competitors such as insurance companies that can now provide competitive financial services. Consequently, automation is a key strategic edge.

  - Contributing to the discrete manufacturing segment growth is the pressure from low-cost "off-shore" producers of goods. To remain viable, vendors are using automation to increase productivity and decrease costs.

EXHIBIT III-31

INDUSTRY PROFESSIONAL SERVICES MARKETS

INDUSTRY SECTOR	1985-1990 AAGR (Percent)	USER EXPENDITURES ($ Billions)		1984-1989 GROWTH RATE RANK
		1985	1990	
Discrete Manufacturing	22%	$1.7	$4.6	3
Process Manufacturing	22	0.8	2.1	3
Transportation	17	0.1	0.3	7
Utilities	9	0.07	0.1	8
Telecommunications	26	0.3	0.97	1
Distribution	17	0.5	1.1	7
Banking and Finance	23	1.3	3.5	2
Insurance	20	0.7	1.8	4
Medical	22	0.2	0.6	3
Education	9	0.06	0.1	8
Services	17	0.1	0.3	7
Federal Government	19	3.3	7.	5
State/Local Government	18	1.1	2.6	6
Other	18	0.2	0.5	6

IV INDUSTRY DRIVING FORCES, ISSUES, AND TRENDS

IV INDUSTRY DRIVING FORCES, ISSUES, AND TRENDS

A. OVERVIEW

- The professional services industry (as with all segments of the information services industry) is affected by certain changing conditions in the overall economy as well as within the computer industry. INPUT has labeled these driving forces as "Macro Factors" and in the following section will elaborate as to the weighted affect these factors have on INPUT's overall 1985-1990 professional services forecast.

- Each factor has been individually weighted as to its impact on the professional services market. It will be noted that factors were given an A, B, or C rating, which in turn were weighted by a factor of three for A, a factor of two for B, and a factor of one for C.

- The weighting factors are all subjective INPUT assessments relative to the state of the market in 1984.

- The "Macro Factors" have been divided into two lists--positive and negative impact factors--for the convenience of the reader and are summarized in Section 3 of this chapter.

B. MACRO FACTORS--DRIVING FORCES

1. POSITIVE FACTORS

- Positive factors that affect the professional services industry include the following (see Exhibit IV-1).

  - Economic growth is starting at a low in late 1985 but will continue to increase steadily near term. The economy is, however, cyclical and will likely turn down toward the end of the forecast period. A healthy economy in general stimulates most industries, the professional services industry not being an exception.

  - The growth of the mainframe/mini installed base impacts the professional services market since software requires hardware to run upon. Hardware shipments in 1985 were lower than expected, therefore this factor has a negative near-term impact. INPUT expects the mainframe/mini market to have a 16% AAGR 1984-1990 so that by 1990 there will be an installed base of 3.2 million units.

  - The acceptance by top management of automation as a competitive edge will also positively impact the professional services market. Once management is willing to invest in automation, in many cases they will be unwilling to wait for internally developed solutions and will instead opt for software developed by a professional services vendor or packaged software. Professional services vendors also have opportunities to educate users or consult with them regarding integration of the package into a client's overall automation solution.

  - The credibility of companies in the professional services market is increasing yearly. Not too long ago, most professional services companies were small, local entities. In 1985, there are quite a few

EXHIBIT IV-1

"MACRO FACTORS" PROFESSIONAL SERVICES MARKET
POSITIVE

FACTOR	WEIGHT	1985	1986	1987	1988	1989	1990	PFS* MARKET MOST AFFECTED
Economic Growth	A	0 0	+1 (+3)	+1 (+3)	+2 (+6)	+1 (+3)	0 (0)	- -
Increase of Mainframe/ Mini Installed Base	A	-1 (-3)	0 (0)	+1 (+3)	+2 (+6)	+2 (+6)	+3 (+9)	- -
Management Accepts Automation as Competitive Edge	A	+1 (+3)	+1 (+3)	+2 (+6)	+2 (+6)	+3 (+9)	+3 (+9)	- -
Credibility Factor	A	+1 (+3)	+1 (+3)	+2 (+6)	+3 (+9)	+4 (+12)	+5 (+15)	All -
Increase of Telecommunications-Based Systems	A	+1 (+3)	+2 (+6)	+3 (+9)	+3 (+9)	+4 (+12)	+4 (+12)	SD C

( ) = Factor with Weighting Included.

Continued

SD = Software Development
C = Consulting
E & T = Education and Training
FM = Facilities Management
SI = Systems Integration

*Professional Services Market

EXHIBIT IV-1 (Cont.)

"MACRO FACTORS" PROFESSIONAL SERVICES MARKET
POSITIVE

FACTOR	WEIGHT	1985	1986	1987	1988	1989	1990	PFS* MARKET MOST AFFECTED
Inflation	B	-1 (-2)	0 (0)	+1 (+2)	+2 (+4)	+2 (+4)	+2 (+4)	- -
End-User Computing Demand	C	+1	+2	+2	+3	+3	+4	-
Technology Price/ Performance Improvements	C	+1	+2	+2	+3	+3	+4	-
Increased Capability of Software Development Tools	C	0	+1	+1	+2	+2	+3	SD
Increased Complexity of Managing Automated Systems	C	0	+1	+2	+2	+3	+3	C

Continued

( ) = Factor with Weighting Included.

SD = Software Development
C = Consulting
E & T = Education and Training
FM = Facilities Management
SI = Systems Integration

*Professional Services Market

EXHIBIT IV-1 (Cont.)

"MACRO FACTORS" PROFESSIONAL SERVICES MARKET
POSITIVE

FACTOR	WEIGHT	1985	1986	1987	1988	1989	1990	PFS* MARKET MOST AFFECTED
Turnover of Professional Services Personnel	C	0	+1	+1	+2	+2	+3	-
Total Positive Factors		+3 (+6)	+12 (+22)	+18 (+37)	+26 (+52)	+29 (+59)	+34 (+66)	

( ) = Factor with Weighting Included.

SD = Software Development
C = Consulting
E & T = Education and Training
FM = Facilities Management
SI = Systems Integration

*Professional Services Market

large, publicly held companies with well-established client bases and excellent reputations. Industry as well as company credibility helps to stimulate sales.

- The increase of telecommunications-based systems as well as the trend toward distributed systems is stimulating the professional services market, especially the consulting sector, due to the complexity of these systems.

- INPUT projects inflation to be at 4% in 1985, 5% in 1986, and 6% for the next three consecutive years. IS budget spending decreases as inflation increases since inflation decreases the amount of dollars available to hire new staff. Consequently, the professional services market will be stimulated as inflation increases since IS managers will tend to have their automation needs met by a consulting rather than a labor expense.

- End user computing deals with people' comfort levels. As the number of microcomputers in business continues to increase, so too will the number of users who will need to be trained on a large variety of packages.

- Technology will impact the sales of more complex, more sophisticated hardware and software that will increase the demand for consulting, education, and training.

- The increased capability of software development tools will stimulate the software development segment of professional services, in turn making professional services programmers more productive.

- The increased complexity of managing automated systems will encourage management to seek outside professional services help in the areas of consulting, education, and training.

- Less turnover of professional services personnel will occur toward the end of the forecast period. The reasons for this will be:

  . As professional services vendors become more astute managers of their programmers, they will offer better defined career paths and benefits that will encourage continued employment.

  . The professional services market is maturing and a significant number of well-known and respected companies are emerging. The prestige that goes with working with these companies will tend to decrease employee turnover.

  . Professional services vendors will also adopt state-of-the-art technology faster than industrial concerns will, thus giving them an additional edge in attracting and retaining quality programmers.

  . There is also a trend toward remote software developments that will lessen personnel turnover. With remote terminal and software development tools with which a programmer can be on-line remotely, code can be written and debugged, and programs changed from, for example, a site in the East Coast for a project in the Midwest. This limits the travel time that a programmer must take to complete a job.

2. NEGATIVE FACTORS

- Negative factors that affect the professional services market include (see Exhibits IV-2):

  - Implementation bottleneck has to do with rate of change. Presently, there is a proliferation of automated solutions that causes user

EXHIBIT IV-2

"MACRO FACTORS" PROFESSIONAL SERVICES MARKET
NEGATIVE

FACTOR	WEIGHT	1985	1986	1987	1988	1989	1990	PFS* MARKET MOST AFFECTED
Implementation Bottleneck	A	-1 (-3)	-2 (-6)	-2 (-6)	-3 (-9)	-3 (-9)	-3 (-9)	- -
Increased Standardization	B	-1 (-2)	-1 (-2)	-2 (-4)	-2 (-4)	-3 (-6)	-3 (-6)	-
PFS Salary Inflation	B	-1 (-2)	-1 (-2)	-2 (-4)	-2 (-4)	-3 (-6)	-3 (-6)	-
Increased Sophistication of CAI Tools	C	-1	-2	-2	-3	-3	-4	E & T
Ease of Implementation of Software Products (e.g., AI)	C	-1	-1	-2	-2	-3	-3	-
Software Products Have More Functionality	C	-1	-1	-2	-2	-3	-3	-

Continued

( ) = Factor with Weighting Included.

SD = Software Development
C = Consulting
E & T = Education and Training
FM = Facilities Management
SI = Systems Integration

*Professional Services Market

EXHIBIT IV-2 (Cont.)

"MACRO FACTORS" PROFESSIONAL SERVICES MARKET
NEGATIVE

FACTOR	WEIGHT	1985	1986	1987	1988	1989	1990	PFS* MARKET MOST AFFECTED
Software Products More Self-Teaching	C	-1	-1	-2	-2	-3	-3	E & T
Total Negative Factors		-7 (-11)	-9 (-15)	-14 (-22)	-16 (-26)	-21 (-33)	-22 (-34)	

( ) = Factor with Weighting Included.

SD = Software Development
C = Consulting
E & T = Education and Training
FM = Facilities Management
SI = Systems Integration

*Professional Services Market

confusion. In spite of the fact that there is an increasing trend by management toward automation, management does not have the time to absorb all of the justifiable automated projects now and will therefore be willing to postpone change (i.e., developing additional systems) a little longer.

- Increased system standardization including technical standards such as communication protocols as well as standards within industries such as common product codes, reporting, and financial statements. Increased standardization makes it more economical for vendors to purchase packaged software solutions rather than opt for a custom solution by a professional services vendor.

- Salaries constantly increasing as the demand continues for more capable programmers who can coordinate integrated distributed systems. These salary pressures put a continual strain in the professional services vendors' bottom line.

- The next four negative factors all relate to software products. As packaged software becomes easier to implement, more self-instructing, and more functional, the need to hire a professional services firm decreases. Also impacting the professional services market negatively is the increasing sophistication of software development tools by which software packages can be easily reworked or designed in house by either professionals or end users.

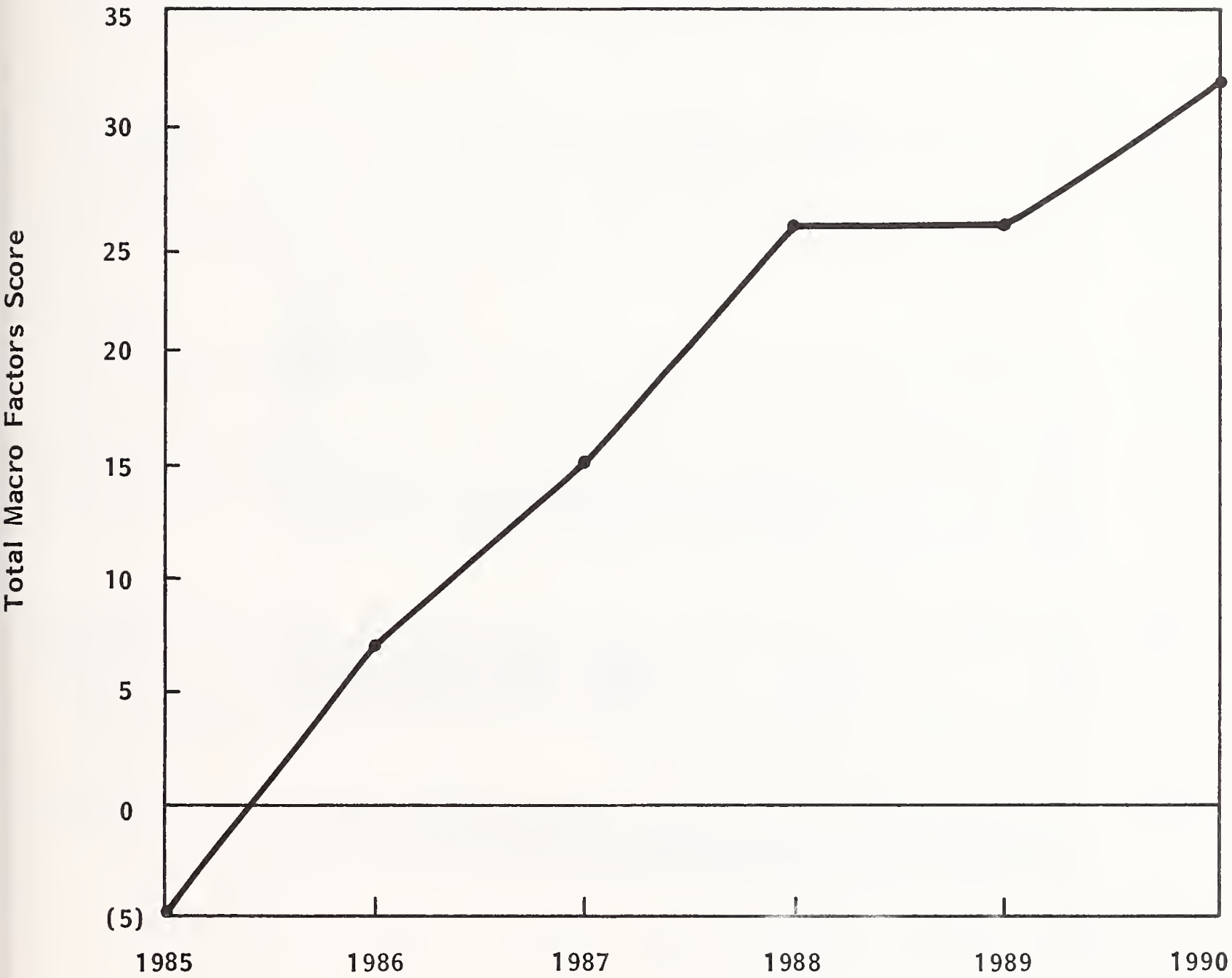
3. DRIVING FORCES SUMMARY

- After totaling the factors, including the weighting, the impact of the factors year-to-year are presented in Exhibit IV-3.

- When graphed, the factors show the professional services market growing steadily until 1988, then leveling out and continuing growth through 1990.

EXHIBIT IV-3

MACRO FACTOR TOTALS



TOTAL MACRO FACTOR SCORE	-4 (-5)	+3 (+7)	+4 (+15)	+10 (+26)	+8 (+26)	+12 (+32)
	1985	1986	1987	1988	1989	1990

( ) = Factor with Weighting Included

4. ARTIFICIAL INTELLIGENCE AND PROFESSIONAL SERVICES

- Artificial intelligence (AI) is a marketplace that impacts all segments and modes of the professional services market. It is one of the fastest growing markets in its own right, with a five-year AAGR of 50% (see Exhibit IV-4).

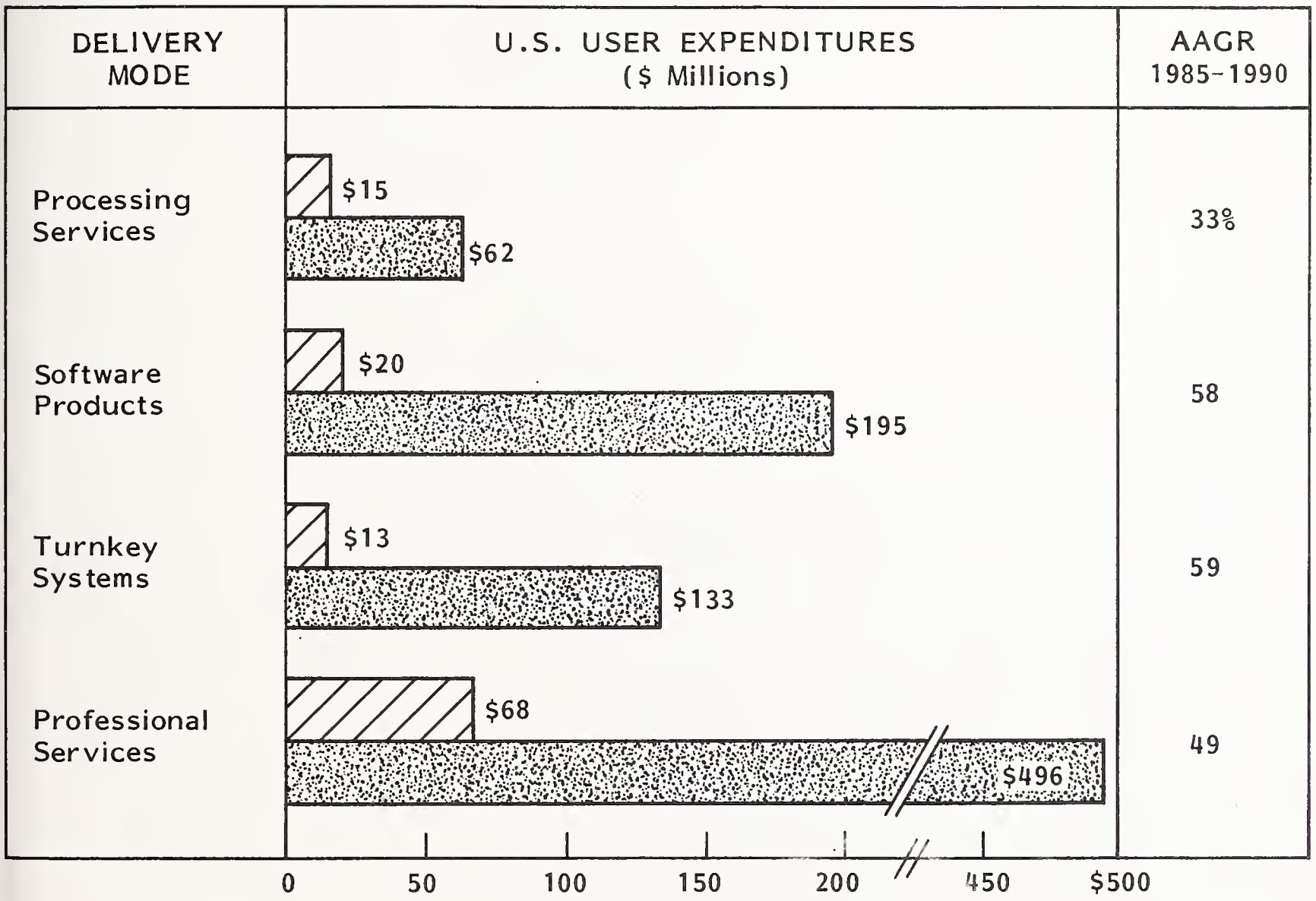
- Expert systems generators will be the fastest growing area of AI with an AAGR of 63%. Expert systems applications are increasing in popularity, especially in vertical markets. These generators will be increasingly used by professional services programmers to develop custom systems faster.

- Professional services in AI is and will continue to be the largest delivery mode, with over 50% of AI user expenditures in both 1985 and 1990. By incorporating AI in custom software products, many professional services vendors will attempt in the near future to evolve into software product suppliers to increase their profit margins.

- Professional services AI vendors, such as Teknowledge, are generally smaller firms. To increase their chances of market penetration, it is recommended that they align with larger well-established companies that can aid credibility as well as provide financial stability.

EXHIBIT IV-4

A.I. MARKET EXPLODING
BY DELIVERY MODE, 1985-1990



APPENDIX A: DEFINITIONS

APPENDIX A: DEFINITIONS

- INFORMATION SERVICES--Computer-related services involving one or more of the following:

  - Processing of computer-based applications using vendor computers (called "processing services").

  - Services that assist users in performing functions on their own computers or vendor computers (called "software products" and/or "professional services").

  - Services that utilize a combination of hardware and software, integrated into a total system (called "turnkey systems").

A. USER EXPENDITURES

- All user expenditures reported are "available" (i.e., noncaptive, as defined below).

- NONCAPTIVE INFORMATION SERVICES USER EXPENDITURES - Expenditures paid for information services provided by a vendor that is not part of the same parent corporation as the user.

- CAPTIVE INFORMATION SERVICES USER EXPENDITURES - Expenditures received from users who are part of the same parent corporation as the vendor.

B. DELIVERY MODES

- PROCESSING SERVICES - This category includes remote computing services, batch services, processing facilities management, and value-added networks (VANs).

  - REMOTE COMPUTING SERVICES (RCS) - Providing computer processing to a user by means of terminal(s) at the user's site(s) connected by a data communications network to the vendor's central computer. There are four submodes of RCS, including:

    . Interactive - Characterized by the interaction of the user with the system for the purpose of problem-solving, data entry, and/or transaction processing. The user is on-line to the program/files. Computer response is usually measured in seconds or fractions of a second.

    . Remote Batch - A service in which the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements. Computer response is usually measured in minutes or hours.

    . Data Base - Characterized by the retrieval and processing of information from a vendor-provided data base. The data base may be owned by the vendor or a third party.

- User Site Hardware Services (USHS) - Offerings provided by RCS vendors that place programmable hardware on the user's site (rather than in the vendor's computer center). USHS offers access to a communications network, access through the network to the RCS vendor's larger computers, and significant software as part of the service.

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

- PROCESSING FACILITIES MANAGEMENT (PFM) (also referred to as "resource management" or "systems management") - The management of all or a major part of a user's data processing functions under a long-term contract (more than one year). This would include both remote computing and batch services. To qualify as PFM, the contractor must directly plan, control, operate, and own the facility provided to the user, either on-site, through communications lines, or in a mixed mode.

- VALUE-ADDED NETWORKS (VANs) - VANs typically involve common carrier network transmission facilities that are augmented with computerized switching. These networks have become associated with packet-switching technology because the public VANs that have received the most attention (e.g., Telenet and TYMNET) employ packet-switching techniques. However, other added data service features such as store-and-forward message switching, terminal interfacing, error detection and correction, and host computer interfacing are of equal importance.

- Processing services are further differentiated as follows:

  . Cross-industry services involve the processing of applications that are targeted to specific user departments (e.g., finance, personnel, sales) but cut across industry lines. Most general ledger, accounts receivable, payroll, and personnel applications fall into this category. Cross-industry data base services, for which the vendor supplies the data base and controls access to it (although it may be owned by a third party), are included in this category. General-purpose tools such as financial planning systems, linear regression packages, and other statistical routines are also included. However, when the application, tool, or data base is designed for specific industry use, then the service is industry-specific (see below).

  . Industry-specific services provide processing for particular functions or problems unique to an industry or industry group. Specialty applications can be either business or scientific in orientation. Industry-specific data base services, for which 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 industry-specific applications are seismic data processing, numerically controlled machine tool software development, and demand deposit accounting.

  . Utility services are those for which the vendor provides access to a computer and/or communications network with basic software that enables users to develop and/or process their own systems. These basic tools often include terminal-handling software, sorts, language compilers, data base management systems, information retrieval software, scientific library routines, and other systems software.

- SOFTWARE PRODUCTS - This category includes users' purchases of applications and/or systems software that is sold by vendors as standard products intended for use by different organizations. Included as user expenditures are lease and purchase expenditures as well as fees for work performed by the vendor to implement and maintain the package (when such fees are either bundled as part of the product price or offered on an annual subscription basis). Fees for work related to education, consulting, and/or custom modification of software products are counted as professional services, provided such fees are charged separately from the price of the software product itself. There are several subcategories of software products, including:

  - APPLICATIONS SOFTWARE PRODUCTS - Software that performs a specific function directly related to solving a business or organizational need. Applications software provides information directly for use by the end user. Applications software products classifications are:

    - Cross-Industry Products - Used in multiple user industry sectors. Examples are payroll, inventory control, and financial planning.

    - Industry-Specific Products - Used in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting, airline scheduling, and materials resource planning.

  - SYSTEMS SOFTWARE PRODUCTS - Softwa e that enables the computer/communications system to perform basic functions, which are interim steps to providing the end user with "answers" sought. Systems software product classifications are:

    - Systems Control Products - These products function during applications program execution to manage the computer system

resource. Examples include operating systems, communication monitors, and emulators.

- Data Center Management Products - These products are used by operations personnel to manage the computer system resources and personnel more effectively. Examples include performance measurement, job accounting, computer operations scheduling, and utilities.

- Application Development Products - These products are used to prepare applications for execution by assisting in design, programming, testing, and related functions. Examples include languages, sorts, productivity aids, data dictionaries, data base management systems, report writers, and retrieval systems.

- PROFESSIONAL SERVICES - This category is made up of modes in the following categories:

  - SOFTWARE DEVELOPMENT - This service develops a software system on a custom basis. It includes one or more of the following: user requirements, system design, contract, and programming.

  - EDUCATION AND TRAINING SERVICES - These services help people acquire new skills, techniques, or knowledge related to computers. This definition does not include services to educational institutions. (This latter market is included in the education (industry-specific) segment.)

  - CONSULTING SERVICES - Consultants advise clients on computer-related issues that are usually management oriented. Feasibility studies and computer audits are examples of services provided.

- PROFESSIONAL SERVICES FACILITIES MANAGEMENT (PSFM) - This is counterpart to processing facilities management, except that in this case the computers are owned by the client, not the vendor; the vendor provides human resources to operate and manage the client facility.

- TURNKEY SYSTEMS (also known as Integrated Systems) - A turnkey system is an integration of systems and applications software with CPU hardware and peripherals, packaged as a single applications solution. The value added by the vendor is primarily in the software and support. Most CAD/CAM systems and many small business systems are turnkey systems. This does not include specialized hardware systems such as word processors, cash registers, or process control systems, nor does it include Embedded Computer Resources for military applications. Turnkey systems are available either as custom or packaged systems.

  - Hardware vendors that combine software with their own general purpose hardware are not classified by INPUT as turnkey vendors.

  - Turnkey systems revenue is divided into two categories.

    . Industry-specific systems--that is, systems that serve a specific function for a given industry sector such as automobile dealer parts inventory, CAD/CAM systems, or discrete manufacturing control systems.

    . Cross-industry systems--that is, systems that provide a specific function that is applicable to a wide range of industry sectors such as financial planning systems, payroll systems, or personnel management systems.

  - Revenue includes hardware, software, and support functions.

- SYSTEMS INTEGRATION - Services associated with systems design, integration of computing components, installation, and acceptance of computer/communications systems. Systems integration can include one or more of the major information services delivery modes--professional services, turnkey systems, and software products. System components may be furnished by separate vendors (not as an integrated system by one vendor, called the prime contractor); services may be furnished by a vendor or by a not-for-profit organization. Integration services may be provided with related engineering activities, such as SE&I (Systems Engineering and Integration) or SETA (Systems Engineering and Technical Assistance).

C. HARDWARE/HARDWARE SYSTEMS

- HARDWARE - Includes all computer communications equipment that can be separatedly acquired, with or without installation by the vendor, and not acquired as part of a system.

  - PERIPHERALS - Includes all input, output, communications, and storage devices, other than main memory, that can be locally connected to the main processor and generally cannot be included in other categories, such as terminals.

  - INPUT DEVICES - Includes keyboards, numeric pads, card records, bar-code readers, lightpens and trackballs, tape readers, position and motion sensors, and A-to-D (analog-to-dialog) converters.

  - OUTPUT DEVICES - Includes printers, CRTs, projection television screens, microfilm processors, digital graphics, and plotters.

  - COMMUNICATION DEVICES - Modems, encryption equipment, special interfaces, and error control.

- STORAGE DEVICES - Includes magnetic tape (reel, cartridge, and cassette), floppy and hard disks, solid state (integrated circuits), and bubble and optical memories.

- TERMINALS - There are three types of terminals:

  - USER PROGRAMMABLE (also called "intelligent terminals"):

    . Single-station or standalone.

    . Multistation-shared processor.

    . Teleprinter.

    . Remote batch.

  - USER NONPROGRAMMABLE:

    . Single-station.

    . Multistation-shared processor.

    . Teleprinter.

  - LIMITED FUNCTION - Originally developed for specific needs, such as POS (point of sale), inventory data collection, controlled access, etc.

- HARDWARE SYSTEMS - Includes all processors, from microcomputers to super (scientific) computers. Hardware systems require type- or model-unique operating software to be functional, but the category excludes applications software and peripheral devices, other than main memory and processor or CPUs not provided as part of an integrated (turnkey) system.

- MICROCOMPUTER (or personal computer or PC) - Combines all of the CPU, memory, and peripheral functions of an 8- or 16-bit computer on a chip, in the form of:

  . Integrated circuit package.

  . Plug-in board with more memory and peripheral circuits.

  . Console--including keyboard and interfacing connectors.

  . Personal computer with at least one external storage device directly addressable by CPU.

- MINICOMPUTER - Usually a 12-, 16- or 32-bit computer, which may be provided with limited applications software and support, and may represent a portion of a complete large system.

  . Personal business computer.

  . Small laboratory computer.

  . Nodal computer in a distributed data network, remote data collection network, connected to remote microcomputers.

- MAINFRAME - Typically a 32- or 64-bit computer, with extensive applications software and a number of peripherals in standalone or multiple CPU configurations for business (administrative, personnel, and logistics) applications, also called a General-Purpose Computer.

  . Large computer mainframes are presently centered around storage controllers but likely to become bus-oriented and to consist of multiple processors (CPUs) or parallel processors;

they are intended for structured mathematical and signal processing, and are generally used with general-purpose von-Newmann-type processors for system control.

. Supercomputer mainframes are high-powered processors with numerical processing throughout that is significantly greater than the largest general-purpose computers, with capacities in the 10-50 MFLOPS (million floating point operations per second) range, in two categories:

- REAL TIME - Generally used for signal processing.

- NONREAL TIME - For scientific use, with maximum burst-mode (but sustained speed) capacities of up to 100 MFLOPS, in one of three configurations:

  . Parallel processors.

  . Pipeline processors.

  . Vector processors.

- Newer supercomputers--with burst modes approaching 300 MFLOPS, main storage size up to 10 million words, and on-line storage in the one-to-three gigabyte class--are also becoming more common.

- EMBEDDED COMPUTER - Dedicated computer system designed and implemented as an integral part of a weapon or weapon system, or platform that is critical to a military or intelligence mission, such as command and control, cryptological activities, or intelligence activities. Characterized by MIL SPEC (military specification) appearance and operation, limited but reprogrammable applications software, and permanent or semipermanent interfaces. May vary in capacity from

microcomputers to parallel-processor computer systems. Information services forecasts in this report do not include applications for this type of computer.

D. TELECOMMUNICATIONS

- NETWORKS - Interconnection services between computing resources. Provided on a leased basis by a vendor to move data and/or textual information from one or more locations to one or more locations.

  - COMMON CARRIER NETWORK (CCN) - Provided via conventional voice-grade circuits and through regular switching facilities (dial-up calling) with leased or user-owned modems (to convert digital information to voice-grade tones) for transfer rates between 150 and 1,200 baud.

  - VALUE-ADDED NETWORK (VAN) - (See listing under Section B, Delivery Modes.)

  - LOCAL-AREA NETWORK (LAN) - Restricted limited-access network between computing resources in a relatively small (but not necessarily contiguous) area, such as a building, complex of buildings, or buildings distributed within a metropolitan area. One of the two types:

    - BASEBAND - Voice bandwidth at voice frequencies (same as telephone, teletype system) limited to a single sender at any given moment and limited to speeds of 75 to 1,200 baud, in serial mode.

    - BROADBAND - Employs multiplexing techniques to increase carrier frequency between terminals, to provide:

- Multiple (simultaneous) channels via FDM (Frequency Division Multiplexing).

- Multiple (time-sequenced) channels via TDM (Time Division Multiplexing).

- High-speed data transfer rate via parallel mode at rates of up to 96,000 baud (or higher, depending on media).

- TRANSMISSION MEDIA - Varies with the supplier (vendor) and with the distribution of the network and its access mode to the individual computing resource location.

  - MODE - may be either:

    . ANALOG - Typified by the predominantly voice-grade network of AT&T's DDD (Direct Distance Dialing) and by operating telephone company distribution systems.

    . DIGITAL - Where voice, data, and/or text are digitized into a binary stream.

  - MEDIA varies with distance, availability, and connectivity:

    . WIRE - Varies from earlier single-line teletype networks to two-wire standard telephone (twisted pair) and balanced line to four-wire full-duplex balanced lines.

    . CARRIER - Multiplexed signals on two-wire and four-wire networks to increase capacity by FDM.

- COAXIAL CABLE - HF (High Frequency) and VHF (Very High Frequency), single frequency, or carrier-based system that requires frequent reamplification (repeaters) to carry the signal any distance.

- MICROWAVE - UHF (Ultra High Frequency) multichannel, point-to-point, repeated radio transmission, also capable of wide frequency channels.

- OPTICAL FIBER - Local signal distribution systems employed in limited areas, using light-transmitting glass fibers and with TDM for multichannel applications.

- SATELLITES - Synchronous earth-orbiting systems that provide point-to-point, two-way service over significant distances without intermediate amplification (repeaters), but requiring suitable groundstation facilities for up- and down-link operation.

- CELLULAR RADIO - Network of fixed, low-powered two-way radios that are linked by a computer system to track mobile phone/data set units; each radio serves a small area called a cell. The computer switches service connection to the mobile unit from cell to cell as the unit moves among the cells.

E. OTHER CONSIDERATIONS

- When questions arise about the proper place to count certain user expenditures, INPUT addresses them from the user viewpoint. Expenditures are then categorized according to what users perceive they are buying.

- The standard industrial classification (SIC) codes are used to define the economic activity contained in generic sectors such as process manufacturing, insurance, or transportation.

APPENDIX B: RECONCILIATION AND DATA BASE

APPENDIX B: RECONCILIATION AND DATA BASE

- INPUT's data base of market forecasts as used in this report is contained in Exhibits B-1 through B-4.

- A reconciliation between professional services market forecasts made by INPUT at the end of 1984 compared to the forecasts made in this report shows the forecasts to be very similar. This reflects the general stability of the professional services market as compared to other delivery modes.

  - Growth in 1984-1985 as published in 1984 was 20%. In 1985, INPUT stated the growth for these same years as 19%.

  - Five-year AAGR as forecast in 1984 was 20%. Five-year AAGR forecast in 1985 is 20%.

  - User expenditures for 1985 as published in 1984 were $10.3 billion. In this report, 1985 professional services user expenditures were stated as $10.5 billion.

- The key difference in the forecasts is in the education and training mode and is discussed below.

EXHIBIT B-1

TOTAL INFORMATION SERVICES MARKET FORECAST BY DELIVERY MODE, 1985-1990

SEGMENTATION BY DELIVERY MODE	($M) 1984	84-85 GROWTH	($M) 1985	($M) 1986	($M) 1987	($M) 1988	($M) 1989	($M) 1990	AAGR 85-90
REMOTE COMPUTING/BATCH									
INDUSTRY SPECIFIC	6787	15%	7827	9211	10843	12709	14943	17512	17%
CROSS INDUSTRY	4254	14%	4852	5614	6542	7659	8953	10428	16%
UTILITY PROCESSING	1789	6%	1896	2029	2171	2301	2416	2537	6%
SUBTOTAL	12830	14%	14575	16854	19556	22669	26312	30457	16%
FACILITIES MANAGEMENT									
INDUSTRY SPECIFIC	1864	15%	2151	2488	2890	3363	3865	4436	16%
CROSS INDUSTRY	57	5%	60	62	63	64	67	71	3%
UTILITY PROCESSING	142	10%	156	181	211	242	281	332	16%
SUBTOTAL	2063	15%	2367	2731	3164	3669	4213	4839	15%
TOTAL PROCESSING/NETWORK SERV.									
INDUSTRY SPECIFIC	8651	15%	9978	11699	13733	16072	18808	21948	17%
CROSS INDUSTRY	4311	14%	4912	5676	6605	7723	9020	10479	16%
UTILITY PROCESSING	1931	5%	2052	2210	2382	2543	2697	2869	7%
VANS	290	27%	368	467	595	762	982	1270	28%
TOTAL	15183	14%	17310	20052	23315	27100	31507	36566	16%
SOFTWARE PRODUCTS									
MAINFRAME/MINICOMPUTER									
INDUSTRY SPECIFIC	2248	22%	2731	3337	4010	6123	7820	9750	29%
CROSS INDUSTRY	1948	17%	2275	2808	3414	3994	4518	5087	17%
SUBTOTAL	4196	19%	5026	6445	8224	10117	12338	14837	33%
*MICROCOMPUTER									
INDUSTRY SPECIFIC	352	34%	473	702	1049	1530	2125	3034	45%
CROSS INDUSTRY	1193	23%	1465	1868	2340	2786	3317	3679	20%
SUBTOTAL	1545	33%	1938	2570	3389	4316	5342	6713	32%
TOTAL APPLICATIONS SOFTWARE	5741	21%	6964	9015	11613	14433	17680	21550	25%
SYSTEMS SOFTWARE									
MAINFRAME/MINICOMPUTER	4685	19%	5569	7034	8985	11124	13284	15540	23%
MICROCOMPUTER	648	16%	753	979	1392	2034	2923	4111	40%
TOTAL SYSTEMS SOFTWARE	5333	19%	6322	8013	10377	13158	16207	19651	25%
TOTAL SOFTWARE	11074	20%	13286	17028	21990	27591	33887	41201	25%
PROFESSIONAL SERVICES									
SOFTWARE DEVELOPMENT	5307	17%	6232	7327	8723	10546	12817	15253	20%
CONSULTING	1425	20%	1717	2089	2542	3055	3676	4351	20%
EDUCATION	834	26%	1049	1329	1708	2173	2691	3352	26%
FACILITIES MANAGEMENT	660	11%	730	814	905	1000	1096	1197	10%
SYSTEMS INTEGRATION-FED	630	27%	800	984	1220	1489	1801	2162	22%
TOTAL PROFESSIONAL SERVICES	8856	19%	10529	12543	15098	18263	22081	26315	20%
TURNKEY SYSTEMS									
INDUSTRY SPECIFIC	4325	17%	5070	6017	7207	8724	10490	12646	20%
CROSS INDUSTRY	2055	13%	2327	2653	3063	3539	4135	4721	15%
TOTAL TURNKEY SYSTEMS	6380	16%	7397	8670	10270	12263	14625	17367	19%
GRAND TOTAL	41493	17%	48522	58293	70673	85217	102100	121449	20%

EXHIBIT B-2

TOTAL INFORMATION SERVICES USER EXPENDITURE FORECAST BY MARKET SECTOR, 1985-1990

SEGMENTATION	($M) 1984	84-85 GROWTH	($M) 1985	($M) 1986	($M) 1987	($M) 1988	($M) 1989	($M) 1990	AAGR 85-90
INDUSTRY-SPECIFIC SECTORS *									
DISCRETE MANUFACTURING	2573	17%	3023	3686	4458	5499	6682	7864	21%
PROCESS MANUFACTURING	1131	16%	1311	1571	1880	2265	2730	3215	20%
TRANSPORTATION	401	17%	471	581	736	937	1210	1576	27%
UTILITIES	190	11%	211	240	279	322	372	434	16%
TELECOMMUNICATIONS	528	13%	604	732	886	1068	1285	1545	21%
DISTRIBUTION	1356	16%	1579	1905	2323	2875	3551	4355	22%
BANKING AND FINANCE	4126	19%	4892	5942	7240	8612	10275	12422	20%
INSURANCE	352	13%	1073	1257	1499	1765	2090	2445	18%
MEDICAL	1456	20%	1740	2129	2603	3202	3959	4931	23%
EDUCATION	191	16%	221	264	315	375	448	534	19%
SERVICES	1135	13%	1324	1626	1996	2447	2984	3672	23%
FEDERAL GOVERNMENT	565	20%	678	794	963	1151	1367	1647	19%
STATE AND LOCAL GOVERNMENT	412	16%	476	560	662	792	943	1130	19%
OTHER INDUSTRY-SPECIFIC	567	14%	669	788	959	1119	1347	1608	19%
SUB-TOTAL	15576	17%	18272	22055	26799	32449	39243	47378	21%
PROF. SERVICES TO INDUSTRY	8856	19%	10529	12543	15098	18263	22081	26315	20%
TOTAL INDUSTRY EXPENDITURE	24432	18%	28801	34598	41897	50712	61324	73693	21%
CROSS-INDUSTRY SECTORS **									
PLANNING AND ANALYSIS	1980	19%	2350	2872	3430	3997	4573	5118	17%
ACCOUNTING	2248	15%	2588	3053	3602	4154	4688	5253	15%
HUMAN RESOURCES	1383	13%	1561	1768	2021	2285	2573	2887	13%
ENGINEERING/SCIENTIFIC	1178	17%	1377	1640	1975	2368	2809	3327	19%
EDUCATION/TRAINING	242	21%	294	363	458	578	715	904	25%
ON-LINE DATA BASES	607	19%	722	896	1120	1399	1734	2159	24%
OTHER CROSS-INDUSTRY	1869	11%	2077	2413	2816	3261	3798	4335	16%
SUB-TOTAL	9507	15%	10979	13005	15422	18042	20890	23966	17%
OTHER SECTORS									
UTILITY PROCESSING	1931	6%	2052	2210	2382	2543	2697	2869	7%
SYSTEMS SOFTWARE	5333	19%	6322	8013	10377	13158	16207	19651	25%
VANS	290	27%	368	467	595	762	982	1270	28%
GRAND TOTAL	41493	17%	48522	58293	70673	85217	102100	121449	20%

* Professional Services expenditures are included in the industry-specific category. The industry-specific detail forecast show these as separate line items.

** Cross-industry Processing Facilities Management user expenditures are not broken down by application and are included in the 'other cross-industry' segment.

EXHIBIT B-3

PROFESSIONAL SERVICES FORECAST
BY TYPE OF SERVICE, 1985-1990

FEDERAL GOVERNMENT SEGMENTATION	($M) 1984	84-85 GROWTH	($M) 1985	($M) 1986	($M) 1987	($M) 1988	($M) 1989	($M) 1990	AAGR 85-90
PROFESSIONAL SERVICES									
SOFTWARE DEVELOPMENT	1098	24%	1362	1647	1928	2313	2729	3248	19%
CONSULTING	292	18%	345	385	459	533	629	717	16%
EDUCATION & TRAINING	234	17%	274	323	420	525	646	807	24%
FACILITIES MANAGEMENT	509	11%	565	633	702	773	842	910	10%
SYSTEMS INTEGRATION	630	27%	800	984	1220	1489	1801	2162	22%
SUB-TOTAL	2763	21%	3346	3972	4729	5633	6647	7844	19%

COMMERCIAL SEGMENTATION	($M) 1984	84-85 GROWTH	($M) 1985	($M) 1986	($M) 1987	($M) 1988	($M) 1989	($M) 1990	AAGR 85-90
PROFESSIONAL SERVICES									
SOFTWARE DEVELOPMENT	4209	16%	4871	5680	6795	8233	10088	12005	20%
CONSULTING	1133	21%	1372	1704	2083	2522	3047	3634	22%
EDUCATION & TRAINING	600	29%	775	1006	1288	1648	2045	2545	27%
FACILITIES MANAGEMENT	151	9%	165	181	203	227	254	287	12%
SUB-TOTAL	6093	18%	7183	8571	10369	12630	15434	18471	21%
GRAND TOTAL	8856	19%	10529	12543	15098	18263	22081	26315	20%

EXHIBIT B-4

PROFESSIONAL SERVICES USER EXPENDITURE FORECAST BY MARKET SECTOR, 1985-1990

SEGMENTATION	($M) 1984	84-85 GROWTH	($M) 1985	($M) 1986	($M) 1987	($M) 1988	($M) 1989	($M) 1990	CAGR 85-90
INDUSTRY SECTORS									
DISCRETE MANUFACTURING	1401	20%	1681	2034	2522	3103	3816	4579	22%
PROCESS MANUFACTURING	670	18%	791	941	1138	1400	1736	2101	22%
TRANSPORTATION	122	12%	137	157	184	215	256	305	17%
UTILITIES	61	10%	67	74	83	90	96	103	9%
TELECOMMUNICATIONS	244	25%	305	387	492	625	787	988	26%
DISTRIBUTION	426	14%	486	558	648	764	910	1064	17%
BANKING AND FINANCE	1036	21%	1254	1529	1881	2314	2869	3500	23%
INSURANCE	609	16%	706	834	992	1210	1476	1757	20%
MEDICAL	183	20%	220	266	324	399	494	588	22%
EDUCATION	61	7%	65	70	77	84	92	101	9%
SERVICES	122	15%	140	163	189	219	258	303	17%
FEDERAL GOVERNMENT	2763	21%	3346	3972	4729	5633	6647	7844	19%
STATE AND LOCAL GOVERNMENT	975	15%	1121	1312	1548	1858	2229	2639	19%
OTHER INDUSTRY-SPECIFIC	183	15%	210	246	291	349	415	485	18%
GRAND TOTAL	8856	19%	10529	12543	15098	18253	22091	26315	20%

	INPUT's 1984 Five-Year AAGR	INPUT's 1985 Five-Year AAGR
Software Development	21%	20%
Consulting	19%	20%
Education and Training	28%	25%
FM	9%	11%

- The five-year AAGR for the education and training mode was decreased from 28% to 25% in this report due to the faster than expected acceptance of technological options that compete with the people-oriented professional services education and training market; i.e., videodisks and PC-based training.

APPENDIX C: RELATED INPUT REPORTS

APPENDIX C: RELATED INPUT REPORTS

ANNUAL MARKET ANALYSES

- U.S. Information Services Vertical Markets, 1985-1990
- U.S. Information Services Cross-Industry Markets, 1985-1990
- U.S. Professional Services Markets, 1985-1990
- U.S. Processing Services Markets, 1985-1990
- U.S. Turnkey Markets, 1985-1990

INDUSTRY SURVEYS

- Eighteenth Annual Survey of the Computer Services Industry - 1985

1985 MAPS REPORTS

- Acquisition Strategies for Information Services Firms

SOFTWARE MARKETS

- Fourth Generation Languages Markets
- Computer Integrated Manufacturing Markets
- Applications Software Development Tools
- Data Base Management Systems Markets
- Information Services in A.I., 1985-1990
- Micro-Mainframe: Market Analysis

- Selling Micro Software to Corporate America
- New Opportunities in Integrated Software
- Analysis of Corporate User Needs
- Microcomputer Software Dealer Survey
- Microcomputer Operating System Directions
- Multi-User Microcomputers

PROFESSIONAL SERVICES MARKETS

- New Professional Services Opportunities
- Professional Services Marketing Opportunities
- Systems Integration Opportunities and Challenges
- Systems Integration in the Federal Government

OTHER 1985 REPORTS

- Annual Information Systems Planning Report, 1985

CORPORATE SYSTEMS PLANNING (CSP Program)

- Market Analysis and Forecasts--TPM
- Market Analysis and Forecasts--Large Systems
- Market Analysis and Forecasts--Small Systems
- Market Analysis and Forecasts--Office Products

INFORMATION SYSTEMS PLANNING (ISP Program)

End User

- Integrated Office Systems
- Multiuser Systems
- Destiny of the Information Center
- Micro-Mainframe End-User Experiences

- Training: Pre Requisite to End-User Computing
- Office Videotex
- Intelligent Workstations

Software

- Micro-Mainframe Software
- Simulation and Prototyping
- Fourth Generation Language Tools
- Artificial Intelligence
- Applications Software Development Tools
- Data Base Management Systems
- Decision Support Evolution: Data to Knowledge

Telecommunications

- Integrating Voice/Data Communications
- Telecommunications Security
- Micro-Mainframe Connectivity
- LAN/CBX Update
- Network Management Systems
- Telecommunications Support Strategies
- Economics of Telecommunications

Corporate Systems

- Information Systems Planning
- Micro-Mainframe: Corporate Impact
- Changing Dynamics of IS Organizations
- Large-Scale Systems Directions: Residual Value-Peripheral
- Large-Scale Systems Directions: Residual Value-Update
- Large-Scale Systems Directions: Residual Value-Mainframe
- Distributed Data Processing

OTHER INPUT SUBSCRIPTION PROGRAMS

- Company Analysis and Monitoring Program (CAMP) for the Information Services Industry
- Customer Service Programs (CSP)
- Information Systems Planning (ISP)
- Federal Information Systems and Services Program (FISSP)